



# Department for Business, Energy & Industrial Strategy

## GRANT FUNDING CALL FOR PROPOSALS: TERMS OF REFERENCE

### FOR THE PROJECT: ECONOMICS OF ENERGY INNOVATION AND SYSTEM TRANSITION

**KNOWLEDGE, EVIDENCE AND ENGAGEMENT PROGRAMME**  
INTERNATIONAL CLIMATE FINANCE  
ENERGY TRANSFORMATION AND CLEAN GROWTH DIRECTORATE

LONDON, UNITED KINGDOM

July 2019

#### CONTENTS

<b>1. Project background and purpose</b>	<b>p2</b>
<b>2. Guidance on project content</b>	<b>p4</b>
<b>3. Guidance on the call for proposals process</b>	<b>p7</b>
<b>4. Quality assurance</b>	<b>p8</b>
<b>5. BEIS coordination and governance</b>	<b>p9</b>
<b>6. Ethical principles</b>	<b>p9</b>
<b>7. UK aid branding</b>	<b>p10</b>
<b>8. Transparency</b>	<b>p10</b>
<b>9. Scale up/down</b>	<b>p10</b>
<b>10. Duty of care</b>	<b>p10</b>
<b>11. Privacy notice</b>	<b>p11</b>

## 1. PROJECT BACKGROUND AND PURPOSE

### The challenges of energy innovation and system transition

Access to affordable and clean energy has been recognised by the United Nations as ‘central to nearly every major challenge and opportunity the world faces today’ – including jobs, security, climate change, food production and increasing incomes.<sup>1</sup>

Transitions in energy and infrastructure systems are important both to take advantage of new technologies and business models, and to limit the risks of climate change. The Intergovernmental Panel on Climate Change has advised that meeting climate goals requires rapid and far-reaching transitions in energy, transport, buildings, land and industrial systems that are unprecedented in terms of scale.<sup>2</sup>

Innovation is widely recognised as critical to enabling the goals of energy access, affordability, security and sustainability to be met at the same time, and to ensuring that system transitions lead to job creation and growth.

### The limitations of current economic approaches

Economic analysis is used by many governments to inform policymaking in these areas. Cost-benefit analysis is an approach that is widely used; however, this is a marginal analysis technique that is most appropriate for use where the broader environment can be assumed to be unchanged by the intervention, and that works less well where there are potential non-marginal effects or changes in underlying relationships – such as those inherent in system transitions.<sup>3</sup> Difficulties include dealing with uncertainty, and assessing the potential for policy interventions to accelerate innovation or catalyse structural change.

The economic models that currently inform policymaking in these areas have been criticised as ‘deeply inadequate in capturing the opportunities of such a transformational shift’ as the transition to sustainable energy and infrastructure systems.<sup>4</sup> Their limitations have been identified as making it ‘difficult to investigate how technological change comes about and how it could be steered into the right direction using different policy instruments.’<sup>5</sup>

Economic theory is relevant to the design and interpretation of models and analytical approaches. A report for the European Commission on policy, innovation and finance for low carbon growth found that differences in theoretical assumptions could have a decisive effect on whether policies were assessed as likely to have net economic costs or net economic benefits.<sup>6</sup> The standard approach to

---

<sup>1</sup> Sustainable Development Goal 7: Affordable and Clean Energy  
<https://www.un.org/sustainabledevelopment/energy/>

<sup>2</sup> IPCC Special Report (2018), Summary for Policymakers, p21  
[http://report.ipcc.ch/sr15/pdf/sr15\\_spm\\_final.pdf](http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf)

<sup>3</sup> HM Treasury, ‘The Green Book: appraisal and evaluation in central government’  
<https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

<sup>4</sup> New Climate Economy (2018), p8 [https://newclimateeconomy.report/2018/wp-content/uploads/sites/6/2018/09/NCE\\_2018\\_FULL-REPORT.pdf](https://newclimateeconomy.report/2018/wp-content/uploads/sites/6/2018/09/NCE_2018_FULL-REPORT.pdf)

<sup>5</sup> UK Energy Research Centre, ‘Modelling demand side energy policies for climate change mitigation in the UK (2019) <http://www.ukerc.ac.uk/publications/modelling-demand-side-policies.html>

