

BBSRC OUTPUTS FRAMEWORK 2006-07

Introductory statement

1. This is the second annual outputs framework published by the BBSRC. Outputs frameworks were implemented across all the Research Councils in 2005 and now form part of the new Economic Impact Framework managed by the Department for Innovation, Universities and Skills. More information about the Economic Impact Framework can be found at: <http://www.berr.gov.uk/science/science-funding/framework/page9306.html>.
2. The Council's outputs framework should be read in conjunction with its 2006-07 Delivery Report and Annual Report, which provide a comprehensive summary of achievements over the period [www.bbsrc.ac.uk/about/pub/reports/AnnDevRep2006-2007.pdf and [www.bbsrc.ac.uk/about/pub/policy/bbsrc annual 06 07.pdf](http://www.bbsrc.ac.uk/about/pub/policy/bbsrc_annual_06_07.pdf)].
3. The outputs framework contains data on aspects of BBSRC performance relevant to the Government's objectives for the UK science base. Categories have changed from the 2005-06 report to reflect the organisation of the Economic Impact Framework, but the 2006-07 framework states whether the data refer to the previously used Output One (aspects of BBSRC's contribution towards maintaining a healthy science and engineering base), and Output Two (BBSRC's contributions to improved exploitation).
4. The framework shows, where possible, the data for 2005-06 alongside that for 2006-07. Clearly, no robust conclusions can be drawn about trends on the basis of two years' data and therefore no analysis of this kind has been attempted. As the framework series is extended the Council will seek to analyse and comment on emerging trends.
5. The data for 2006-07 show:
 - The UK now leads the world in terms of the impact of its research in the biosciences
 - The numbers of researchers engaged in the biosciences in the UK is very healthy and numbers of postgraduate students have grown by nearly 50% since the late 1990s
 - Nearly a third of BBSRC's responsive mode awards are currently invested in joint bioscience/non-bioscience projects
 - BBSRC is committed to major investments in research infrastructure at the new bioscience research centre in Edinburgh, at the Institute for Animal Health and at the Babraham Institute
 - BBSRC's investment in new collaborative research in the last year significantly exceeded its target, with investments in technology priorities, and in industry clubs, LINK and underpinning research
 - Evaluations of BBSRC's schemes supporting knowledge exchange efficiency have demonstrated their quality and effectiveness

Overall economic impacts		
Metrics/indicators	Current data	Comments
Economic and social impact of outcomes from Research Council funded research	In 2006, the "Warry" Economic Impact Group reported to then OSI on how the Research Councils could deliver and demonstrate they are delivering a major increase in the economic impact of their investments. In response, the Councils commissioned three studies, including a user satisfaction survey, which reported in September 2007.	

Investment in the research base and innovation [Output 1]		
Metrics/indicators	Current data	Comments
RC £ input per annum	BBSRC grant-in-aid: 2005-06 £321.8M 2006-07 £365.8M	Figures from BBSRC Annual Reports, and differ from Departmental Expenditure Limit (DEL), which include non-cash costs associated with depreciation and cost of capital.
Rate of change in RC spend profile in relation to identified priorities	Annual expenditure on research initiatives: 2005-06 £45.2M 2006-07 £45.8M	BBSRC's Strategy Board and Strategy Panels are responsible for considering and adjusting the Council's research priorities in the light of scientific opportunities and user needs. Research initiatives are developed to exploit those opportunities and/or to meet those needs. Figures from BBSRC Annual Reports.
	% Annual turnover in S & T programmes: A. Projects/grants current at 1 April 2005 2,706 2006 2,888 B. Projects/grants in A completed by 31 March 2006 897 (33%) 2007 1,086 (38%) C. Projects/grants started 1 April to 31 March* 2005-06 769 2006-07 880	
Level of inter-disciplinary activity within & beyond RC domain	% HEI grant expenditure in non-bioscience depts: 2005-06 ¹ 14.7 2006-07 ² 14.8	These are partial indicators. ¹ based on grants 'live' on 1 April 06 ² based on grants 'live' on 1 April 07
	% responsive mode spend on joint bioscience-non-bioscience grants (i.e. with PIs from different depts): 2005-06 ¹ 29 2006-07 ² 31	
	Investment in cross-Council programmes: 2006-07 £21M	

