



Programme Area: Bioenergy

Project: Biomass to Power with CCS

Title: Biomass to Power with CCS Flexible Research Programme Project - Request for Proposal

Abstract:

Published in 2010, the request for proposals set out the project scope for the Biomass to Power with CCS project. The project consisted of an assessment of the technology and cost barriers for biomass fuelled power and the optimum scale-up potential of single-source and co-fired biomass to power with carbon capture technology.

Context:

The Biomass to Power with CCS Phase 1 project consisted of four work packages: WP1: Landscape review of current developments; WP2: High Level Engineering Study (down-selecting from 24 to 8 Biomass to Power with CCS technologies); WP3: Parameterised Sub-System Models development; and WP4: Technology benchmarking and recommendation report. Reports generally follow this coding. We would suggest that you do not read any of the earlier deliverables in isolation as some assumptions in the reports were shown to be invalid. We would recommend that you read the project executive summaries as they provide a good summary of the overall conclusions. This work demonstrated the potential value of Biomass to Power with CCS technologies as a family, but it was clear at the time of the project, that the individual technologies were insufficiently mature to be able to 'pick a winner', due to the uncertainties around cost and performance associated with lower Technology Readiness Levels (TRLs).

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Biomass to Power with CCS Flexible Research Programme Project:

Assessment of the technology and cost barriers for biomass fuelled power and the optimum scale-up potential of single-source and co-fired biomass to power with carbon capture technology

Request Issue Date:

Thursday 20th May

Deadline for Notification of Intention to Submit a Proposal:

Thursday 3rd June

Closing Date:

Proposals must be received before 5pm on Thursday 17th June

Contact for Enquiries:

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1. Introduction and Overview of the Services Required

1.1. Introduction to the Energy Technologies Institute

The Energy Technologies Institute LLP (the ETI) is a private organisation formed as an innovative Limited Liability Partnership between international industrial energy companies and the UK government.

Our mission is to accelerate the development, demonstration and eventual commercial deployment of a focused portfolio of energy technologies, which will increase energy efficiency, reduce greenhouse gas emissions and help achieve energy and climate change goals.

We will do this by leveraging the skills, capabilities and market access routes of our members, working with other organisations worldwide, to take the most challenging large-scale energy projects to full system demonstration, thus bridging the gulf between laboratory proven technologies and full scale commercially tested systems. Our projects will also develop knowledge, skills and supply-chains, and will inform the development of regulation, standards and policy. Hence we aim to overcome major barriers, de-risk the future development and shorten the lead times to market for secure, affordable, low-carbon energy systems for power, heat and transport.

Our portfolio includes programmes in areas such as Wind, Marine, Distributed Energy, Transport, Energy Storage and Distribution, and Carbon Capture & Storage.

Further information can be found on our web-site at www.energytechnologies.co.uk

1.2. Background to the Project

Biomass is a flexible resource, capable of conversion to heat, power, and transport fuel energy vectors (as well as bio-materials). While there is a significant potential to increase biomass production through land-use changes of lower grade land in the UK, the prioritisation of biomass use, and requisite technology toolkit to exploit this biomass is not clear.

Biomass produced in the UK could provide up to 10% of UK Energy in 2050. While the sustainability issues involved in land-use changes and greatly increased UK biomass production are being analysed in other bio energy projects; this project is focussed on developing a detailed understanding of the technical and cost barriers associated with biomass to power with CCS technologies.

Biomass conversion to heat and/or power combined with CCS could provide the UK with substantial net negative CO₂ emissions, with the potential to remove 50 to 100 MT of CO₂ from the atmosphere on an annual basis (depending on capture rates) and provide 80 to 120 TWhr of electricity annually.

As the UK progresses in order to meet a 159MT CO_{2e} requirement for 2050, there will be clear quick wins and progression points; however the further down the curve, the higher the potential costs of supply and demand side reduction. Hence the incremental costs of moving from hitting a 250MT target to 159MTCO_{2e} target become incredibly real. In this context, a technology choice that is capable of creating “50 to 100MT of negative carbon” could be compelling, depending on the cost at which this technology option can be developed and deployed.

There are currently a few small CCS demonstrators in development with the potential to co-fire small amounts of biomass, such as the 30MW Vattenfall oxyfuel pilot plant inaugurated in 2008.

In addition, there are a number of 300 to 400MW dedicated biomass power plants in the planning and consent phase in the UK. Biomass co-firing is also carried out on a number of fossil-fired plants which could conceivably be fitted with CCS in the future. Thus the potential to incorporate carbon capture and storage into power plants using biomass is foreseeable in the near as well as distant future.

1.3. Outline Scope of the Project

While cost has been reported to be a major barrier in terms of CCS for biomass, the technical challenges and technology developments required are also not clear. Detailed work is currently ongoing in terms of assessing CO₂ capture with coal and gas-fired generation, whilst limited work is being conducted on the assessment of dedicated biomass to power with CCS; or indeed, of co-firing fossil fuel fired generation with higher rates of biomass with CCS.