<sup>6</sup> European Commission, ‘Policy-induced energy technological innovation and finance for low carbon economic growth’ (2016) <https://ec.europa.eu/energy/sites/ener/files/documents/ENER%20Macro-Energy%20Innovation%20Final%20%28Ares%20registered%29.pdf>

public economics has been described as being ‘generally about the comparison of equilibrium outcomes under different policies, and not about how the change happens’.<sup>7</sup>

### **The opportunity of new economic approaches**

The opportunity for new economic approaches to support policymaking is increasingly recognised. The OECD has created a unit for New Approaches to Economic Challenges, and has researched systems-based approaches to innovation, finding that these can provide new rationales for policy interventions.<sup>8</sup> Its Secretary General has spoken of the value of systems thinking for policymaking, and of the potential for complexity science to help us ‘understand the main features of the most important systems we have to deal with’.<sup>9</sup>

Models that can simulate the behaviour of dynamic systems are beginning to be applied to economic problems of instability and transition. The Bank of England has used agent-based models to improve its understanding of the corporate bond market and the UK housing market.<sup>10</sup> The European Union is supporting research using a system dynamics model based on post-Keynesian economics to inform policy on the transition to a low carbon economy in Europe.<sup>11</sup>

The relevance for policy of new developments in economic theory has been recognised by the UK’s Economic and Social Research Council, which is funding a ‘Rebuilding Macroeconomics’ programme to find out how inter-disciplinary ideas, alternative schools of thought, and new research methods can contribute to our most pressing ‘real world’ macroeconomic questions.<sup>12</sup>

### **Aim of this project**

The aim of this project is to take advantage of the latest developments in economic thinking and techniques, and apply them to the pressing problems of energy innovation and system transition.

### **BEIS International Climate Finance**

The project will be funded by a grant from the Knowledge, Evidence and Engagement Programme, which is an International Climate Finance research and engagement facility.

At the UNFCCC Conference of the Parties (COP) in Paris, the UK reaffirmed the collective commitment with other developed countries to mobilise \$100bn of climate finance a year by 2020 from public and private sources, to help developing countries mitigate and adapt to climate change. The UK has committed at least £5.8bn of International Climate Finance for 2016-2021, which is managed jointly by the Department for International Development (DFID), the Department for Business, Energy and Industrial Strategy (BEIS), and the Department for Environment, Food and Rural Affairs (DEFRA). The three departments have different allocations from the fund, and different focusses for their spend.

---

<sup>7</sup> Nicholas Stern, ‘Public economics as if time matters: climate change and the dynamics of policy’ (2018) <https://www.sciencedirect.com/science/article/pii/S004727271830046X>

<sup>8</sup> OECD, ‘System Innovation: Synthesis Report’ (2015) [https://www.innovationpolicyplatform.org/sites/default/files/general/SYSTEMINNOVATION\\_FINALREPORT.pdf](https://www.innovationpolicyplatform.org/sites/default/files/general/SYSTEMINNOVATION_FINALREPORT.pdf)

<sup>9</sup> Angel Gurría, ‘Better policies to meet the systemic challenges of the 21<sup>st</sup> century’ (2018) <http://www.oecd.org/education/better-policies-to-meet-systemic-challenges-of-21st-century-austria-2018.htm>

<sup>10</sup> Haldane and Turrell, ‘An interdisciplinary model for macroeconomics’ (2017) <https://www.bankofengland.co.uk/working-paper/2017/an-interdisciplinary-model-for-macroeconomics>

<sup>11</sup> MEDEAS project <https://www.medeas.eu/#home>

<sup>12</sup> Rebuilding Macroeconomics <https://www.rebuildingmacroeconomics.ac.uk/rebuild-macro/>

The BEIS International Climate Finance (ICF) team focusses on climate change mitigation primarily in middle-income countries where the largest climate change mitigation opportunities exist. The BEIS ICF looks to mobilise private finance, towards the Paris \$100bn goal. We look to achieve transformational change, supporting projects and programmes that have a multiplier effect. We aim to *innovate* to overcome critical barriers in the market, *invest with impact* by mobilising private capital at scale, and *inspire* by sharing UK skills to support ambition.