Knowledge generation (stock of publicly available knowledge) [Output 1]																							
Metrics/indicators	Current data	Comments																					
International standing in biological sciences: share of citations	<p>Number and share of citations among OSI/DIUS comparator group*:</p> <table border="1"> <thead> <tr> <th></th> <th>2004</th> <th>2005</th> </tr> </thead> <tbody> <tr> <td>No. of UK citations</td> <td>11,724</td> <td>12,901</td> </tr> <tr> <td>UK rank by no. of citations</td> <td>2</td> <td>2</td> </tr> <tr> <td>% share of citations, OSI/DIUS group</td> <td>10.03</td> <td>9.81</td> </tr> </tbody> </table> <p>* 25 countries: all G8, Belgium, Denmark, Finland, Netherlands, Spain, Sweden, Switzerland, Poland, Australia, Brazil, China, India, Iran, Israel, Singapore, S Africa, S Korea, Taiwan</p>		2004	2005	No. of UK citations	11,724	12,901	UK rank by no. of citations	2	2	% share of citations, OSI/DIUS group	10.03	9.81	<p>Major scientific achievements reported in <i>BBSRC Business</i> and Annual Reports (www.bbsrc.ac.uk/about/pub/Welcome.html).</p> <p>Data from Evidence, <i>PSA target metrics for the UK research base</i>, Table 3.02. Figures quoted for the biological sciences, the area of BBSRC's core business; the Council also monitors data for other SUoAs, including pre-clinical sciences, physical sciences, mathematics, engineering, where we have clear interests.</p> <p>Tracking publications and citations specifically arising from a single funder is very resource-intensive and expensive, and are not data to which BBSRC has access.</p>									
	2004	2005																					
No. of UK citations	11,724	12,901																					
UK rank by no. of citations	2	2																					
% share of citations, OSI/DIUS group	10.03	9.81																					
International standing in biological sciences: citations/publication	<p>Citation impact relative to world baseline:</p> <table border="1"> <thead> <tr> <th></th> <th>2004</th> <th>2005</th> </tr> </thead> <tbody> <tr> <td>Rebased impact</td> <td>1.40</td> <td>1.53</td> </tr> <tr> <td>Rank</td> <td>3</td> <td>1</td> </tr> </tbody> </table> <p>Number and share of papers in top 1% by citation count:</p> <table border="1"> <thead> <tr> <th></th> <th>2000-04</th> <th>2001-05</th> </tr> </thead> <tbody> <tr> <td>Number</td> <td>5,528</td> <td>4,290</td> </tr> <tr> <td>Share</td> <td>13.2%</td> <td>13.3%</td> </tr> <tr> <td>Rank</td> <td>2</td> <td>2</td> </tr> </tbody> </table>		2004	2005	Rebased impact	1.40	1.53	Rank	3	1		2000-04	2001-05	Number	5,528	4,290	Share	13.2%	13.3%	Rank	2	2	<p>Data from Evidence, <i>PSA target metrics for the UK research base</i>, Tables 3.09, 3.07. Figures quoted for the biological sciences, the area of BBSRC's core business; see also comments above.</p> <p>No figures for RC funded research.</p>
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No. of publications produced per annum in biological sciences	<p>Total number of biological sciences publications with UK authors in refereed journals:</p> <table border="1"> <tbody> <tr> <td>2000-04</td> <td>94,589</td> </tr> <tr> <td>2001-05</td> <td>79,514</td> </tr> </tbody> </table> <p>Publications data for BBSRC-sponsored institutes (calendar year):</p> <table border="1"> <thead> <tr> <th></th> <th>2005</th> <th>2006</th> </tr> </thead> <tbody> <tr> <td>X/N¹ All publications²</td> <td>1,257.5</td> <td>1,131.7</td> </tr> <tr> <td>Refereed publications</td> <td>605.5</td> <td>523.1</td> </tr> <tr> <td>Actual³ All publications</td> <td>1,836</td> <td>1,704</td> </tr> <tr> <td>Refereed publications</td> <td>1,082</td> <td>980</td> </tr> </tbody> </table>	2000-04	94,589	2001-05	79,514		2005	2006	X/N ¹ All publications ²	1,257.5	1,131.7	Refereed publications	605.5	523.1	Actual ³ All publications	1,836	1,704	Refereed publications	1,082	980	<p>Figures from Evidence, <i>PSA target metrics for the UK research base</i>, Tables 3.05, 3.06, see also comments above.</p> <p>Figures from annual returns from BBSRC-sponsored institutes.</p> <p>¹ Calculated according to the X/N formula in the Funding Councils' RAE where, for a given publication, X is the number of authors at the institute and N the total number of authors.</p> <p>² All publications include: refereed papers, books and book chapters, edited conference contributions, technical reports, theses and popular articles.</p> <p>³ Actual number of publications; not calculated as X/N.</p>		
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Knowledge generation (stock of publicly available knowledge) [Output 1]							
Metrics/indicators	Current data					Comments	
Publications/research leader	Publications data for BBSRC-sponsored institutes per research leader (calendar year):					Figures from annual returns from BBSRC-sponsored institutes.	
			2005	2006			
	X/N	All publications	4.5	4.5			
		Refereed publications	2.2	2.1			
	Actual	All publications	6.6	6.7			
		Refereed publications	3.9	3.9			
Outcome of final year evaluations of research grants	% of grants in each category:					<p>Evaluated by refereed final reports assessed against the original objectives of the project.</p> <p>A: Very high class work that has met all or almost all of the key objectives</p> <p>B: Work that has met the majority of its key objectives</p> <p>C: Work that has fallen short of the expectations of the original proposal even though it may have met some or all of its key objectives</p> <p>D: Work that has failed to address the key objectives</p>	
			A	B	C		D
	2005-06		32	46	20		2
	2006-07		35	44	19		1

Knowledge generation (human capital) [Output 1] (a) newly trained people						
Metrics/indicators	Current data					Comments
No. of people awarded PhDs per annum by domain.	By domain: doctoral students registered:					From <i>HESA Students in HEIs</i> , Tables A and E.
			2004-05	2005-06		
		Total number registered	89,390	91,820		
		Biological sciences	11.9%	11.7%		
		Veterinary sciences	0.5%	0.5%		
	Agriculture and related subjects	1.0%	0.8%			
No. of PhD awards funded by RCs	Number of BBSRC-funded PhD leavers:					Figures from BBSRC Operating Reports (BBSRC does not readily have numbers of PhD students completing, as data are monitored by starting cohorts and groups from more than one cohort will complete in any given year).
	Start year					
	2000-01		615			
	2001-02		612			

