

THE TECHNOLOGY PROGRAMME:
NOVEMBER 2004 COMPETITION FOR FUNDING

Bio-Based Industrial Products and Processes

Summary

The Government is committed to sustainable development and there are significant benefits for business too. Renewable materials, produced by agriculture as feedstocks for industry and energy, and industrial bio-based processes, will play a vital part.

In recognition of this, an indicative £7m of DTI funding has been allocated in this competition to support Collaborative R&D projects that address the following broad areas:

- Bio-based industrial feedstock and products from Non-Food Crops
- Technology validation for economic exploitation of Non-Food Crops
- Biocatalysis and Biotransformations for New and Improved Industrial Processes

Background

Bio-based technologies, products, and processes can enhance the competitiveness of industry through the development of new markets and products, while lowering costs through reduction in water and energy consumption, waste production, and depletion of limited natural resources. The advancement of bio-based feedstock and products technologies will be reliant on advances in biocatalysis and biotransformations.



Scope for Applications

Based on the UK research excellence and potential for exploitation, the following areas are considered a priority for this competition:

Bio-based industrial feedstock and products from Non-Food Crops

We are seeking applied research projects in application areas that might include one or more of, but are not restricted to:

- Production of chemicals from renewable, non-fossil feedstocks (including development of new technologies to turn 'platform' molecules into valuable chemical intermediates, extracting added value from crop feedstocks outside its fuel value such as by-products from biodiesel manufacture, extraction of fibres from feedstocks, conversion to ethylene for plastics and other materials)
- Cost effective technology for the fractionation and processing of lignocellulosics to produce feedstocks for both chemicals and energy
- Processing / extraction technologies for the production of valuable materials from biorefinery waste streams such as composite materials from plant fibres and polymers from proteins extracted from oilseed rape
- Production of high performance bio-based materials – includes bioplastics, resins and composites for use in the construction, automotive and packaging industries
- Production of high value chemicals / pharmaceuticals / bioactive compounds from non-food crops

Technology validation for economic exploitation of Non-Food Crops

We are seeking experimental development projects that aim to validate, at a commercially relevant scale, models, tools, techniques, and technologies that have been proven at a laboratory scale, in order to

provide technical and economic confidence to end-users and suppliers.

Biocatalysis and Biotransformations for New and Improved Industrial Processes

We are looking for applied research projects addressing improved and cost-effective industrial production using standardised, stable enzymes and enzyme systems (either isolated or via pathway engineering in whole cells). Strong emphasis will be placed on clearly identified industrial processes – especially the production of fine and bulk chemicals and chemical intermediates for use in other manufacturing sectors – with significant wider benefits and commercial potential.

Application areas might include one or more of, but are not restricted to:

- Tools to aid industrial scale-up and process intensification
- Development of biocatalytic routes from low cost materials (including renewables) to high value products
- Improved biocatalyst properties – including stability, co-factor regeneration, and use of novel systems, etc.
- Identification and development of high performance/high value enzymes and cells – including stable, process-compatible host cells to express biocatalytic genes – including the use of appropriate screening methods
- Novel and improved immobilisation – including, for example, free flowing stable enzyme powders, and techniques that enable recovery and re-use, etc.
- Technologies derived from marine science, such as new & improved bioreactor technology, extremophile management, improved purification methods, novel biocatalysts
- Novel approaches to specific designed synthesis routes, including polypeptides as enzyme mimetics and development of artificial cells, etc.

Proposals focussing on non-food crop energy generation should be submitted under the New and Renewable Energy technology area.

Project Details

Proposals that address the above technology application areas are sought for Collaborative R&D projects that involve science-to-business and business-to-business interactions. The focus is on applied research projects or experimental development projects that develop and validate larger scale demonstrators – specific details of types of projects sought for each technology area are highlighted in ‘Scope of Applications’ above. In particular we would encourage projects that can demonstrate benefits to a number of business sectors. Projects will be expected to include at least one partner with defined end-user needs.

Proposals will be strengthened with involvement of the relevant knowledge transfer networks. DTI will require dissemination through the National Non Food Crops Centre and the Pro-Bio Faraday Partnership. Consortia should also consider sustainability issues (e.g. reduced waste/use of toxins and hazardous substances, reduced emissions, etc) including increasing resource efficiency (e.g. reduced energy/water consumption).

Typically a project would have a 3 year duration and require DTI support of up to £0.5m for applied research projects and £1m for experimental development projects.

Other Funding Opportunities

BBSRC and EPSRC are interested in co-funding applied research projects in this technology area where there is a significant high quality academic component. Applicants who wish to seek BBSRC or EPSRC funding should read the additional guidance provided at www.dti.gov.uk/technologyprogramme

Contact

If you have any queries about this technology area, please contact Bill Leitch at the DTI.

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For general enquiries on the application process please contact the helpline on **01355 272155** or e-mail **info@technologyprogramme.org.uk**

Deadline for registering your intention to submit an application:
31st January 2005

Outline application submission
deadline: 7th February 2005

For details on how to register
and apply go to
www.dti.gov.uk/technologyprogramme