## 2. GUIDANCE ON PROJECT CONTENT

The following notes provide detail on the purpose and possible content of each of the project's stages. These should be read as indicative, not prescriptive. Proposals should reflect prospective grant recipients' judgment on how the aims of the project can be most effectively met.

**Stage 1:** *Engagement with the governments of partner countries to identify policy decisions that could most benefit from a strong understanding of energy innovation and system transitions, and to understand the analytical approaches, economic models and theories that are currently informing decisions in these areas.*

Aims of this stage:

- Establish productive engagement with governments of partner countries
- Ensure the project addresses policy decisions of interest
- Understand the baseline – the economic approaches currently used

Example methodology:

- Workshops and interviews with officials and academic experts

Explanatory notes:

- Relevant policy decisions are likely to be those that relate to the low carbon transition in sectors such as power, buildings, transport and industry, while also relating to objectives such as energy security, affordability, jobs, and industrial competitiveness.
- 'Analytical approaches' refers to the ways in which information is systematically organised to support decision-making. Examples include cost-benefit analysis, cost-effectiveness analysis, multi-criteria decision analysis, and systems thinking.
- 'Economic models' refers to ways of representing or simulating economic systems for the purposes of assessing the likely costs, benefits, or effectiveness of different policy actions. These may cover specific sectors or whole economies. Examples of model types include optimisation models, system dynamics models, macro-econometric models, and agent-based models.
- 'Theories' refers to ways of understanding and predicting the behaviour of the economy, the relationships between variables, and the effect of policy actions. Examples include neoclassical, evolutionary, and post-Keynesian economics, and complexity science.

**Stage 2:** *Application of new analytical approaches, economic models and theory to assess policy options in relation to the decisions identified in Stage 1 above, in partnerships with partner country governments.*

Aim of this stage:

- Provide an improved understanding of the opportunities and risks of policy options, supporting decision-making and demonstrating the value of new approaches

Example methodology:

- Literature review and synthesis of relevant economic theory
- Qualitative assessment of implications of relevant theory for understanding of opportunities and risks of policy options under consideration
- Use of systems thinking to map the dynamics of policy areas under consideration and assess potential effects of policy measures acting in combination

Explanatory note:

- The expectation is that this stage would make use of existing models, where relevant and to the extent they are useful, and not devote any significant resources to the construction of entirely new models. (The construction of new models is the focus of Stage 4.)

**Stage 3:** *Identification of general principles for policymaking on energy innovation and system transition, drawing on Stage 2 above and other relevant evidence; testing of these principles in economic models; and communication of findings to governments and experts internationally.*

Aims of this stage:

- Identify principles that can be applied more broadly, beyond the specific policy decisions considered in Stage 2
- Communicate findings to governments and experts internationally, not limited to those involved in the project

Example methodology:

- Individual expert consideration and discussion in workshops to identify principles based on theoretical understanding
- Quantitative comparison of rates of innovation and system change under different policy conditions (compared across countries or time periods), to provide observational evidence
- Testing of example policies across different kinds of economic models, to compare results and support (or refute) general principles
- Synthesis of findings in summary reports for international dissemination.

**Stage 4:** *Construction of new economic models to support partner country governments' decision-making processes over the longer-term in sectors important to the low carbon transition; use of these models to test likely effects of policies individually and in combination.*

Aims of this stage:

- Provide new models to support decision-making in areas where they are most needed (e.g. sectors of partner countries' economies for which appropriate models to inform decisions on system transition are not currently available)
- Generate new information on the likely effects of policies individually and in combination, in areas of decision-making of interest to partner country governments

Example methodology:

- Construction of new economic models to support decision-making in at least one sector in each of the partner countries. (For example, these could be agent-based, system dynamics, or econometric models).
- Testing of the effects of policy options individually and in combination, in the new models; comparison with assessment based on previous models and analytical approaches

Explanatory notes:

- The choice of which sectors to create models for (e.g. power, transport, industry, buildings) is expected to be made at the end of Stage 2, on the basis of where there appears to be the greatest potential to provide new insights for policy.
- Bids should give an indicative description of the scale, scope, quantity and kind of models that could be constructed at this stage of the project, consistent with the overall budget and timeline of the project.