Knowledge generation (human capital) [Output 1]																													
(a) newly trained people																													
Metrics/indicators	Current data	Comments																											
Diversity of new PhDs relative to society norms	BBSRC-funded PhD starters by gender (%): <table border="0" style="margin-left: 20px;"> <tr> <td></td> <td style="text-align: center;">2005-06</td> <td style="text-align: center;">2006-07</td> </tr> <tr> <td>Male</td> <td style="text-align: center;">43</td> <td style="text-align: center;">48</td> </tr> <tr> <td>Female</td> <td style="text-align: center;">57</td> <td style="text-align: center;">52</td> </tr> </table> And by ethnic origin (%): <table border="0" style="margin-left: 20px;"> <tr> <td></td> <td style="text-align: center;">2005-06</td> <td style="text-align: center;">2006-07</td> </tr> <tr> <td>White</td> <td style="text-align: center;">89.7</td> <td style="text-align: center;">85.8</td> </tr> <tr> <td>Black</td> <td style="text-align: center;">1.2</td> <td style="text-align: center;">1.2</td> </tr> <tr> <td>Asian</td> <td style="text-align: center;">3.4</td> <td style="text-align: center;">5.9</td> </tr> <tr> <td>Other</td> <td style="text-align: center;">1.2</td> <td style="text-align: center;">1.2</td> </tr> <tr> <td>Not specified</td> <td style="text-align: center;">4.4</td> <td style="text-align: center;">5.9</td> </tr> </table>		2005-06	2006-07	Male	43	48	Female	57	52		2005-06	2006-07	White	89.7	85.8	Black	1.2	1.2	Asian	3.4	5.9	Other	1.2	1.2	Not specified	4.4	5.9	
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Rate of change in per annum PhDs awarded in relation to identified priorities	Number of BBSRC-funded PhDs in priority areas in 2006: <table border="0" style="margin-left: 20px;"> <tr> <td>Bioprocessing</td> <td style="text-align: center;">5</td> </tr> <tr> <td>Comparative genomics</td> <td style="text-align: center;">9</td> </tr> <tr> <td>Crop science</td> <td style="text-align: center;">9</td> </tr> <tr> <td>Integrative mammalian physiology</td> <td style="text-align: center;">12</td> </tr> <tr> <td>Technologies for regenerative medicine</td> <td style="text-align: center;">6</td> </tr> <tr> <td>Selective chemical intervention in biological systems</td> <td style="text-align: center;">9</td> </tr> </table>	Bioprocessing	5	Comparative genomics	9	Crop science	9	Integrative mammalian physiology	12	Technologies for regenerative medicine	6	Selective chemical intervention in biological systems	9	BBSRC targets PhD studentship funding into priority research and training areas through an annual Targeted Priority Studentship competition.															
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PhD completion rates	BBSRC-funded students submitting by end of 4 th year (%): <table border="0" style="margin-left: 20px;"> <tr> <td>Start year</td> <td style="text-align: center;">%</td> </tr> <tr> <td>2001-02</td> <td style="text-align: center;">73</td> </tr> <tr> <td>2002-03</td> <td style="text-align: center;">79</td> </tr> </table>	Start year	%	2001-02	73	2002-03	79	BBSRC monitors submission rates rather than completion rates as the time to submission is under the control of the student and supervisor; the time to completion is not. Data from BBSRC Annual Report.																					
Start year	%																												
2001-02	73																												
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Knowledge generation (human capital) [Output 1]					
(b) trained people pool					
Metrics/indicators	Current data			Comments	
No. of active researchers per domain		2004-05	2005-06		Figures from HESA, for biological sciences and related disciplines; BBSRC also monitors equivalent data for other relevant areas, including physical sciences, mathematics and computer sciences.
	Professors	1,940	2,055		
	Senior Lecturers	3,020	3,235		
	Lecturers	4,550	4,485		
	Researchers	8,275	8,445		
	Total	17,785	18,220		
Numbers in and sustainability of trained research community	Age of HEI staff:				Data from report on Health of Disciplines to Funders Forum, taken from HESA statistics. Data presented for one year only, because of changes to the way HESA collects and presents the data.
	2004-05	Under 35	35-49	50+	
	Biological sciences	6,993	7,836	3,455	
	Veterinary science, agriculture & related subjects	372	639	309	
Participation of women in SEB	% women BBSRC-funded principal investigators at universities and in senior science grades at BBSRC-sponsored institutes:				
		2005-06	2006-07		
	Universities	18.7	17.6		
	Institutes	17.7	18.9		
Recruitment and retention	Staff joining and leaving BBSRC (Institutes and BBSRC Office):				Reduction in staff numbers mainly due to restructuring at institutes.
		2005-06	2006-07		
	Recruited	246	282		
	Leaving	379	362		
Capacity at undergraduate and postgraduate levels	% change in numbers of undergraduates, 1998-99 to 2004-05:				Data from report on Health of Disciplines to Funders Forum.
	Biological sciences		36.2		
	Veterinary science, agriculture and related subjects		2.0		
	% change in numbers of postgraduates, 1998-99 to 2004-05:				
	Biological sciences		49.5		
	Veterinary science, agriculture and related subjects		17.2		

