

Invitation to Tender

Offshore and Coastal Renewable Energy

(Date issued: 22nd December 2008; Closing date: 26th January 2009, 16.00hrs.)

Summary

This document defines the requirements for two scoping studies that will contribute to the development and implementation of the NERC Strategy Theme Sustainable Use of Natural Resources (SUNR). The two studies will scope research into the impacts and benefits of large-scale coastal and offshore marine renewable energy projects on two elements of the earth system, in order to allow NERC to develop detailed plans for research activities in the 2009 Theme Action Plans (TAPs)¹.

Study 1 will focus on ecosystems and biodiversity linked to offshore and coastal renewable energy structures. Study 2 will focus on understanding changes in sediment dynamics linked to renewable energy structures.

A. Background

1. These scoping studies directly relate to planning delivery of the NERC Strategy 'Next Generation Science for Planet Earth', in particular, science theme Sustainable Use of Natural Resources and (a) the action on Marine Bioenergy² and (b) scoping a future action under the related but wider area of marine renewable energy (potentially linked to SUNR, Biodiversity, Natural Hazards and Climate Systems Themes).
2. The overall theme goal relating to this action is to raise the profile of environmentally focused, as opposed to technologically driven, science in the energy arena. The objective is to develop appropriate whole-systems methodologies to maximise environmental gains while meeting technological, social and energy policy goals.
3. The mixture of government support, high energy prices, carbon trading and concerns about the security of energy supplies combine to make renewable energy an attractive sector for investment: over £36 billion of new money was invested globally in clean or renewable energy or clean technology in 2007 (up 43% on 2006, FT 3 Jan 07). Land constraints favour less mature technologies such as offshore wind farms and tidal and wave energy (as being developed at the Cornwall Wave Hub). The UK has significant capacity to develop further its marine and estuarine renewable energy sources because of its extensive coastline, high

¹ Published 2008 TAPs can be viewed at: <http://www.nerc.ac.uk/research/themes/tap/>

² www.nerc.ac.uk/publications/strategicplan/nextgeneration.asp

winds and relatively high tides. Existing capability can forecast the impacts of climate change on the security of the renewable energy supply. However, the evidence base is poor for predicting the impact of large-scale investments in coastal and off-shore power generation on marine and coastal bioresources. Development of the knowledge base is needed to deliver a sustainable, environment-enhancing supply of energy from the marine environment from a range of sources (kinetic, wind, solar, thermal; marine bioenergy is a separate action). The objective of future actions in this area would be to understand the individual and cumulative impacts of renewable energy technologies (especially wave and tidal power) on estuarine, coastal and marine systems, including changes in marine sedimentary processes (e.g. from tidal energy schemes) and predicting co-benefits (e.g. partial/complete exclusion zones; ‘designer-reefs’, coastal protection) and risks (e.g. sedimentation, water quality) for bioresources. This action would compliment not duplicate existing programmes (e.g. Sustainable Marine Bioresources) and new initiatives (e.g. ETI pilot programme on marine energy) to meet cross-Council needs in the energy arena.

4. Energy is a NERC research priority. The Research Centre Energy Programme (RCEP) focuses primarily on energy technologies, consequently NERC investment in environmental capability is poorly visible and is often in the form of ‘environmental impact assessment’ rather than the whole-systems approach proposed in this priority. The overarching challenge is to demonstrate the benefits of including environmental thinking in energy technology development.
5. NERC Theme Leaders are seeking advice on the direction of environmental research in the area of offshore and coastal renewable energies, from the perspective of the NERC Sustainable Use of Natural Resources (SUNR) theme. Future actions in this area will potentially also cut across the Natural Hazards, Biodiversity and Climate System Themes. The scoping studies will inform how NERC takes this area of research forward, the focus of future actions and partnerships and collaborations formed.

B. Specification

1. Consultant

The role of the consultant for each study will be to undertake the scoping activity specified for one or both of the two areas outlined in 2.3 and 2.4. The consultant must attend the NERC workshop on 26th February 2009 which will start to address the environmental research issues under the broad theme of ‘offshore and coastal renewable energy’. The main responsibility is to produce the final output as a comprehensive report of research opportunities for NERC in the scoping area.

2. SUNR Theme Leader

Scoping study customer, provide direction and advice

The material from these scoping studies will inform strategic discussions between NERC Theme Leaders and the NERC community, the outcomes of which are expected to

contribute to the development and implementation of the themes' 2009 Theme Action Plans (TAPs) advising how NERC should invest in this area.

3. *NERC Programme Manager*
Monitor progress and authorise payment

Objectives

4. The aim of each scoping study is to provide a report on:
Study 1- Potential ecological benefits and impacts of large-scale offshore and coastal renewable energy projects
Study 2- Generic and case study based assessments of effects of major marine renewable developments (wind, wave and tidal) on sediment transport and associated implications in coastal and offshore environments