**Stage 5:** *Provision of training in the use and interpretation of new economic models and analytical approaches to partner country government officials.*

Aim of this stage:

- Ensure partner country government officials are able to benefit from the use of new economic models and analytical approaches beyond the lifetime of the project

Explanatory notes:

- The design of training should take into account the work of all previous stages of the project, and the implications for the form of training that would be most useful (e.g. application of which analytical approaches, use and interpretation of which economic models).
- Bids should indicate the forms of training that could be provided, and the quantity and nature of training sessions and materials that could be provided, consistent with the overall budget and timeline of the project.

### **Expected outputs**

Prospective grant recipients should indicate clearly on the bidding form the outputs that would be delivered by each of the project's activities. These will be expected to include:

- a) At least one report for each partner country government at the end of Stage 3, to summarise and communicate the country-specific and general findings of Stages 1-3 of the project;
- b) At least one report for a wider international audience at the end of Stage 3, to synthesise and communicate the general findings of Stages 1-3 of the project;
- c) At least one new economic model to support decision-making in at least one sector in each of the partner countries;
- d) Training sessions and materials for at least ten officials in each of the partner countries.

### 3. GUIDANCE ON THE CALL FOR PROPOSALS PROCESS

The project will be funded by a grant, with the recipient selected through a competitive call for proposals process as set out below.

#### Eligibility

Project proposals must:

- Include plans for the implementation of all five stages of the project as set out above;
- Include plans for engagement with at least two of China, India and Brazil;
- Be for a duration of between 2 and 3 years;
- Require funding of up to a maximum of £3m;
- Be compatible with Official Development Assistance (ODA) criteria. Proposals must demonstrate how they will support the economic development and welfare of eligible developing countries. See the following link for more detail on ODA compatibility:

<http://www.oecd.org/dac/financing-sustainable-development/development-finance-standards/What-is-ODA.pdf>

- Demonstrate compliance with requirements of section 1 of the International Development Act 2002.

#### Selection criteria

Eligible concept bids will be assessed based on the following criteria:

1. **Academic expertise:** Demonstrated expertise in theory, modelling and economic analysis to inform policy on energy innovation and system transition. The forms of expertise most relevant to the project will be those that consider dynamic systems in a range of possible states (not limited to equilibrium), those that model technology learning and diffusion, and those that can inform policy in situations of non-marginal change. (For example: evolutionary, complexity and behavioural economics; agent-based, system dynamics, and disequilibrium econometric models; and systems thinking). (Weighting: x2)
2. **Policy engagement:** Demonstrated ability to engage successfully with governments and provide actionable advice to policy based on economic research and analysis; and strength of the engagement and communications elements of the proposal. (Weighting: x1)
3. **International relationships:** Demonstrated ability to build successful international relationships with other academic institutions and/or governments; and potential for successful engagement with the governments of partner countries in this project. (This will take into account the identity and expertise of any partner country institutes that may form part of bidding consortia, and any expressions of support for partner country governments). (Weighting: x1)
4. **Project management:** Demonstrated ability to competently manage projects of a similar scale and scope in terms of academic challenge, stakeholder engagement and financial budget; and strength of the project management team proposed for the implementation of this project. (Weighting: x1)
5. **Proposal quality:** The quality of the proposed approach to implementing the project, taking into account the scale, relevance, and deliverability of proposed activities, and overall value for money – including any actual or potential co-funding of this project from other sources. (Weighting: x1)

## Budgets and funding

- **Budgets** should be inclusive of all activities required to fully achieve the project's stated goals, including any dissemination and translation activities. Any significant additions or changes to the budget will need to be approved by the BEIS programme team before payment.
- **Co-funding** from other stakeholders is allowed. Prospective grant recipients should demonstrate that any co-funding is consistent with the purpose of the project, and that funding from ICF and other sources supports distinct and complementary activities.
- **Value for money and additionality** must be demonstrated in project proposals. Proposals must make clear how they will ensure an efficient allocation of resources for maximum effect. Proposals should also demonstrate how projects are adding value to, and not duplicating, existing activity.
- **Monitoring and evaluation.** BEIS ICF places a strong emphasis on project monitoring and evaluation. Grant recipients must submit quarterly progress reports and relevant financial reports for the duration of the project and submit a project completion report within three months of project completion.