Framework conditions: financial sustainability [Output 1]														
Facilities and infrastructure														
Metrics/indicators	Current data	Comments												
International standing of BBSRC funded strategic facilities	The 2005 Institute Assessment Exercise showed that 45 out of the 55 assessed programmes scored high international/international (quality of science) or outstanding/good (strategic relevance).													
Capital investment in BBSRC-sponsored institutes	<table border="0"> <tr> <td></td> <td>2005-06</td> <td>2006-07</td> </tr> <tr> <td>Average institute annual surplus level</td> <td>£682.6k</td> <td>£705k</td> </tr> <tr> <td>Capital expenditure as % of total estate building replacement</td> <td>3.0%</td> <td>6.5%</td> </tr> <tr> <td>Maintenance as % of replacement cost</td> <td>1.2%</td> <td>1.3%</td> </tr> </table>		2005-06	2006-07	Average institute annual surplus level	£682.6k	£705k	Capital expenditure as % of total estate building replacement	3.0%	6.5%	Maintenance as % of replacement cost	1.2%	1.3%	Capital expenditure is BBSRC's contribution for 2006-07.
	2005-06	2006-07												
Average institute annual surplus level	£682.6k	£705k												
Capital expenditure as % of total estate building replacement	3.0%	6.5%												
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New facilities entering service as a result of BBSRC funding	Total expenditure on institute facilities: 2005-06 £15.8M 2006-07 £17.1M													
Rate of change in BBSRC spend on & between facilities	Following IAE 2005, BBSRC is: <ul style="list-style-type: none"> • increasing proportion of core institute funding for animal health and welfare from 22% to 26% by 2009-10 • providing £35M in capital funding for the proposed research centre in Edinburgh • increasing core institute funding in sustainable agriculture and land use • increasing core institute funding in biomedical and food sciences. 													
Efficiency of BBSRC-sponsored institutes	Saving generated: 2005-06 £2.33M 2006-07 £7.94M	Includes leveraging of new Industrial Collaborations, savings from the closure of Silsoe Research Institute and withdrawal of funds from Edward Jenner Institute. Information from Gershon returns.												

Framework conditions: financial sustainability, efficiency [Output 1]												
Metrics/indicators	Current data	Comments										
BBSRC management efficiency eg reduction in wasteful tail of unsupported grant applications	BBSRC is in regular discussion, through its Committees and Boards, with the research community, to reduce the number of lower quality applications; the success rates of HEIs in obtaining grants are published on the website. Success rates for responsive mode applications: 2005 session (April 2005 to March 2006) 26% 2006 session (April 2006 to March 2007) 26%	Figures from Gershon returns.										
	Expenditure on administration: <table border="0"> <tr> <td></td> <td>2005-06</td> <td>2006-07</td> </tr> <tr> <td>Total</td> <td>£9.3M</td> <td>£11.1M</td> </tr> <tr> <td>Outturn</td> <td>2.78%</td> <td>2.67%</td> </tr> <tr> <td>Admin spend:science budget ratio</td> <td>0.07% below target</td> <td>0.02% over target</td> </tr> </table> Gershon administration savings generated: 2005-06 £0.6M 2006-07 £1.0M			2005-06	2006-07	Total	£9.3M	£11.1M	Outturn	2.78%	2.67%	Admin spend:science budget ratio
	2005-06	2006-07										
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Outturn	2.78%	2.67%										
Admin spend:science budget ratio	0.07% below target	0.02% over target										
BBSRC reprioritisation savings	Saving from effective reprioritisation of programme spend: £8.4M against a target of £8.6M	Figures from Gershon return.										

Framework conditions: Public engagement [Output 1]											
Metrics/indicators	Current data	Comments									
Public consultation and dialogue	Open meetings: <table border="0"> <tr> <td></td> <td>2005-06</td> <td>2006-07</td> </tr> <tr> <td>Number of meetings held</td> <td>2</td> <td>1</td> </tr> <tr> <td>Number of participants</td> <td>170</td> <td>120</td> </tr> </table>		2005-06	2006-07	Number of meetings held	2	1	Number of participants	170	120	Consultation and dialogue events encourage participation in BBSRC policy, planning and funding decisions, and help build confidence. Attendance at open meetings includes policy makers, academics, industrialists and NGO representatives. The 2007 meeting focused on research training provision.
		2005-06	2006-07								
Number of meetings held	2	1									
Number of participants	170	120									
9 consultations held to date	Topics included: data sharing policy, biodiversity research, priorities for farm animal genomics research, and research committee structures.										

Framework conditions: Public engagement [Output 1]															
Metrics/indicators	Current data		Comments												
Public consultation and dialogue (ctd)	3 public attitudes studies have been commissioned to date: on research into ageing (with MRC), diet and health, and joint funding with industry. New BBSRC discussion meeting held on stem cells. Contributing to RCUK public dialogue on energy.		BBSRC and MRC are leading on the ScienceWise project (£300k award) on public dialogue about stem cell science.												
	Recognition from Demos, FEC, etc, of developing role in public engagement. Positive feedback from participants in dialogue events, from visitors at public exhibitions and from schools, and through formal evaluation by consultants.		Recommendations from independent evaluations of exhibits will inform development of future exhibitions.												
Survey trends in public attitudes to science issues	BBSRC is a member of the Coalition for Medical Progress (CMP) Steering Group. Yearly public attitude studies commissioned by CMP on the use of animals in medical research shows approximately 75% can accept the use of animals in research as long as it is for medical purposes. The proportion of people trusting the regulatory system, and trusting scientists not to cause unnecessary suffering, has increased steadily since 1999.		BBSRC (with EPSRC) contributed to the Nanodialogues project led by Demos. This, and the earlier NanoJury which BBSRC supported, suggests that there is no particular concern about nanotechnologies, and that issues should be addressed on a case-by-case basis. BBSRC is contributing to the RCUK organisation of the next Public Attitudes to Science survey.												
	The Bioscience for Society Strategy Panel is considering potential issues of public interest in the emerging field of synthetic biology.		Openness and responsiveness to issues of public concern are a key element of BBSRC's activities to maintain public trust in UK bioscience. BBSRC runs web-based consultations on selected new research initiatives, with views taken into account by initiative managers. The Bioscience for Society Strategy Panel advises Council on its interactions with the public, including responding to issues of public concern.												
Interactions with partners and users		<table border="1"> <thead> <tr> <th></th> <th>2005-06</th> <th>2006-07</th> </tr> </thead> <tbody> <tr> <td>Media releases</td> <td>60</td> <td>82</td> </tr> <tr> <td>Corporate publications</td> <td>12</td> <td>11</td> </tr> <tr> <td>New requests for schools resources</td> <td>882</td> <td>483</td> </tr> </tbody> </table>		2005-06	2006-07	Media releases	60	82	Corporate publications	12	11	New requests for schools resources	882	483	BBSRC has regular formal and informal interactions with relevant Government Departments and agencies, RCUK and the other research councils (see also knowledge exchange efficiency).
	2005-06	2006-07													
Media releases	60	82													
Corporate publications	12	11													
New requests for schools resources	882	483													