The fundamental requirements of this work will therefore be to develop a techno-economic assessment of the barriers in terms of biomass to power with CCS systems; provide an assessment and comparison of various potential biomass to power with CCS configurations (at both small and large scale); and an assessment and comparison of dedicated biomass/CCS combinations with co-fired biomass/fossil/CCS combinations.

The project comprises of the following four work packages (WP):

- **Work Package 1:** Landscape Review of Current Developments
- **Work Package 2.** High Level Engineering Study
- **Work Package 3.** Parameterised Sub-System Models Development
- **Work Package 4.** Technology Benchmarking and Recommendation Report

Project Proposers should highlight any assumptions made in this regard in their proposal.

Please refer to section 3 for a detailed description of each project work package and requisite deliverables.

Exclusions:

It is recognised that in order to fully understand the costs, carbon and energy balance implications of the biomass to power with CCS processing routes considered in work package 2, a whole systems optimisation model would need to be developed that incorporated both the spatial aspects of biomass from the input end of a systems model, and the CO₂ piping infrastructure at the output. Furthermore, the aspects of pre-processing and feedstock conditioning would also need to be considered (e.g. pelletisation, torrefaction, gasification, etc).

These aspects are being developed in two other ETI project areas, the Biomass Value Chain Model, and the ETI's overall UK Energy Systems Model; and as such are excluded in terms of evaluation in work packages 2 and 3.

The project should not overlap in scope with the ETI's CCS Mineralisation Project

The ETI will make available outline documentation on the Value Chain Project, the CCS Mineralisation, and the Energy Systems Model upon request.

1.4. Required Outcomes and Critical Success Factors for the Project

The project will provide the following outcomes:

- Clarity on what further developments are required to better understand the Biomass to Power with CCS opportunity space
- A comparison of dedicated biomass to power with CCS as against biomass co-firing with CCS, in terms of CO_{2e}, cost, energy efficiency, and other parameters
- A report on the current state-of-the-art that includes a landscape overview of the current status of work conducted in the biomass-with-CCS arena; including feedback on any demonstration projects that incorporate biomass co-firing, as well as dedicated biomass-to-power conversion. The report should identify current technologies and TRL levels
- A high-level engineering study on the main issues and unknowns in the value chain, from feed (impurities, blend-rates, etc), efficiency of the power cycle with and without capture through to capture and assessment both from a technology-development and costs perspective
- Parameterised sub-system models on the selected technology processes that can be integrated into a whole systems optimisation tool.
- A benchmarking and recommendation report providing feedback on biomass with CCS as a development opportunity in the UK and comparing this to other forms of CCS, including coal, gas and blended biomass/coal) conversion. The assessment must look at the impact in terms of CO_{2e} reduction, costs and energy output and credible market size. The report must outline the scope for technology acceleration opportunities which could allow meaningful testing in the TRL 3 to 6 environment

Critical Success Factors, which either characterise a successful Project outcome or which are required to facilitate a successful project outcome, including the following. Any additional factors identified should be described in the proposal.

- The Project must provide sufficient information and present it in such a manner as to enable the ETI to make an informed decision at the end of work package 1 to prioritise and direct the development of work packages 2 and 3
- The data and outputs from work packages 2 and 3 must be presented in such a way that they can be easily inputted into the ETI's Bio-Energy Value Chain Model Framework. It is anticipated that the two project teams will need to be involved in upfront engagement to facilitate this process.
- The parameterised sub-system models in work package 3 need to be developed with sufficient flexibility in order to be utilised within a whole systems optimisation framework which will be set-up to enable optimisation based on costs, CO_{2e} and energy production

1.5. Anticipated Project Organisation Structure

It is anticipated that a number of Participant organisations / entities will be required to work together in order to provide all the necessary knowledge, skills, experience and inputs to complete the Project (as detailed in Section 2.2).

These Participants may choose either:

- to form a Consortium, contracted with the ETI, governed by its own Consortium Agreement and led by a 'Lead Coordinator' to manage the Project and act as primary interface with the ETI, or
- to form sub-contracts between themselves and one of their number who shall act as 'Prime Contractor', shall form a contract with the ETI, and shall manage the Project and act as primary interface with the ETI.

Either of these contracting arrangements is acceptable to the ETI, but there must be a single organisation (Lead Coordinator or Prime Contractor) leading and acting as the primary interface with the ETI. This organisation shall appoint a Project Manager to lead and coordinate all activities of the Project Participants, and to liaise regularly with the ETI's Programme Manager to whom he/she is accountable on behalf of the Participants. This organisation shall also act as the Respondent for the purposes of this Request for Proposals.

2. Request for Proposals Process and Terms

2.1. Content and Format of Proposals

Interested organisations are requested to submit a collective Proposal through their nominated Respondent as described in Section 0 above. The Proposal shall be arranged according to the structure detailed in Appendix A and shall include all the information listed therein.

The Proposal must be written in a succinct manner and must not include imprecise statements, generalities or repeated information. The Proposal must be easily readable with appropriate font sizes, margins, etc, and **shall not exceed a maximum of 25 pages** (excluding the due-diligence information required under Section 12 of Appendix A).