## Timing

The project is expected to begin in Autumn 2019. As noted above, the project duration should be between 2 and 3 years. Bids should clearly indicate the timing of all planned activities.

## 4. QUALITY ASSURANCE

Sources of guidance and advice relevant to quality assurance include:

- The BEIS guidance on quality assurance for analytical modelling  
<https://www.gov.uk/government/collections/quality-assurance-tools-and-guidance-in-decc>
- The Government Social Research Code: <http://www.civilservice.gov.uk/networks/gsr/gsr-code>
- The Green Book: appraisal and evaluation in central government  
<https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>
- The Magenta Book, Government guidance on policy evaluation and analysis:  
[http://www.hmtreasury.gov.uk/data\\_magentabook\\_index.htm](http://www.hmtreasury.gov.uk/data_magentabook_index.htm)
- Supplementary Guidance on the Quality in Policy Impact Evaluations [http://www.hm-treasury.gov.uk/data\\_magentabook\\_supguidance.htm](http://www.hm-treasury.gov.uk/data_magentabook_supguidance.htm)
- [Quality in Qualitative Evaluation: A Framework for assessing research evidence](#) provides a Framework for appraising the quality of qualitative evaluations
- DFID's approach to [Value for Money](#), which is used across all BEIS and DFID ICF project appraisals

Where relevant, bids should refer to these pieces of guidance and advice and how they will be used. Prospective grant recipients should include a quality assurance plan that they will apply to all of the research tasks and modelling work of the project. This QA plan should be no longer than 1 or 2 sides of A4 paper. A QA log should be kept during the project and submitted at project completion to demonstrate the QA undertaken.

When models are submitted to partner country stakeholders, during the project or at completion, they should be accompanied by confirmation by a senior (director or equivalent) of the grant recipient organization that the assurance has taken place in accordance with approaches outlined in the QA plan agreed with BEIS.

## **5. BEIS CO-ORDINATION AND GOVERNANCE**

The main point of policy contact with BEIS will be:

Simon Sharpe, Head of International Climate Strategy & Projects Team, International Climate and Energy Directorate. E: [simon.sharpe2@beis.gov.uk](mailto:simon.sharpe2@beis.gov.uk) T: 0207 215 2575

A project management group consisting of BEIS officials will meet the delivery partner on a quarterly basis to review progress and plans, agreeing any changes to plans that are necessary to manage risks and stay on track to meet overall objectives.

A Senior Oversight Group will also be established to review progress provide guidance on significant decisions of project direction and implementation. This will include senior government officials and external experts not involved in the implementation of the project.

The grant agreement will include break points after stages 1 and 3 of the project, where continuation will be dependent on satisfactory progress against objectives and the opportunity for further successful engagement in line with the project's purpose and intended outcomes. This decision will be taken by the project's Senior Oversight Group. It is expected that plans for later stages of the project will be reviewed and if necessary adjusted at these points, in light of the findings and experiences of the earlier stages.

## **6. ETHICAL PRINCIPLES**

All applicants should identify and propose arrangements for initial scrutiny and on-going monitoring of ethical issues. The appropriate handling of ethical issues is part of the assessment exercise and proposals will be evaluated on this.

We expect grant recipients to adhere to the following government social research principals:

- Sound application and conduct of social research methods and appropriate dissemination and utilization of findings
- Participation based on valid consent
- Enabling participation
- Avoidance of personal harm
- Non-disclosure of identity and personal information

Details on these principles can be found here:

<https://www.gov.uk/government/publications/government-social-research-publication-protocols>

Bidders should identify any additional ethical issues, particularly considering the challenges of working in developing countries, and specify how they will be addressed.

## **7. UK AID BRANDING**

Partners that receive funding from BEIS must use the 'Funded by the UK Government' logo on their development and humanitarian programmes to be transparent and acknowledge that they are funded by UK taxpayers. This should be agreed before any report is finalized. Partners should also acknowledge funding from the UK government in broader communications, but no publicity is to be given to this grant funding opportunity without the prior written consent of BEIS.