Knowledge exchange efficiency: ease of cooperation														
(a) User Focus [Output 1]														
Metrics/indicators	Current data	Comments												
<i>Recruitment and retention trend in HEIs by domain [PSA]</i> Pattern of first destinations of new PhDs	Of BBSRC-funded PhDs, % leaving for known destinations, start year 2001-02: Government and public sector 9 Higher Education 36 Industrial and commercial sector 25 Further training 13 School teaching/other 3 Not employed 13	First destination data now collected against newly agreed categories, so trend data not yet available (collected by HESA).												
Utilisation rate	Institute collaborations with HEIs: <table border="1"> <thead> <tr> <th></th> <th>2005-06</th> <th>2006-07</th> </tr> </thead> <tbody> <tr> <td>Number</td> <td>993</td> <td>891</td> </tr> <tr> <td>Value</td> <td>£14,062k</td> <td>£13,398k</td> </tr> </tbody> </table> Uptake of facilities at Integrative Systems Biology Centres.		2005-06	2006-07	Number	993	891	Value	£14,062k	£13,398k	Figures from annual returns from BBSRC-sponsored institutes. ISBs will be monitored for uptake by the community in future years (metric being developed).			
	2005-06	2006-07												
Number	993	891												
Value	£14,062k	£13,398k												
Level of interaction with HEIs	% HEI representation on BBSRC Council, Boards, Research Committees and Strategy Panels: <table border="1"> <thead> <tr> <th></th> <th>2005-06</th> <th>2006-07</th> </tr> </thead> <tbody> <tr> <td>Council & Boards</td> <td>54</td> <td>52</td> </tr> <tr> <td>Research Committees</td> <td>74</td> <td>75</td> </tr> <tr> <td>Strategy Panels</td> <td>54</td> <td>63</td> </tr> </tbody> </table> 2 meetings each year with heads of UK HEI Bioscience Depts.		2005-06	2006-07	Council & Boards	54	52	Research Committees	74	75	Strategy Panels	54	63	Interactions with HEIs are a routine part of BBSRC business, and take place at all levels. In addition to formal Committee/Panel/Board meetings, the Council holds scientific workshops, meetings with heads of HEI bioscience departments, public events, all involving interchanges with HEIs. There is also a significant amount of daily business in relation to grant, fellowship and studentship applications, and funded awards.
	2005-06	2006-07												
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Research Committees	74	75												
Strategy Panels	54	63												
Survey assessment of SEB confidence in RC	RCUK has recently conducted a survey of university researchers and administrators across the UK which shows that a very substantial majority believe that the Councils' grant application administration and peer review processes are excellent or good. The Joint Electronic Submission System is believed to have made the grant application process more efficient, particularly in reducing time and paperwork and enabling the development of collaborative proposals. The report will be published in the autumn. Open meetings are now an annual event.													

Knowledge exchange efficiency: ease of cooperation		
(a) User Focus [Output 1]		
Metrics/indicators	Current data	Comments
Growing the level of co-funding of research	Investment in new collaborative research: 2005-06 £2.01M 2006-07 £5.2M*	Figure from Gershon returns. * against a target of £2.5M
No. of joint publications with business	Publications data for BBSRC-sponsored institutes (calendar year): 2005 2006 Refereed publications* 65 82 Per scientist 0.2 0.3 % of all refereed publications 6 8	Figures from annual returns from BBSRC-sponsored institutes. * Actual number of refereed publications, not calculated as X/N.
License income	Data for BBSRC-sponsored institutes: 2005-06 £656k 2006-07 £793k	Figures from annual returns from BBSRC-sponsored institutes. Figures include income from IP licences held by the institutes and from licences assigned to collaborators.
% business and public services as first destination of PhDs	Of BBSRC-funded PhDs leaving for known destinations, % entering private or public sector: Start year % 2001-02 34	Figure comprises Government and public sector, Industrial & commercial sector and other R&D, but excludes PhD graduates going into teaching (collected by HESA).
Level of business/services capital investment in disciplinary areas	Current planned investment within BBSRC 10 year Estates Strategy: 2005-06 to 2014-15 £432M 2006-07 to 2015-16 £421M	Two projects to highlight are the £121M investment in Pirbright and the Babraham redevelopment of £21M, of which BBSRC will fund £23M and £15M respectively.
% business/services people on RC governing bodies, etc	% user representation on BBSRC Council, Boards, Research Committees and Strategy Panels: 2005-06 2006-07 Council & Boards 29 33 Research Committees 15 10 Strategy Panels 33 27	Interactions with users are many and varied (see comments in scale section). The Bioscience for Industry Strategy Panel focuses on interactions with the private sector.
	% user representation on BBSRC-sponsored institute Governing Bodies and institute policy committees: 2005-06 2006-07 Governing Bodies 57 60 Policy Committees 44 46	