Additional information (such as organisational brochures, etc) may be provided to accompany the Proposal if this is expected to add value (although it is not necessarily required by the ETI), but such additional information will not usually be taken into account when reviewing Proposals.

The Proposal shall consist of **4 complete hard copies and one (1) electronic copy**. The latter shall be provided in both PDF and Microsoft Word formats.

2.2. Acceptance, Review and Selection of Proposals

Proposals will be reviewed and judged primarily against the criteria listed below.

- Completeness of information content, structure and quality of Proposal (against areas listed in Appendix A)
- Compliance with technical specification (i.e. Sections 1.3, 1.4 and 3 of this RfP)
- Knowledge, skills and experience, which must include ALL of the following. A table should be provided to identify which Participant(s) is/are proposed to satisfy each of the following criteria:
 - (a) Generic Criteria:
 - Availability and stability of deployable resources to mobilise sufficiently rapidly and for sufficient durations
 - Record and ability in quality, timely and on-budget delivery (of technology programmes) to the full satisfaction of the main stakeholders
 - Knowledge and previous experience of industry, environment, technologies, and of this type of study, etc
 - Ability and experience in collaborative working
 - For the lead organisation particularly, project management expertise
 - (b) Specific Technical Criteria:
 - Demonstrated knowledge of power industry and biomass-to-power technologies
 - Demonstrated knowledge of advanced separation and adsorption technologies
 - Demonstrated knowledge of capture technologies
 - Experience in modelling chemical and advanced thermo-chemical conversion, separation and thermodynamics
 - Experience and knowledge of the range of biomass feed-stocks suitable for use in power generation
 - Experience and track-record in delivering techno-economic studies
 - Experience and track-record in developing high level engineering studies
 - Access to a database of biomass feedstock characterisation parameters required for power and separation processes (such as alkali, halide, ash contents, water, etc)
- Effectiveness of the contracting, organisational, governance and control structures and processes proposed for the participating entities / organisations
- Project approach and plan, including Gantt chart, suitable stage gates & payment milestones, and proposed management of specific risks and issues
- Compliance with terms and conditions, including any intellectual property issues (such as acceptance of ETI IP terms, or the existence of any IP issues which may affect the ability to carry out the Project and exploit the results)
- Value for money

The ETI at its discretion may request further information in order to assess a Proposal, and may reject any Proposal which does not provide sufficient information.

This RfP is not an agreement to purchase goods or services, and the ETI is not bound to enter into a Contract with any Respondent. All decisions made by the ETI relating to the acceptance, review and selection or otherwise of Proposals are final. The ETI will be under no obligation to explain or justify any such decisions at any time.

2.3. Estimated Time-Frames

Respondents shall notify the ETI of their intention to submit a proposal. This notification shall be in writing to the Address for Submission of Proposals, no later than the Deadline, all as listed on the front cover of this RfP.

The following timetable outlines the anticipated schedule for the contract process. The timing and the sequence of events resulting from this Request for Proposals may vary and shall ultimately be determined by the ETI.

Event	Anticipated Date(s)
Deadline for Notification of Intention to Submit a Proposal	June 3 rd 2010
Closing Date for Responses to RfP	June 17 th 2010
Preferred Bidder Identified	July 16 th 2010
Project Detailing and Contract Agreement	from July
Contract Approval	ASAP
Project Start	ASAP after approval
Project Duration	approx 6 months

2.4. Ownership of Proposals and Confidentiality of Information

All documents, including Proposals, submitted to the ETI become the property of the ETI. They will be received and held in confidence by the ETI, subject to the ETI reserving the right to provide such documents to third parties engaged by the ETI in its assessment of them. Organisations selected by the ETI to be taken forward to the Project Detailing Stage will be required to sign non-disclosure agreements.

3. Specification of Project Scope of Work and Deliverables

3.1 Work Package 1: Landscape Overview of Current Developments

The aim of this work package is to provide a landscape overview and up to date summary of the current developments in the biomass to power with CCS arena; including feedback on a number of demonstration project works that incorporate biomass co-firing, as well as dedicated biomass to power conversion.

The overview must incorporate a summary of the most promising technology areas for further review in the latter work packages. A comparison of the relative merits of dedicated biomass to power and various ranges of biomass co-firing rates (with fossil fuels) from an overall CO_{2e}, costs, and energy balance perspective needs to be included.

For the purposes of this project, both small scale generation as well as larger scale generation need to be considered as part of work package 1.

Project Proposers should provide qualitative and quantitative details on the range of technologies they would consider appropriate to review within the proposal.