Activities

5. Each study will focus on the state of research in the area of the potential benefits and impacts of large scale marine renewable energy projects on:
 - Study 1 ecological systems (to include, for example, species-specific, biogeochemical, biodiversity, migration, habitats). For example fishery-related benefits of wind farms, linked to artificial reefs as refuges and MPAs, wave-hubs.
 - Study 2 sediment transport and associated implications (e.g. sediment transport processes, composition, spatial mapping). Evidence-based recommendations as to the appropriate future research balance between different approaches (e.g. experimental projects, modelling, observational) should be included.
6. Each study must consider:
 - Potential future work programmes and projects in the area covered and how these may be extended into the wider area of marine and coastal renewable energies.
 - How work in these areas would fit into the NERC Strategy and Themes. Theme reports are available at: www.nerc.ac.uk/research/themes
7. It is not expected that the studies will review the following areas:
 - technology development requirements;
 - assessment of feasibility of large-scale marine renewable energy projects
 - economic and energy generation requirements and potential
 - social and political issues
8. Consultants may undertake any appropriate activities to achieved the required reviews and prepare the required report. The Scoping studies will review the current state of knowledge and how NERC science can potentially contribute to the specified area in the future.
9. Each Scoping study is required to include the following activities:
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- Identification of the key work carried out by organisations (including NERC Centres) and individuals in the field, both within the UK and internationally. Examination of the scale and scope of the work and relevance to NERC science, especially the SUNR theme
 - Identification of areas where NERC science could contribute significantly. Note: the SUNR Theme is particularly focusing on whole-system approaches.
 - Identification of the key science challenges and research opportunities and why these need to be filled. Focus should be on areas where NERC science can contribute and any key institutions, University research groups or Research Centres that should be involved.
 - Evidence-based recommendations as to the appropriate future research balance between different approaches (e.g. experimental projects, modelling, observational)
 - A synthesis of stakeholders and policy makers' interests in impacts of marine renewable energy projects.
10. It is expected that there will be regular consultation with the SUNR Theme Leader throughout the scoping studies. The frequency and format of these updates is likely to be via telecom.
11. The holders of the scoping contracts will be expected to attend and contribute to a NERC workshop on coastal and offshore renewable energy on 26th February.

Outputs

12. Payment will be dependent on the satisfactory completion of milestones. The suggested milestones for each of the two studies are:
- *26th February 2009*: Attendance at NERC workshop which will inform the scoping study
 - *KO + 5 weeks*: an outline of the final report. This report will be circulated to the Theme Leaders for comment to ensure that the Scoping Study will provide the information needed to feed into the coastal and offshore renewable energy action
 - *17th April 2009*: a final report.
13. *Key Output -Final report*: each study must produce a report that provides a review of current activities and opportunities along with recommendations on which key areas NERC should focus future investments in this field. The report must identify the key work carried out by organisations and individuals in the field, both within the UK and internationally. Discussion of the scale and scope of the work should be included. Areas where NERC science could contribute must be highlighted. Please specify in your application the criteria you will use to identify what the key pieces of work are. A synthesis of stakeholders and policy makers' interests must also be included (for example in table format to easily identify the stakeholders' different perspectives). Also required is a bibliography of the critical research papers and reports, which should be in a searchable format such as an Excel spreadsheet.

14. The Final Report should specifically address the following within the subject area of each study:
 - i. Define research gaps and opportunities
 - ii. Define the priority research questions
 - iii. Different options to study the questions in (i) and associated advantages/disadvantages
 - iv. Levels of resources needed to deliver project(s)
 - v. Required/recommended collaborations/partners
 - vi. Further information needed to commission such project(s)
 - vii. Nature of research – observational/modelling/experimental
 - viii. Risk assessments: are they needed? E.g. risk of use versus non-use; whole ecosystem approach
 - ix. Synthesis of stakeholders and policy makers interests (including searchable annex)
 - x. Bibliography of critical research papers (searchable annex)

15. The completed scoping exercise must provide the NERC Theme Leader with the information needed to put forward a robust case for proposed activity that meets NERC's strategic priorities.

C. Guidance for applicants

Eligibility

1. This consultancy activity may be provided by any research organisation or company with a good knowledge of NERC science and UK stakeholders in this research area.
2. Interested parties may apply to deliver one or both of the scoping studies.

Finances

3. Contracts will be awarded up to a value of £10,000 per project inclusive of consultancy day-rate, travel and subsistence and inclusive of VAT. Full economic costing is not applicable, and estates and indirect costs will not be covered.

Governance & Performance Management

4. Management, reporting and monitoring procedures will be in line with NERC policy. The consultant will report to the NERC programme manager, and any changes to the scoping study must be agreed in advance. A progress update will be required mid-point through the contract period.
5. Payment will be upon satisfactory completion of the final report.

Assessment criteria

6. Applications will be assessed on: Fit to Specification, Cost Effectiveness and Track Record.

Assessment Timetable

7. The provisional timetable for procurement is as follows:

Call announced: Monday 22nd December 2008
 Deadline for tenders: Monday 26th January 2009
 Assessment panel: w/o 2nd February 2009
 Successful applicants notified: Monday 9th February 2009
 Contract expected to commence by: 16th February 2009
 Duration: up to 2 months

8. The reviews will be expected to commence by 16th February 2009, for a duration of up to 2 months. The final report must be completed and delivered by 17th April 2009.

Application Format

9. Applicants may submit proposals for one or both reviews, but each must be submitted as separate applications.
10. The application will consist of 2 parts, both of which must be in 12point Times New Roman or Arial, with margins of at least 1.5cm.
11. Scoping Study proposal:
- Up to 4 pages detailing how you will achieve the deliverables specified.
 - Up to 1 page for the track record for the consultancy team and organisation, summarising relevant expertise and project planning. Please include name, contact details and role of all team members.
12. Up to 1 page is allowed for the finance table (below) and justification of resources.

Please copy the table below to input your costs.

| Heading | Detail | Total Cost (£) | Day Rate (£) | Effort (days) |
|-------------------------|--------------------------------|----------------|--------------|---------------|
| 1) Staff | <i>Name</i> | | | |
| | <i>add positions as needed</i> | | | |
| 2) Travel & Subsistence | | | | |
| 3) Other Costs | <i>please itemise</i> | | | |
| | | | | |
| Grand Total* | | | | |

* total budget should be inclusive of VAT

How to Submit

Applications must be submitted as email attachments to Sasha Leigh (snbl@nerc.ac.uk) by **4pm** on **26th January 2009**.

Initial queries should be directed to:

Sasha Leigh

snbl@nerc.ac.uk

01793 442634