Knowledge exchange efficiency: ease of cooperation																				
(a) User Focus [Output 1]																				
Metrics/indicators	Current data	Comments																		
Survey assessment of user confidence in RC.	<p>The House of Commons Science and Technology Select Committee Report on Research Councils support for knowledge transfer identified a need for the Councils to engage business users more effectively. Whilst Research Councils have striven to develop effective engagement with business over recent years, they take such feedback seriously and will be consulting with their stakeholders on strengthening this aspect of their operations.</p> <p>BBSRC has a 'Bioscience for Industry' Strategy Panel with representatives from relevant sectors, which provides regular feedback on industrial views.</p>	BBSRC staff participate in numerous meetings with users, for example, gaining feedback on BBSRC programmes via a workshop at the ABPI annual meeting in October 2006. BBSRC also participating in RCUK User Survey, reporting September 2007.																		
RC involvement/membership of business/regional networks	<p>Institute collaborations with local organisations:</p> <table border="1"> <thead> <tr> <th></th> <th>2005-06</th> <th>2006-07</th> </tr> </thead> <tbody> <tr> <td>Number</td> <td>183</td> <td>174</td> </tr> <tr> <td>Value</td> <td>£1,539k</td> <td>£1,506k</td> </tr> </tbody> </table>		2005-06	2006-07	Number	183	174	Value	£1,539k	£1,506k	Figures from annual returns from BBSRC-sponsored institutes.									
	2005-06	2006-07																		
Number	183	174																		
Value	£1,539k	£1,506k																		
Distribution of funding amongst funders; joint funding as % total funding; membership of networks	<p>% funding to BBSRC-sponsored institutes:</p> <table border="1"> <thead> <tr> <th>Source</th> <th>2005-06</th> <th>2006-07</th> </tr> </thead> <tbody> <tr> <td>BBSRC</td> <td>61</td> <td>61</td> </tr> <tr> <td>Defra/FSA</td> <td>14</td> <td>14</td> </tr> <tr> <td>Industry</td> <td>5</td> <td>3</td> </tr> <tr> <td>International</td> <td>4</td> <td>4</td> </tr> <tr> <td>Other (including research charities) (pre-audit figures)</td> <td>16</td> <td>18</td> </tr> </tbody> </table>	Source	2005-06	2006-07	BBSRC	61	61	Defra/FSA	14	14	Industry	5	3	International	4	4	Other (including research charities) (pre-audit figures)	16	18	
Source	2005-06	2006-07																		
BBSRC	61	61																		
Defra/FSA	14	14																		
Industry	5	3																		
International	4	4																		
Other (including research charities) (pre-audit figures)	16	18																		

Knowledge exchange efficiency: collaboration				
(b) Collaborative research [Output 2]				
Summary data:		2005-06	2006-07	
Total value of BBSRC commitment to research involving collaboration with industry and/or research relevant to technology priorities (collaborative R&D product (CRD), LINK, clubs and underpinning research)		£9.9M	£17.4M	
Total value of new BBSRC commitment to research involving collaboration with industry and/or research relevant to technology priorities (CRD, LINK, clubs and underpinning research)		£2.6M	£10.6M	
Total value of new BBSRC commitment to Industrial Partnership Awards (IPAs)		£7.1M	£6.2M	
Metrics/indicators	Current data		Comments	
Commitment to collaborative R&D activities such as CRD, clubs and other initiatives underpinning industrial need		2006-07	In 2006-07, awards in collaboration with industry were made in Bioprocessing (through the Bioprocessing Research Industry Club), Integrative Mammalian Biology and under the national Technology Programme in Regenerative Medicine and Bioscience for Industry. Applications were also sought for research in collaboration with industry in Systems Biology and through the national Technology Programme in Technologies for the Development and Manufacture of Biopharmaceuticals and Smart, Bioactive and Nanostructure Materials for Health. A Diet and Health Research Industry Club was also launched in collaboration with 12 food companies. * includes club company members	
	Number of projects	22		
	Number of industrial participants*	40		
	New projects	22		
	Total value of BBSRC commitment	£8,798k		
	Total value of new BBSRC commitment	£8,798k		
Commitment to collaborative R&D through LINK		2005-06	2006-07	BBSRC continues to support pre-competitive academic/industrial research collaborations through the LINK mechanism, both through programmes and using the LINK franchise. In 2006-07, applications were also sought for LINK projects in Exploiting Systems Biology.
	Number of projects	61	40	
	Number of industrial participants	86	93	
	New projects	10	3	
	Total value of BBSRC commitment	£9,873k	£8,583k	
	Total value of new BBSRC commitment	£2,651k	£1,778k	

Knowledge exchange efficiency: collaboration				
(b) Collaborative research [Output 2]				
Metrics/indicators	Current data			Comments
Industrial Partnership Awards (IPAs)		2005-06	2006-07	IPAs encourage industrial awareness of, and involvement in, research projects funded by BBSRC. They are science base-led responsive mode research grants that have significant industrial involvement and where industry contributes 10% to the cost of a responsive mode project. IPAs were also awarded through initiatives underpinning the BBSRC Technology Strategy in the areas of Crop Science, and Farm Animal Genetics and Genomics.
	Number of awards	24	22	
	Total value of awards	£7.1M	£6.2M	

BBSRC-sponsored institutes (figures for this section all from annual returns)				
Metrics/indicators	Current data			Comments
LINK collaborations		2005-06	2006-07	
	Number of projects	54	48	
	New projects	16	7	
	Number of industrial participants	222	282	
	Annual value to institutes	£3,575k	£3,562k	
Industrial contracts and collaborations		2005-06	2006-07	Institutes receive funding for 'contracts', to carry out routine testing or contract research for a contractor, and 'collaborations', where they work jointly with others on a project where all partners contribute intellectually.
	Contracts: annual value to institutes	£6,082k	£3,685k	
	Collaborations: annual value to institutes	£2,747k	£4,294k	

Quality
<ul style="list-style-type: none"> Longer-term excellence demonstrated through assessments of final reports, publications records and evaluation of science programmes. Satisfaction of industrial collaborators with the collaboration User Survey commissioned as an RCUK activity in March 2007 to report autumn 2007. All collaborative research projects supported to be internationally competitive. This to be ensured through peer review by appropriate assessment panels or research committees.