Deliverables

[1] A Report that

- Identifies the current technologies, TRL levels, scale of current and planned developments globally
- Catalogues the viability of the technology sets in terms of robustness (e.g. with varying bio-energy feed stocks); costs (CAPEX and OPEX); carbon; and energy
- Catalogues the degree of pre-processing required for each technology set (such as torrefying or pelletizing the feed-stocks); and impact of these in terms of costs, carbon, and energy balance
- Summarises the critical factors that require addressing in terms of technology improvements and cost reduction cited by the literature
- Clarifies the opportunity space in terms of technology types and recommends an appropriate number of technology processes (up to 5) linked with CCS to consider in the on-going work packages. At least one of these processes should consider small-scale generation

The report, along with recommendations for the further work in work package 2, will need to be delivered within the first 2 to 3 months of the project. The recommendations will be jointly reviewed by the ETI and project participants, with the final decision on which technology processes to be taken further in work package 2 made by the ETI.

3.2 Work Package 2: High-Level Engineering Study

Based on the recommendations from work package 1, develop a high-level engineering study on the recommended technology process combinations. The engineering study should concentrate on the main issues and unknowns in the value chain, from feed (impurities, blend-rates), efficiency of the power cycle (with and without capture) through to capture and assessment both from a technology-development and costs perspective

Deliverables

- [1] A Report that
- Assesses critical bottlenecks to larger scale demonstration project development (costs, technology, efficiency, and capture rates)
 - Provides details of the range of operability of each process equipment area in terms of all key parameters (e.g. temperature, pressure, feedstock quality requirements and variability over time)
 - Outlines where there are limited data sets and gaps in the understanding

3.3 Work Package 3: Parameterised Sub-system Model Development

Background

It is recognised that in order to fully understand the costs, carbon and energy balance implications of the biomass to power with CCS processing routes considered in work package 2, a whole systems optimisation model would need to be developed that incorporated both the spatial aspects of biomass from the input end of a systems model, and the CO₂ piping infrastructure at the output. Furthermore, the aspects of pre-processing and feedstock conditioning would also need to be considered (e.g. pelletisation, torrefaction, gasification, etc).

These aspects are being developed in two other ETI project areas, the Biomass Value Chain Model, and the ETI's overall UK Energy Systems Model.

The purpose of this work package is to build upon work packages 1 and 2 to develop parameterised sub-system models which can be integrated into the ETI's Biomass Value Chain Model and Energy Systems Model.

Scope

Develop parameterised sub-system models based on the outputs from work package 2.

- Based on work packages 1 and 2, select the most appropriate technology processes to model
- Develop a model of each process area, cataloguing the key operational parameters and ranges
- Validate the sub system models based on existing data from pilot and lab-scale operations

The sub-system models will be integrated into the ETI's Biomass Value Chain Model, and ultimately into the ETI's overall UK Energy Systems Model, where a whole systems optimisation can be developed.

Reasonable assumptions should be made in terms of the input variables

- For example, the quality requirements and range of potential feedstock inputs (ash contents, silica, water content, energy content/density, etc), as well as the impact on performance (costs, GHG, efficiency). The range of biomass energy crop feedstock available should consider, but not be limited to, src, srf, forestry, miscanthus, willow, rape, wheat, and sugar beat

The component models should be developed such that the outputs are detailed with sufficient quality to be integrated into a whole systems model

- For example, quality of output CO_{2e}, flow-rate, pressure, etc

Out of Scope:

- Spatial aspects of biomass distribution (i.e. this work package should look at the specific sub system costs, efficiency, GHG impact)
- Modelling of pre-processing technologies (gasification, AD, torrefaction, pelletisation, etc)
- CCS skeleton piping system optimisation;

Deliverables

[1] Working, parameterised sub-system models on the selected technology processes that can be integrated into a whole systems optimisation tool

[2] A report that

- Outlines the key assumptions and data-sets
- Summarises the key gaps in the current models and recommendations for further development in both the model and in the data-sets
- Clarifies the assumptions made around input and output variables

Critical Success Factors

- The parameterised sub-system models need to be developed with sufficient flexibility in order to be utilised within a whole systems optimisation framework which will be set-up to enable optimisation based on costs, CO_{2e} and energy production
- The report must outline and be explicit on the gaps in the model/data-sets and make recommendations for further development

3.4 Work Package 4: Technology Benchmarking and Recommendation Report

This work package shall assess the potential benefits to the UK which could be derived from the further development and deployment of the identified technologies and opportunities. The report must look at the impact in terms of CO_{2e} reduction, costs and energy output

Deliverables

[1] A report that includes the following:

- Feedback on biomass with CCS as a development opportunity in the UK and comparing this to other forms of CCS, including coal, gas and blended biomass/fossil fuel conversion. The report must look at the impact in terms of CO_{2e} reduction, costs and energy balance and credible market size. Benchmarking figures on gas based CCS will be provided by the ETI.
- Provides a recommendation as to which areas of technology are highest in terms of priority for further development; and outlines the scope for technology acceleration opportunities which could allow meaningful testing in the TRL 3 to 6 environment

4. Price and Payment

This Project will be paid on a “***capped cost plus***” basis. The Project Contract will include defined deliverables, with acceptance criteria, and defined Payment Milestones by which one or more deliverables will have been completed. Payments will be made against each defined Payment Milestone according to actual costs incurred by the Participants (plus an agreed profit margin), up to the agreed maximum for each Payment Milestone, subject to ETI acceptance of the Milestone Completion Report. Unless otherwise agreed as part of a formal contract variation process, the ETI shall not be liable for any payments above the maximum stated in the Project Contract.

