

# ECONOMIC IMPACT REPORTING FRAMEWORK



Report for 2007/08

October 2008

Images: The Environment Centre Wales, which opened in February 2008. This is a joint venture between NERC's CEH and Bangor University and received the highest environmental assessment rating for its design and construction.

**This page is intentionally blank.**

**NATURAL ENVIRONMENT RESEARCH COUNCIL**

**Economic Impact Reporting Framework**

Report for 2007/08

October 2008

An annex to the NERC Annual Delivery Report for 2007/08

## **NERC Economic Impact Reporting Framework: Report for 2007/08**

This is the third annual Economic Impact Reporting Framework (EIRF) report published by NERC. These reports were implemented across all Research Councils in 2005 and form part of the economic impact reporting framework managed by the Department for Innovation, Universities and Skills. More information on the EIRF can be found at: <http://www.berr.gov.uk/dius/science/science-funding/framework/page9306.html>

The economic impact reporting framework contains data on selected aspects of NERC performance relevant to the government's objectives for the UK science base:

1. Overall economic impacts
2. Knowledge generation (stock of publicly available knowledge)
3. Knowledge generation (human capital)
4. Investment in the research base and innovation
5. Framework conditions (public engagement)
6. Framework conditions (financial sustainability)
7. Knowledge exchange efficiency

The majority of metrics originate from the NERC Output Framework report 2005/06, parts 1 and 2. Hence, this report shows, where possible, data for 2005/06, 2006/07 and 2007/08.

The Council's EIRF report should be read in conjunction with its 2007/08 Delivery Plan Report and Annual Report, which provide a comprehensive summary of achievements over the period.

### Successes reported for 2007/08

Highlights from the NERC Economic Impact Reporting Framework for 2007/08 include:

- A university spin-out arising from a 1999 NERC-funded PhD has been sold for \$275m
- Two trading spin-out companies have been established out of NERC Research Centres
- Two major licence agreements were signed and 10 patents filed
- There were 6,960 publications from NERC funded research, growth of +5% in two years
- 49% of refereed ISI journal publications were internationally co-authored, up +11% in two years
- Advice was given to government by the environmental sciences community on 957 occasions in relation to NERC-funded science, an increase of +28% in two years
- Gershon cumulative efficiency savings totalled £26.77m

## 1. Overall economic impacts

- 1.1 This category includes evidence on how NERC delivers economic benefits at the aggregate economy level, by way of increased productivity and improved welfare. Welfare can be considered to include health, environmental, social and national security outcomes.
- 1.2 Impacts will grow and mature over time. However, substantial time lags from initial investment to overall economic impacts make performance measurement and reporting difficult. Case studies can be a useful method for exemplifying the kinds of impacts being achieved out of NERC-funding. Outputs from evaluations focussed on knowledge exchange activities are given below. Further Knowledge Exchange examples are given within the NERC Annual Report 2007/08, pp. 19-23, <http://www.nerc.ac.uk/publications/annualreport/2008/> .
- 1.3 An example of economic impact is the MTEM company which was sold in June 2007 to Petroleum Geoservices Ltd for \$275m. It originated as a spin-out from Edinburgh University. It is not always easy or indeed possible to identify and attribute economic impact from NERC-funding in HEIs. However, in this instance MTEM is based on patented technology directly arising from a NERC-funded PhD.

<b>1. Outputs from Evaluations of NERC research, plus business performance reviews and knowledge exchange surveys</b>
<p>Knowledge Exchange team conducting investigative visits to HEIs, eg Edinburgh, Leeds and Manchester as well as the London Development Agency.</p> <p>Major KE example identified at Edinburgh:</p> <p>Spin-out company MTEM sold in June 2007 to Petroleum Geoservices Ltd for \$275m. Company was based on patented technology directly arising from NERC-funded PhD "Detection of reservoir fluid movements with time-lapse multichannel transient electromagnetic (MTEM) data" undertaken between 1999 and 2002 in the School of GeoSciences at the University of Edinburgh.</p> <p>Development milestones included support from Scottish Enterprises proof of concept scheme followed by a £7.4m venture capital injection.</p>
<b>2. Periodic evaluations of knowledge exchange activities across all its funding mechanisms</b>
<p><u>Changes to KT Call following review in 2006/07:</u></p> <p>The call is now more flexible with no specific scheme within it (eg networks and good ideas) and there are two rounds each year. Assessment criteria refocussed from science excellence to potential economic impact.</p> <p><u>Affiliate college review 2007:</u></p> <p>The Peer Review College provides assessments, advice and guidance across the full spectrum of NERC's research investments and research. Affiliate membership of the college is for those who use the results of research in some way, commission or oversee research activities or undertake policy-making or regulatory activities.</p> <p>A review of the affiliate college has led to clearer guidelines for assessment of potential economic impact. Although produced for KT Call, these have wider relevance in assessment of responsive mode grant proposals. Affiliate college members are to have a strong role in the assessing KE plans for responsive mode grants because of their understanding of the user community.</p>