Knowledge exchange efficiency: transit of knowledge flows				
(c) Commercialisation of research [Output 2]				
Summary data:			2005-06	2006-07
Total value of activities to support the commercialisation of R&D			£3.8M	£1.54M
Total number of individuals trained/mentored through these activities			1,246	1,485
Metrics/indicators	Current data			Comments
Biotechnology YES		2005-06	2006-07	The Biotechnology YES (Young Entrepreneurs Scheme) is an innovative competition developed to raise awareness of the commercialisation of bioscience ideas among postgraduate students and postdoctoral scientists.
	Number of participants	198	247	
Research Council Business Plan Competition		2005-06	2006-07	The Competition, which builds on the success of the earlier bioscience Competitions, is designed to help entrepreneurial researchers from across the UK find successful routes to market. It provides regional training workshops, and coaching and mentoring, with a prize being awarded to the team producing the best business plan.
	Number of teams participating	110	110	
Enterprise Fellowships		2005-06	2006-07	This scheme is run jointly by BBSRC and the Royal Society of Edinburgh, and supports researchers who wish to be actively involved in commercialising their research. The Fellowships provide business training, access to networks of mentors, business experts and professional advisers, and a salary to allow them to concentrate on developing the commercial potential of their research.
	Number of fellowships awarded	4	2	
Intellectual Property Workshops		2005-06	2006-07	Workshops are run to encourage awareness of IP and KT issues within the research community. They inform existing and potential BBSRC-funded scientists of the issues surrounding the identification, protection and exploitation of intellectual property and cover all aspects of the commercialisation process.
	Number of courses run	29	30	
	Number of individuals trained	934	1,128	
Follow-on Fund		2005-06	2006-07	This scheme, run jointly with EPSRC, NERC and PPARC, aims to increase the level and accelerate the rate of commercialisation of ideas arising from the research community. It provides funds for proof-of-concept studies to enable ideas to be brought to a stage where commercial opportunities (e.g. licensing, seed or equity funds) can be secured.
	Number of awards	15	15	
	Total value of awards	£1,083k	£1,295k	

Knowledge exchange efficiency: transit of knowledge flows				
(c) Commercialisation of research [Output 2]				
Metrics/indicators	Current data		Comments	
University commercialisation activities		2004-05	2005-06	Exploitation metrics are collected from the leading BBSRC-funded university departments.
	Number of departments	15	13	
	BBSRC funding	£39,670k	£36,050k	
	Exploitation income	£1,946k	£768k	
	Spin-out companies	38	37	

BBSRC-sponsored institutes (figures for this section all from annual returns)				
Metrics/indicators	Current data		Comments	
Exploitation data		2005-06	2006-07	
	Number of patents and plant breeders rights held by institute	126	136	
	- Number of current licensing agreements	37	41	
	- Royalty income	£415k	£551k	
	Number of patents and plant breeders rights held by collaborators	15	14	
	- Number of current licensing agreements	8	7	
	- Royalty income	£241k	£242k	
	Number of patents and plant breeders rights which generated income	76	78	
	Number of licensing agreements involving companies with significant research or manufacturing capacity in the UK	26	23	
	Income from sale of equity in start-up companies	£449k	£491k	
	Income from any other exploitation of research	£612k	£710k	
	Total exploitation income	£1,717k	£1,994k	
	Total cost associated with IP protection	£530k	£537k	
Number of employees involved in commercialisation activities	13.5	13.8		
Spin-out companies		2005-06	2006-07	BBSRC encourages the formation of new business ventures and has funded a number of activities to assist in establishing spin-out companies, including trading arms, service companies and entrepreneurial life science companies.
	Number of companies incorporated	1		
	Number of companies trading	16	17	
	Number of dormant companies	7	5	
Awards to inventors		2005-06	2006-07	A proportion of income received from the exploitation of IP is distributed among the relevant staff involved in the exploitation, including: royalties and licensing payments, sale of IP, advance/milestone payments.
	Number of awards	19	19	
	Total value of awards	£80,830	£33,229	

**Knowledge exchange efficiency: transit of knowledge flows
(c) Commercialisation of research [Output 2]**

Quality

- Longer term excellence demonstrated through the assessment of final reports and evaluation studies.

The external evaluation of the two Bioscience Business Plan Competitions undertaken in 2003 was updated by the same contractors in autumn 2006. The 2006 Review again confirms the very positive impact the Business Plan Competition has had on enhancing the commercial knowledge and understanding of participants and of stimulating them to commercially exploit their research outputs. The review showed that:

- The competitions significantly increased the attractiveness of commercial exploitation for 88% of respondents and better equipped all but 5% of them to better identify research outputs with commercial potential.
- The commercial activity of the 41 teams who participated in the first three competitions was investigated in detail where:
 - Commercialisation for four teams has seen their IP acquired by and absorbed into other organisations. All but three of the remainder remain in existence as of September 2006, with 13 businesses being commercially active. It is estimated that these companies currently employ between 50 and 52 full-time equivalent employees.
 - As of 30 June 2006 the total R&D spend of the 13 active respondent companies was £5.34M. Over the same period they had secured £5.66M of funding. Performance across all key metrics was heavily skewed towards four key companies whose performance significantly outclasses that of the other respondents. Those four companies have secured investment from knowledgeable investors/business angels and recruited experienced commercial management.
 - The proportion of investment by regionally-based venture funds and RDAs has almost doubled since the 2003 report, to stand at 26% of total investment as at June 2006. Grant funding has been the second most important source, accounting for 17% of the total raised.