Further information is contained in the Summary of Terms contained in Appendix B.

An Accountant’s report shall be required to support selected financial reports and invoiced amounts, dependent upon the total contract value to be paid to each Participant. Details of these requirements will be agreed during the Project Detailing phase.

5. Terms and Conditions for Project Contract

During the Project Detailing phase, a Project Contract will be drawn up by the ETI based on its standard contracts for such work and incorporating appropriate information from the ETI’s RfP and the Respondent’s Proposal. Full terms and conditions will be agreed at that time, but a Summary of Terms is included in Appendix B.

If the Project is to be undertaken by a Consortium, then the Consortium members will be required to execute a Consortium Agreement between themselves prior to signature of the Project Contract with the ETI. The ETI may request a copy this Agreement for review / approval, and a Model Consortium Agreement is available from the ETI.

Appendix A – Content and Format of Proposals

The Proposal shall be arranged according to the structure defined below and shall explicitly include all the information listed.

1. Executive Summary *[maximum 1 page]*

A summary of the Proposal, describing briefly:

- The organisation / Consortium undertaking the work
- Summary of the technical approach and **key** deliverables
- Confirmation of compliance with the Specification detailed in the Request for Proposals and/or brief summary of **key** exceptions/deviations
- Total Project cost and duration.

2. Project Objectives *[typically ≤ ½ page]*

The overall Project objectives will be as specified in the Request for Proposals. The Respondent may provide subsidiary objectives if they think this is appropriate. The Respondent should also describe any Critical Success Factors which either characterise a successful Project outcome or which are required to facilitate a successful Project outcome.

3. Background to Proposed Participants

The Respondent should provide a brief description of each of the proposed Participant organisations, including any major Subcontractors, *[maximum 1 page per Participant]*, including:

- Key skills, knowledge, experience and previous track record in the area (technical, commercial and project management, including any UK-specific issues such as technology applicability to UK systems, UK industry practice, UK market/industry knowledge, etc)
- Key staff members involved (including a designated Project Manager), with the amount of each individual's time which will be dedicated to the Project, and detailing their experience – with CVs included in an Appendix (maximum 2 pages per individual)
- Alternate resources available to be deployed in the event that the above key members become unavailable
- Relevant quality, health, safety and environment management systems.

If the Project is to be undertaken by a group of organisations (whether as a Consortium or as Subcontractors), a table *[typically ½ page]* should also be provided to identify which Participant(s) is/are proposed to satisfy each of the specific criteria (skills, experience, etc) listed in the 'Criteria for Review and Selection of Proposals' section of the Request for Proposals.

Also if the Project is to be undertaken by a group of organisations (whether as a Consortium or as Subcontractors), evidence of previous collaborative working (or subcontract management as appropriate) should be provided, both within and outside the Participant group *[typically ½ page]*.

4. Project Organisation *[typically 2 pages]*

The Respondent should provide Project organisational, governance and control structures and processes (particularly for Consortia).

The Respondent should indicate in the structure each Participant (including the ETI) and the position of the key individuals identified in Section 3 (including the Respondent's Project Manager).

The Respondent should identify in their Proposal any foreseen issues or difficulties in executing a Consortium Agreement and/or subcontracts (as appropriate).

5. Programme of Work *[typically 5 – 10 pages]*

The Respondent should provide a summary of the overall approach to delivery of the Project, and a Task-by-Task breakdown of the proposed work, identifying for each Task:

- the Task leader
- other Participants involved
- key dependencies

- the technical approach (including use of any specific methodologies, techniques or tools)
- Task objectives
- deliverables, including for each deliverable a specification (e.g. quality, appearance, scope, function and purpose as appropriate) and proposed Acceptance Criteria

The Respondent should be specific about the activities within the Task, e.g. including test/simulation matrices or stating a number of tests/simulations.

Any issues or assumptions in defining the programme or schedule (e.g. inputs required from the ETI or other projects) should be explicitly stated.

A specific project management Task (or Tasks) should be identified describing all the activities in this area (e.g. regular meetings, reporting, Stage Gates etc). **Note that throughout Project delivery the ETI will require reports of monthly progress with supporting financial data, reports to substantiate completion of each milestone, etc.**

If appropriate, a work flow diagram should be provided to illustrate the relationships between Tasks.

Any relevant activities related to but not included within this Project, and the relationships with these activities, should also be described.

6. Deliverables & Payment Milestones [typically 1 page]

Following the detailed specifications of each deliverable in the previous section, a summary table should be provided here listing all the Project Payment Milestones (i.e. key points in the Project where one or more Deliverables will have been provided and payment is requested from the ETI), and their constituent deliverables, with due dates for each deliverable and Payment Milestone.

Refer also to Section 11.