## **8. TRANSPARENCY**

BEIS has transformed its approach to transparency, reshaping our own working practices and pressuring others across the world to do the same. BEIS requires grant recipients receiving and managing funds to release open data on how this money is spent, in a common, standard, re-usable format and to require this level of information from immediate sub-contractors, sub-agencies and partners.

It is a requirement for all grant recipients to comply with this, and to ensure they have the appropriate tools to enable routine financial reporting, publishing of accurate data and providing evidence of this BEIS – further IATI information is available from; <http://www.aidtransparency.net/>

When the project comes to an end, all Intellectual Property rights arising from the funding of the project will be subject to Open Government License: <http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>. Recipients will be required to include an attribution statement on all published and online materials.

## **9. SCALE UP/ DOWN**

Recipients shall commit to being fully prepared in the event any decision is made to scale up (increase) or scale down (decrease) the scope of the programme.

## **10. DUTY OF CARE**

Recipients are responsible for the safety and well-being of their personnel. Recipients are responsible for ensuring that appropriate arrangements, processes and procedures are in place for their personnel, taking into account the environment they will be working in and the level of risk involved in delivery of the grant agreement.

The prospective grant recipients must confirm in their bid response:

- They fully accept responsibility for Security and Duty of Care.
- They understand the potential risks and have the knowledge and experience to develop an effective risk plan.
- They have the capability to manage their Duty of Care responsibilities throughout the life of the grant agreement.

If you are unwilling or unable to accept responsibility for Security and Duty of Care as detailed above, your bid will be viewed as non-compliant and excluded from further evaluation.

## **11. PRIVACY NOTICE**

This notice sets out how we will use your personal data, and your rights. It is made under Articles 13 and/or 14 of the General Data Protection Regulation (GDPR).

### **YOUR DATA**

We will process the following personal data:

Names and contact details of employees involved in preparing and submitting the bid; Names and contact details of employees proposed to be involved in delivery of the grant; Names, contact details, age, qualifications and experience of employees whose CVs are submitted as part of the bid.

#### *Purpose*

We are processing your personal data for the purposes of the call for proposals exercise described within this Terms of Reference, or in the event of legal challenge to such call for proposals exercise.

#### *Legal basis of processing*

The legal basis for processing your personal data is processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the data controller, such as the exercise of a function of the Crown, a Minister of the Crown, or a government department; the exercise of a function conferred on a person by an enactment; the exercise of a function of either House of Parliament; or the administration of justice.

#### *Recipients*

Your personal data will be shared by us with other Government Departments or public authorities where necessary as part of the call for proposals exercise. We may share your data if we are required to do so by law, for example by court order or to prevent fraud or other crime.

#### *Retention*

All bids will be retained for a period of 6 years from the date of grant agreement expiry.

### **YOUR RIGHTS**

You have the right to request information about how your personal data are processed, and to request a copy of that personal data.

You have the right to request that any inaccuracies in your personal data are rectified without delay.

You have the right to request that any incomplete personal data are completed, including by means of a supplementary statement.

You have the right to request that your personal data are erased if there is no longer a justification for them to be processed.

You have the right in certain circumstances (for example, where accuracy is contested) to request that the processing of your personal data is restricted.

You have the right to object to the processing of your personal data where it is processed for direct marketing purposes.

You have the right to object to the processing of your personal data.

## **INTERNATIONAL TRANSFERS**

Your personal data will not be processed outside the European Union.

## **COMPLAINTS**

If you consider that your personal data has been misused or mishandled, you may make a complaint to the Information Commissioner, who is an independent regulator. The Information Commissioner can be contacted at:

Information Commissioner's Office  
Wycliffe House  
Water Lane  
Wilmslow  
Cheshire  
SK9 5AF  
0303 123 1113  
[casework@ico.org.uk](mailto:casework@ico.org.uk)

Any complaint to the Information Commissioner is without prejudice to your right to seek redress through the courts.

## **CONTACT DETAILS**

The data controller for your personal data is the Department for Business, Energy Industrial Strategy (BEIS).

You can contact the BEIS Data Protection Officer at:  
BEIS Data Protection Officer  
Department for Business, Energy and Industrial Strategy  
1 Victoria Street  
London SW1H 0ET  
Email: [dataprotection@beis.gov.uk](mailto:dataprotection@beis.gov.uk).