

Technology Strategy Board

Driving Innovation



Carbon abatement technologies – Phase 2

**COMPETITION FOR COLLABORATIVE RD&D
AND FEASIBILITY FUNDING**

NOVEMBER 2011



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Summary

The Technology Strategy Board is to invest up to £4.5m in carbon abatement technologies (CATs), centred mainly on innovative projects with strong elements of technology demonstration. This competition is part of our continued portfolio of investment in low-carbon technologies and forms the next phase of our CATs implementation plan.

We aim to deliver innovative technologies that tackle CO₂ emissions from large single-point sources such as fossil-fuel power plants and energy-intensive industries. The challenge is to produce cost-effective, energy-efficient ways of reducing CO₂ that have high reliability and durability.

There are two strands to the competition. The first builds on our successful 2009 competition for feasibility studies and seeks to take the best of those concepts and other new proposals towards commercialisation through collaborative research, development and demonstration (RD&D) projects. The second strand is for feasibility studies into innovative and disruptive carbon abatement technologies.

In Strand 1, up to £4m is available for collaborative RD&D projects. Projects must be business-led, collaborative and contain a small or medium-sized enterprise (SME). The competition is open to consortia that have demonstrated the feasibility of technologies at a design or laboratory scale and are looking to progress to the next stage of development and demonstration.

In Strand 2, up to £500k is available for new feasibility studies. Projects must be led by a SME and must be collaborative. Partners can include businesses of any size and academics. The competition is open to consortia with new and innovative ideas that could significantly contribute to CO₂ abatement from large single-point sources.

The competition opens on **1 November 2011** and the deadline for receipt of applications

is at noon on **13 December 2011**.

A briefing day for potential applicants will be held on **15 November 2011**.

Background and Challenge

Fossil-fuel-fired power plants and large energy-intensive industries such as chemical, cement and metals processing are amongst the largest emitters of CO₂ both in the UK and globally. Fossil power plants still produce more than 70% of the UK's electricity, and large energy-intensive businesses are responsible for 45% of the UK's business and public sector CO₂ emissions.

All of these industries play a vital role in underpinning the UK infrastructure and economy either through security of electricity supply or through the support of our manufacturing and process industries. At the same time, there are political and regulatory pressures to tackle climate change, such as the EU Emissions Trading Scheme and the Climate Change Act, meaning industry has to take urgent action to reduce its emissions.

It is therefore clear that the development of innovative, cost-effective carbon abatement technologies is essential both from an environmental and business perspective. Their successful development could provide the UK with significant business opportunities both nationally and in a global market where more than 95% of the world's CO₂ emissions originate in countries outside the UK.

Scope

This single-stage competition includes two strands. Strand 1 focuses on the up-scaling of technologies and their demonstration in real operating environments. It builds on the successful results of studies already completed, including (but not exclusively) those funded under our 2009 CATs feasibility

competition. Strand 2 aims to develop further innovative ideas through the funding of new feasibility studies.

For both strands, the competition will support innovative carbon abatement technologies for large single-point emitters of CO₂ including fossil-fuelled power plants, and energy-intensive industries such as (but not exclusively), chemical, metals processing, paper, glass, ceramics, and cement. The challenge is to produce cost-effective, energy-efficient ways of reducing CO₂ that have high reliability and durability.

All proposals must explain how the work will help in positioning the UK in the global market and against other innovative leaders in this field. In particular, the proposals should state how they will enable the UK to contribute to national and EU targets relating to CO₂ emissions.

Proposals in both strands of the competition should address these challenges by focusing on the development of one or more of the following:

- new technologies for reducing energy consumption and CO₂ emissions from large single-point sources, or improved efficiency of existing technologies and/or processes
- technologies that support switching to lower carbon alternatives for fuel such as co-firing of fossil fuel with biomass
- innovative technologies to generate energy from waste
- CO₂ capture technologies, components or systems, including pre and post-combustion and oxy-fuel firing
- CO₂ compression and handling technologies for subsequent transport and storage
- technologies associated with the safe transport, storage and monitoring of CO₂
- technologies for the alternative uses of large volumes of CO₂ which are scalable, economic, energy efficient and environmentally friendly.



Technologies related to CO₂ reduction from the built environment, transport sector and other forms of power generation (for example renewables and nuclear), which are covered by other areas of the Technology Strategy Board's portfolio of programmes, are not in scope for this competition.

Strand 1 **Collaborative RD&D** proposals should:

- be based on a proven post-feasibility technology concept
- take the technology to the next stage towards commercialisation
- deliver a step change in scale and output from a feasibility activity
- deliver a demonstrator at a scale that will show commercial viability in a real operating environment and a clear route to market
- have the support of an equipment manufacturer and/or end user as an active consortium member.