7. Project Schedule [typically 1 page]

The Respondent should provide a time schedule for the Project (e.g. in the form of a Gantt chart) showing the main Work Packages, Project stages and main Tasks within each Work Package and stage. This should clearly identify:

- Task durations and dependencies (including any inputs required from the ETI or other parties and any other external dependencies)
- Project Deliverables
- Payment Milestones and other relevant milestones
- Project Stage Gates, if appropriate (i.e. major review point(s) in the Project).

8. Risk and Health, Safety & Environment (HSE) Management *[typically 3 pages]*

The Respondent should describe the proposed Risk Management Strategy (i.e. how risks to the successful delivery of the Project will be identified and managed throughout the Project). They should also provide a Risk Register, identifying the key challenges, risks (including any assumptions or dependencies identified earlier), issues and opportunities which may affect the successful delivery of the Project outcomes and identifying planned activities to address / mitigate each item.

Further to the summaries of each Participant's HSE management systems provided in Section 3 of the Proposal, The Respondent should provide here a register summarising the main anticipated HSE issues potentially affecting the Project and proposed strategies to address / mitigate each item.

9. Statement of Compliance *[typically 1 page or less]*

The Respondent shall provide a statement that the Proposal is fully compliant with the Specification and all other aspects of the Request for Proposals, or shall state clearly any exceptions, deviations, alternative approaches or additions to the required Specification, with justification. **Note that in the absence of any specifically-stated deviation in this section of the Proposal, in the case of any subsequent dispute, the ETI's specification will take precedence over the Proposal.** Additional comments and clarifications should also be listed where appropriate (for example to clarify interpretation of requirements), but these must be differentiated from any deviations / exceptions above.

10. Intellectual Property (IP) *[typically 1 – 2 pages]*

Arising IP:

Any Project commissioned by the ETI will be subject to the appropriate ETI terms and conditions, (a summary of which is included in Appendix B), which state that all Arising IP will belong to the ETI. The Respondent should provide a brief overview of the nature of any anticipated Arising IP from the Project.

Any licensing of Arising IP from the ETI to the Participants may be discussed if appropriate. If Participants wish to discuss any licence to use the Arising IP, Participants should note that it is unlikely that any profit will be paid for the Project in addition to the grant of a licence of Arising IP.

Background IP:

The Respondent should describe any Background IP (e.g. patents, proprietary data, computer algorithms, knowhow or other IP) only to the extent there is Background IP:

- which is needed, either by the ETI or to be licensed from one Participant to another Participant, to carry out the Project or which may be used during the Project; or
- which may be needed by the ETI to exploit the Arising IP.

The description of any such Background IP should detail:

- the nature of the IP (including the legal nature of the IP right),
- rights to that IP, and
- ownership and control, whether this is by any of the Project Participants or by any third parties.

Academic Institutions/Publishing:

Generally, the ETI will grant rights to Participants who are academic institutions for the purposes of academic research and teaching if requested. Publication of appropriate parts of the Project results will generally be permitted subject to an approval process. Participants should include details of their desired requirements in relation to academic research, teaching and publication in their Proposal.

11. Project Payment [typically 1 – 2 pages]

(a) The Respondent should provide:

- a figure for the **maximum (capped) total contract value**, and
- a **breakdown** between Tasks and (for consortia or other Participant groups) **between Participants against each Task**.

If there are any assumptions or limitations to this price, these should be clearly stated.

(b) The Respondent should also provide a **breakdown of the total contract value (only) by category**, as specified in the Table below.

	Participant 1 (Lead Coordinator or Prime Contractor)	Participant 2	Participant 3	Participant 4	Participant 5	Total
Number of Person-days						
Base Labour						
Materials						
Capital						
Subcontractors						
Travel & Subsistence						
Overheads						
Other						
Profit						
TOTALS						
Profit Margin, %						

Notes on Category Breakdown table:

1. Base Labour should include direct add-ons (eg NI, pension etc)
2. Capital costs should be based on depreciation during the Project x % usage on Project
3. Participants will be required to provide justification of overhead calculations during the Project detailing stage. ETI can provide a spreadsheet to calculate overheads on request
4. Participants are required to declare their profit margins
5. Academic Participants should determine their costs using the JeS system. Note that ETI funds Academic Participants at 100% Full Economic Cost.

Please note that during Project Detailing (prior to contract signature) the ETI will require more detailed cost breakdowns, including a schedule of payments against the Payment Milestones identified in Section 5 above.

12. Due Diligence Information [this is excluded from the page limit]

The ETI requires Participants to provide due diligence information. The due diligence is carried out in two stages. Certain information is required to be provided at the same time as the proposal (part A) and further information is required to be provided if any proposal is selected to proceed to the Contract Detailing stage (part B).

Please note that successful completion of all elements of the due diligence is a pre-requisite to any contract award. Even if a proposal is selected to move to the Contract Detailing stage, failure to meet due diligence requirements at that stage may result in the exclusion of that Participant or the proposal from the ETI's selection process.

Please provide the due diligence information as set out below. Please note information for questions A and B are required from ALL Participants.

