

MEMORANDUM FROM BBSRC IN RESPONSE TO THE HOUSE OF COMMONS ENVIRONMENTAL AUDIT COMMITTEE INQUIRY INTO PROGRESS ON CARBON BUDGETS

INTRODUCTION

1. The Biotechnology and Biological Sciences Research Council (BBSRC) is the leading funder of non-medical biological research in the UK. Its budget for 2012-13 is around £500M, supporting approximately 1600 scientists and 2000 research students in universities and institutes across the UK. Further details are available at www.bbsrc.ac.uk.
2. This evidence is submitted by BBSRC and represents the Council's independent views. It does not include or necessarily reflect the views of the Science and Research Group in the Department for Business, Innovation and Skills (BIS), BBSRC's sponsoring government department.
3. As a public funder of research, it is not appropriate for BBSRC to make policy recommendations regarding the level, operation or governance of UK Carbon Budgets. This response therefore highlights the importance of bioenergy and industrial biotechnology to carbon budgeting, and outlines relevant BBSRC investments.

RESPONSE

4. Bioenergy and Industrial Biotechnology offer novel low carbon alternatives to the production of energy, materials and chemicals from fossil fuels through the sustainable exploitation of plants, bacterial, algae and fungi. They have an important role in helping the UK to meet the targets for Green House Gas emissions set out in the Climate Change Act and to maintain its energy security in the context of increasing oil prices.
5. The Energy System Modelling Environment (ESME) model¹ and Department of Energy and Climate Change Carbon Calculator² demonstrate that it would be challenging for the UK to meet its carbon reduction commitments without bioenergy. Bioenergy offers a significant and cost-effective contribution to reducing carbon emissions, and its exclusion would significantly increase the cost of decarbonising the UK's energy system³. In combination with carbon capture and storage (CCS), bioenergy could contribute to achieving negative carbon emissions.

¹ http://www.eti.co.uk/technology_strategy/energy_systems_modelling_environment/

² <https://www.gov.uk/2050-pathways-analysis>

³ UK Bioenergy Strategy

BBSRC investment in Bioenergy and Industrial Biotechnology

6. In 2009 BBSRC invested £20M in the BBSRC Sustainable Bioenergy Centre (BSBEC)⁴. Research undertaken by BSBEC spans the bioenergy pipeline from biomass crops to fermentation for the production of biofuels and high value chemicals. The Centre brings together world-class research groups and industrial partners to create a network which ensures the translation of its research to practical application.
7. Building on BSBEC, BBSRC is supporting the transition of the UK to a low carbon economy through strategic investment in world class Industrial Biotechnology and Bioenergy (IBBE) research, underpinning the development of sustainable low carbon technologies. As one of BBSRC's three strategic priorities, IBBE received investment of £28M in 2012-2013.
8. BBSRC's key interests in Industrial Biotechnology and Bioenergy are⁵:
 - The improvement of lignocellulosic feedstocks (non-food crops and waste straw) and development of biological conversion technologies to generate biofuels and bioenergy
 - The exploitation of systems and synthetic biology approaches to generate bacteria capable of producing biofuel, biogas and industrial chemicals
 - Multidisciplinary research underpinning the development of biological, chemical and engineering processes for the sustainable, clean, production of chemicals materials and polymers (biorefining)
 - The cultivation and engineering of microalgae and cyanobacteria for the production of biofuels and high value chemicals

Bioenergy for the future

9. As indicated in paragraph 5 above, bioenergy has a major role to play in the UK energy mix - contributing to long term greenhouse gas emissions reductions, 2020 renewables targets and the UK's future energy security.
10. Fully realising bioenergy's potential will require continued investment in basic and translational research. To this end, BBSRC have recently announced a further £35M of funding for Industrial Biotechnology and Bioenergy, to create networks and collaborative research between academia and industry leading to translational development to commercialisation, offering a channel for sustainable economic growth for the UK and new 'green' jobs.
11. BBSRC funded research is contributing to the development a solid body of evidence to inform decision-making in the development of a low carbon economy.

⁴ <http://www.bbsrc.ac.uk/research/biotechnology-bioenergy/bsbec/bsbec-index.aspx>

⁵ <http://www.bbsrc.ac.uk/funding/priorities/ibb-bioenergy.aspx>

BBSRC, May 2013