Strand 2 **feasibility studies** should:

- involve technologies that can provide genuine innovation and added value to carbon abatement technologies. These may be existing technologies used in a different sector and requiring work on technology transfer, or a completely new technology
- be disruptive with the potential to make a step change in technology
- support a business case to take the technology to the next level.

Typical feasibility studies could include early-stage design or 'bench top' studies to assess technical feasibility with outputs such as detailed design studies, prototype manufacture or laboratory demonstrators. We would expect to see an implementation plan showing how developments will be taken beyond the technical feasibility stage as part of the project.

Looking for partners to work on your project? Go to **_connect** (www.innovateuk.org/connect) to find collaborators and networks

Funding Allocation and Project Details

Strand 1 – Collaborative RD&D

We will invest up to £4m in RD&D projects which must include the demonstration of systems or subsystems in real or closely simulated operating environments.

Eligible projects are likely to be of two types:

- (i) demonstration-only projects, attracting around 25% grant
- (ii) projects that require elements of both applied R&D and demonstration. These may be funded to a higher level, typically 25-45% grant. However, a clear justification and breakdown of the two elements must be given.

The programme preference is for near-to-demonstration projects relating to prototyping and scale-up issues that will accelerate full-scale deployment of CAT technologies. For this reason, all projects must contain a significant demonstration element and a clear route to market

We would anticipate typical grant levels of £0.5m-1m, leading to indicative total project sizes of approximately £1m-3m. We will, however, consider larger and smaller projects on their individual merits.

Projects are expected to last between two and three years and should generally aim to implement significant business change within a three-to-five-year timeframe from the end of the project. Projects must be business-led and collaborative and have an SME as one of the partners.

For applicants who participated in the feasibility phase 1 of CATs in 2009, the consortium is not necessarily expected to

be the same as at the feasibility stage. Equally, applicants might like to consider joint bids with other consortia working in similar areas or where joint working is likely to lead to a higher quality project and associated deliverables. Potential merging of projects and introduction of new partners is encouraged and in some cases may be essential to fulfill our eligibility criteria.

For new applicants, we will request additional evidence of the viability and proof of concept of your technology to assess if they are at the appropriate stage of development.

For all applicants, at the proposal stage, evidence must be given of the economic viability of the technology in terms of life-cycle costs, cost of energy, up-scaling, operational costs and environmental benefits.

For a link to feasibility studies funded under the 2009 CATs competition please go to <http://tinyurl.com/catscollaborationnation>

Strand 2 – Feasibility studies

We will invest up to £500k in feasibility studies of between six and 12 months duration. Projects can attract up to 75% public sector funding and the total public funding element will not exceed £75k for each project. Studies must be collaborative, led by an SME and have at least one additional partner. Companies of any size are eligible as partners. Academics are eligible, but cannot lead a consortium. We are keen to help develop the UK supply chain in this area through early-stage ideas inclusive of basic and applied research and therefore we welcome new entrants or ideas for technology transfer from other sectors.

Funding Note: The Technology Strategy Board reserves the right to apply a portfolio approach to strands 1 and 2 depending on the quality of proposals received in each strand.



Key dates

Competition opens	1 November 2011
Briefing day	15 November 2011
Registration deadline	6 December 2011 (noon)
Deadline for receipt of full applications	13 December 2011 (noon)
Decision to applicants	24 January 2012

Application Process

This is a single-stage competition for both strands 1 and 2. The competition opens on **1 November 2011**. There will be a briefing day for applicants on **15 November 2011**. The briefing day is compulsory for all strand 1 applicants. It is optional for strand 2 applicants, although attendance is recommended.

Applicants must register by noon on **6 December 2011**. The deadline for applications is at noon on **13 December 2011**. Applicants will be informed of a decision on **24 January 2012**.

The *Guidance for Applicants* will be available on line when the competition opens and explains the application process and additional requirements in detail.

If you have any queries about the technical scope of the competition or the application process, please contact the Competitions helpline on 0300 321 4357 or email competitions@innovateuk.org

Note that ALL deadlines are at noon.

More information

For more information about this and other competitions, and details of how to register and apply, and the *Guidance for Applicants* please see Competitions at www.innovate.uk.org

Competition helpline:
0300 321 4357

Email:
competitions@innovateuk.org

Publicity

The Technology Strategy Board frequently publicises the results of competitions and this includes engagement with the media. Applicants will be asked to provide an agreed form of words for use in publicity material. E-mail pressoffice@tsb.gov.uk with any queries.

The Technology Strategy Board is a business-led executive non-departmental public body, established by the Government. Its role is to promote and support research into, and development and exploitation of, technology and innovation for the benefit of UK business, in order to increase economic growth and improve quality of life.

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