Please note that the following information will be required for part B of the due diligence at Contract Detailing if a proposal is selected to proceed to that stage:-

- a. It is anticipated that this project is going to be desk based and so it is not anticipated that the ETI will carry out a full health and safety competency. If a Respondent proposes to incorporate non-desk based aspects, the ETI will carry out a tailored health and safety competency assessment.
- b. IP due diligence:-

A detailed Background IP questionnaire will be issued for completion identifying the relevant Background IP for the project and Participants may be asked to provide evidence of either ownership or rights to use if there is relevant Background IP for the Project and use of the results.
- c. Copies of each Participant’s insurance policies will need to be provided.
- d. Any other information that the ETI reasonably requires in order to fund the proposed project.

PART A – RfP Stage

A. State Aid

ALL Participants shall confirm that there are no potential, threatened, pending or outstanding recovery orders by the European Commission in respect of any funding received by any Participant.

B. Insurance

All Participants: Please confirm for each Participant insurance cover for the following risks is held, and confirm levels of cover and expiry for each. ETI will require evidence of these during the Project Detailing phase.

- a. Property damage
- b. Business interruption
- c. Employer’s liability
- d. Public liability
- e. Product liability (or justify its exclusion if not appropriate)
- f. Professional Indemnity

Participants should identify if they self insure for any of these risks.

- C. All Participants (except ETI Members, universities / higher education institutions and UK/EU government laboratories / agencies) which provide more than 20% of the resources for the Project or which provide an input which is critical to the Project’s success, shall provide Due Diligence Information to the ETI according to the table overleaf.

Details of organisation
Full name:
Registered Office:
Type of Business (sole trader, limited company, partnership etc):
Names of directors/partners/owner:

VAT number:
Details of directors, partners or associates
Have any directors, partners or associates of the organisation been involved in any organisation which has been liquidated or gone into receivership? (Yes/No)
Have any directors, partners or associates of the organisation been convicted of a criminal offence relevant to the business or profession? (Yes/No)
Please give (and attach if necessary) full details if you have answered 'Yes' to either of the two previous questions.
Audited Financial Accounts
Please supply Audited Financial Accounts for the last 3 years for the organisation, or relevant part thereof.
Claims or litigation
Please provide (and attach if necessary) details of any claims or litigation against the organisation, outstanding and/or anticipated.

Appendix B – Summary of Terms and Conditions for Project Contract

TECHNOLOGY CONTRACT Summary of Terms

Introduction

The following represents a summary of the key contractual terms which the ETI would expect to be included in the Research Services Contract for a project under which the ETI owns all arising IP. This summary assumes that the Project will be carried out either by a multi-party consortium with one of the consortium members acting as a Lead Co-ordinator or by a Prime Contractor supported by a series of subcontractors.

Structure

1. The Project Participants shall be represented in dealings with the ETI by the Lead Co-ordinator or the Prime Contractor, who shall, in the majority of instances, be the intermediary for any communication between the ETI and the Project Participants. This role includes providing notices of meetings and other activities to the ETI, reviewing and commenting on Project reports (as required under the Project) and administering payment of invoices for all Project Participants.

Project Management

2. The Project Participants will be required to appoint a Project manager for the day-to-day management of the Project. The ETI will appoint a programme manager to act on behalf of the ETI with regards to the Project.
3. The Project Participants shall form a steering committee to make decisions on day-to-day matters (excluding decisions affecting the overall scope, structure and timing of the Project). The frequency of meetings of the steering committee will be agreed. The ETI and its members shall be entitled to attend any meetings of the steering committee.
4. The Project Participants must fulfil various reporting obligations. The requirements for reports will depend upon the nature of the Project, the deliverables under it and the duration of the Project but are likely to include monthly reports, milestone reports, annual reports and a final report. Each report must address a specified list of topics required by the ETI.
5. The ETI will require the right to carry out a stage gate review on completion of a “stage” in order to assess whether the Project continues to deliver against ETI outcomes and also in order to carry out a validation exercise against the business case. The need for stage gate reviews and the definition of a stage will depend upon the nature of the Project.

Finance

6. ETI will pay against milestones and only in respect of actual costs incurred (or at pre agreed profit margin, if appropriate) for the work done under the Project. Only eligible costs will be payable. Ineligible costs include interest charges, bad debts, advertising costs and legal costs incurred in finalising contracts and carrying on the Project. Acceptance of milestones will be determined by the ETI, where appropriate, against agreed acceptance criteria. Any increase

in costs in carrying out the Project over and above the agreed contractual amounts will only be payable by the ETI when such charges are agreed in accordance with the contractual variation control procedure.

7. Costs are payable in Sterling and ETI will pay valid invoices within 30 days of receipt of invoice following acceptance of a milestone. An accountant's report will be required to support selected, in accordance with a standard ETI matrix.
8. The ETI reserves the right to require the return of funding in certain circumstances (such as in the event of corruption or fraud, overpayment, costs incurred in respect of unapproved Project changes and failure to comply with State Aid obligations).

Confidentiality

9. Restrictions on disclosure of any other party's confidential information will apply. Any publication of results (if appropriate) will be subject to the confidentiality provisions in the agreement.