External evaluation of the Follow-on Fund was commissioned in April 2007 to report autumn 2007.

- For enterprise fellowships and YES through career progression of individuals involved.

A longer term review highlighting the career progression of past participants in YES was completed in 2006 in collaboration with the University of Nottingham (UNIEI). The Review showed that:

- 3 entrepreneurs, past participants of Biotechnology YES, have raised over £5M of equity investment for their ventures
- 43% of participants have gone on to work in the private sector
- 77% of participants now working in private industry said the competition helped them gain their current position
- 12% of participants are working in technology transfer or IP management roles.

- Assessment of feedback from participants in YES/BPC and IP workshops as measure of increased commercial awareness

- Ensure all proposals supported through Business Plan Competition, Follow-on Fund, SBRI, and Enterprise Fellowships assessed as excellent (both science and commercial) by appropriate assessment panel.

Knowledge exchange efficiency: transit of knowledge flows				
(d) Cooperative training [Output 2]				
Summary data:			2005-06	2006-07
Total value of spend on education and training activities involving industry			£11.6M	£11.6M
Metrics/indicators	Current data			Comments
CASE/Industrial CASE		2005-06	2006-07	CASE and Industrial CASE awards fund top quality bioscience graduates to undertake a three-year programme of research (leading to a PhD) on a subject selected and supervised jointly by academic and industrial partners.
	Number of studentships awarded	251	253	
Modular Training for Industry		2005-06	2006-07	The Modular Training for Industry Programme provides up to date, industrially-relevant technical training for graduates working in industry. Support is provided for the development of individual training modules.
	Number of awards	10	8	
	Total value of awards	£298k	£182k	
	Number of companies supported	67	51	

BBSRC-sponsored institutes (figures for this section from annual returns)				
Metrics/indicators	Current data			Comments
CASE/Industrial CASE		2005-06	2006-07	
	Number of CASE awards	49	49	
	Number of Industrial CASE awards	9	10	

Quality
<ul style="list-style-type: none"> • % BBSRC funded PhDs leaving for the private sector: 25% (see also Newly trained people, page 5) • For MTI ensure delegate attendance and quality of outcomes of modules evaluated by assessment Panel. Evaluation of the MTI scheme completed autumn 2006. The Report can be found at www.bbsrc.ac.uk/business/cpd/mti06.pdf. In summary, the MTI evaluation was very positive and showed good evidence that highly industrially relevant courses had been funded with a good level of industrial involvement. Case studies highlighting successful courses were also identified. • All Industrial CASE awards to provide an excellent training environment for postgraduate students. This will be ensured through assessment of Industrial CASE proposals by the Studentships and Fellowships Panel. • All Modular training courses supported to be of high quality and meeting industrial need as assessed by an expert panel. Assessment Panel to ensure all supported modules have significant industrial involvement. Evaluation completed autumn 2006 (see above).

Knowledge exchange efficiency: transit of knowledge flows			
(e) Interaction with business [Output 2]			
Metrics/indicators	Current data		Comments
		2005-06	2006-07
User and industry representation			
	<i>Council/Boards:</i>		
	Users	29	33
	Industry	21	22
	<i>Research Committees:</i>		
	Users	15	10
	Industry	12	10
	<i>Strategy Panels:</i>		
	Users	33	27
	Industry	21	15

BBSRC-sponsored institutes (figures for this section from annual returns)			
Metrics/indicators	Current data		Comments
		2005-06	2006-07
User and industry representation on institute governing bodies and other policy committees			
	<i>Governing body:</i>		
	Users	57	60
	Industry	34	27
	<i>Policy committees:</i>		
	Users	44	46
	Industry	32	27

Knowledge exchange efficiency: transit of knowledge flows			
(f) People exchanges [Output 2]			
Summary data:		2005-06	2006-07
Total spend on activities involving the interchange of people and knowledge between the science base and industry		£0.2M	£0.4M
Metrics/indicators	Current data		Comments
Annual spend on interchanges between the science base and industry		2005-06	2006-07
	Number of awards	6	7
	Total value of awards	£180k	£262k
Knowledge Transfer Partnerships		2005-06	2006-07
	Number of programmes	7	11
	Total expenditure	£45k	£66k
BBSRC encourages the flow of people and knowledge between science and industry by running a flexible interchange scheme between industry and academe.			
KTPs enable collaborative partnerships between the bioscience base and industry. They serve as a mechanism to transfer knowledge and to develop graduate and postgraduate personnel for industrial careers.			

BBSRC-sponsored institutes (figures for this section from annual returns)			
Metrics/indicators	Current data		Comments
Interactions between institutes and industry		2005-06	2006-07
	<i>Staff exchanges:</i>		
	Number of staff exchanged with industry		
	Number of industrial staff exchanged with institutes	2	
	<i>Staff industrial consultancies:</i>		
	Number of staff involved	69	65
Number of industrial customers	60	94	
Institute staff working in industry, and industrialists working in institutes, which result in a significant outcome or output. Institute staff also carry out formal consultancies, for which the institute receives a financial return.			

Quality
<ul style="list-style-type: none"> Ensure quality of outcomes through the assessment of Final Reports and evaluation studies. An external evaluation of BBSRC-supported KTP Programmes was undertaken in 2005-06 in collaboration with Momenta and with co-funding from DTI. The Report of the evaluation was considered by the BBSRC Bioscience for Industry Panel and KTP Management Board in March 2006. The Report indicates that life science companies benefit less from KTP as compared to other sectors, thus supporting BBSRC plans to reduce Council investment in this Programme. The Report can be found at www.bbsrc.ac.uk/about/pub/reports/KTP_Evaluation_2006.pdf All interchanges supported to be of high quality as determined through peer review against the criteria for the scheme.