Audits and Records

10. ETI will require the right to audit the Project and Project Participants during the Project and, in certain circumstances, up to 7 years from the end of the Project on financial or technical grounds.
11. The parties will be required to maintain the majority of Project records for a minimum of 10 years from the Project end date and for potentially more than 20 years where the records relate to registered intellectual property rights.

Sub-contracting

12. Sub-contracting is not permitted without consent; however, details of known subcontractors (and therefore the requisite consent) can be given in the agreement at signing.

Variation

13. Any variations to the Project must be made via the variation control procedure.

Liability

14. The liability provisions relating to Project Participants will be tailored on a case-by-case basis but are likely to be several and capped at (or at a multiple of) the amounts payable or received under the Project (except in the case of IP infringement claims, certain third party claims or other liabilities which cannot be limited or excluded by law. For these claims, no cap will apply). Recovery of indirect, consequential etc. damages will usually be excluded.

Withdrawal

15. Withdrawal from the Project is only possible with the unanimous consent of all other contracting parties. Withdrawing Participants cannot recover outstanding costs, unless otherwise agreed.

Termination and Suspension

16. The ETI reserves the right to terminate the agreement in certain circumstances (such as breach by a Participant, withdrawal of a Participant, insolvency, change of control of a Participant etc.). The ETI also reserves the right to terminate the agreement unilaterally upon giving a (to be agreed) period of notice to the Project Participants. Upon termination, the ETI will pay the eligible costs incurred by the Project Participants up to the date of termination.
17. The ETI will reserve the right to suspend the Project in certain defined circumstances.

Intellectual Property

18. All arising IP from the Project will be owned by the ETI. The Project Participants will, to the extent required, be required to assign all relevant arising IP to the ETI.
19. The Project Participants will be required to licence their background IP: (i) to the other Project Participants on a royalty free basis where required for the purposes of the Project; (ii) to the ETI or sub-licensees of the ETI, where required for the use or exploitation of the arising IP.

Appendix C – Glossary

Term	Definition
Consortium	The group of organisations described in Section 0 which may decide together to submit a Proposal to carry out the Project and be governed by a Consortium Agreement between themselves. This will not include the ETI itself.
Consortium Agreement	The agreement to be entered into between the organisations together forming a Consortium, as described in Section 0, which governs the execution of the Project within the Consortium.
Lead Coordinator	The organisation which is a member of the Consortium, and which manages and coordinates the activities of all the Consortium members, and which acts as the primary interface between the Consortium and the ETI, as described in Section 0.
Participant	An organisation which is responsible for the delivery of part of the Project scope and which is therefore the Prime Contractor, or is Subcontracted to the Prime Contractor, or is a member of the Consortium, or is a subcontractor to any of these organisations, as appropriate, as described in Section 0.
Payment Milestone	A contract milestone with defined constituent deliverables, associated deliverable acceptance criteria, and milestone value (all to be detailed in the Respondent's Proposal and agreed in the Project Contract) which should be completed in order to reach the said milestone, and at which, subject to acceptance by the ETI that the milestone has in fact been reached, payment may be claimed from the ETI on the basis described in Section 4 and on the Terms in Appendix C,
Prime Contractor	The organisation which manages and coordinates the activities of all the Subcontract Participants, as described in Section 0.
Programme Manager	The individual appointed by the ETI to manage the overall ETI programme to which this Project is affiliated, and to whom the Project Manager is accountable.
Project	The project for which the purpose, scope of work and other details are described in this Request for Proposals.
Project Contract	The contract, as described in Section 5, to be entered into between the ETI and the Participants (whether as a Consortium, Prime Contractor or single contractor)
Project Detailing Stage	The stage of Project commissioning carried out by the ETI if and after it has decided to take forward a Proposal, during which full and final Project details are established and a Project Contract is agreed.
Project Manager	The individual who is appointed by the Lead Coordinator or Prime Contractor, or is otherwise agreed by the Project Participants, to carry out its responsibilities.
Project Organisation	The entity or group of entities / organisations, and the contracting and management structure which they adopt, as described in Section 0, which together will carry out the Project if commissioned by the ETI.
Proposal	The proposal for the Project submitted to the ETI, as described in Section 2.1, in response to this Request for Proposals.
Respondent	The organisation submitting a Proposal to the ETI, as described in Section 2.1, on behalf of themselves and of any Consortium or Subcontract Participants.
Subcontract	A contractual arrangement between the Prime Contractor (described in Section 0) and another Participant organisation to which work has been subcontracted. This includes Participant organisations subcontracted in turn by other Participant organisations, but the Prime Contractor is not defined as a Subcontractor to the ETI.
Task	A significant activity or group of activities (within a Work Package) which results in completion of a deliverable or a significant part of one, or which represents a significant step in the process towards one.
Work Package (WP)	A major section of the Project scope of work, which may be identified in this RfP or in the Respondent's Proposal, in order to break up the scope of work into separate manageable parts. A Work Package will usually consist of a number of Tasks.