## 2. Investment in the research base and innovation

- 2.1 The investment made by government through the Department for Innovation, Universities and Skills in NERC is denoted as the Departmental Expenditure Limit. Over the three years 2005/06 to 2007/08, covering the 2004 Spending Review period, this investment amounted to £1.13bn. NERC additionally generated £144m of other income, comprising mainly external income generated through its Research Centres. This section provides a brief overview of how that investment has been distributed.
- 2.2 Metric 4 shows the allocation of the NERC budget by the NERC strategic science themes and by the NERC funding streams. This is a new basis of reporting for 2007/08. More detail on the strategic science themes can be found in the NERC Strategy 2007- 2012, *Next Generation Science for Planet Earth*. [www.nerc.ac.uk/about/strategy/ngscience.asp](http://www.nerc.ac.uk/about/strategy/ngscience.asp)

3. Value of NERC Departmental Expenditure Limit				
	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>	Other income:
Resource:	£323.5m	£315.6m	<b>£342.2m</b>	2005/06 = £48.3m
Capital (includes capital grants to HEIs):	£49.7m	£49.7m	<b>£46.7m</b>	2006/07 = £47.1m
Total:	£373.2m	£365.3m	<b>£388.9m</b>	2007/08 = <b>£48.3m</b>
4. Expenditure within and across strategic science themes and funding streams				
Allocation of budget by the NERC strategic science themes:				
			<u>2007/08</u>	
Climate system			20%	
Biodiversity			22%	
Sustainable use of natural resources			10%	
Earth systems science			21%	
Natural hazards			9%	
Environment, pollution and human health			10%	
Technologies			8%	
Allocation of budget by the NERC funding streams:				
National Capability			48%	
Research Programmes			20%	
Responsive Mode			23%	
Knowledge Exchange			4%	
Efficiency			5%	

- 2.3 Metrics 5, 6 and 7 address how NERC has invested in multidisciplinary research. NERC set itself specific targets to provide new trained people in multidisciplinary research areas related to climate change and to build a multidisciplinary community to address environment and human health. Metric 5 shows NERC's contribution to cross-Council programmes.
- 2.4 Metric 6 shows the spend in those programmes on a multidisciplinary area or which specifically promote multidisciplinary research. However, NERC directed programmes and research within NERC's Centres are inherently multi-disciplinary. Total expenditure on Directed Programmes 2007/08 = **£27.8m**. Expenditure on Research and Collaborative Centres research programmes 2007/08 = **£66.3m** (programme spend only) or **£136.9m** (including supporting infrastructure).
- 2.5 Metrics 8 and 9 show the investment in PhD and Masters training in support of health of disciplines. Training outputs are shown in section 4: Knowledge generation (human capital). Expenditure on PhDs training in 2007/08 was £23.0m, an increase of £2.4m or +12% in two years. Masters includes MSc and MRes courses. Masters training expenditure in 2007/08 was £4.0m, an increase of £0.5m or +14% in two years.

<b>5. Funding into cross-Council Programmes {value and % total budget}</b>											
2005/06 = £9.5m; 2.4% 2006/07 = £10.2m; 3.0% (adjusted) 2007/08 = <b>£9.6m; 2.5%</b>	2007/08 data covers the following cross-Council activities: Post Genomics, e-Science, RELU, Environmental Mathematics and Statistics, the Tyndall Centre, Environment and Human Health and Environmental Nanotechnology.  2006/07 figure adjusted to report on same basis as other years by excluding contribution for FAAM.										
<b>6. Funding of programmes which are focussed on a multidisciplinary area or are specifically to promote multidisciplinary research or training {value and % total budget}</b>											
2005/06 = £0.2m; 2.6% 2006/07 = £9.0m; 2.5% 2007/08 = <b>£11.5m; 3.0%</b>	2007/08 data includes the following directed programmes: QUEST, RAPID, IODP, FREE.										
<b>7. Investment in grants involving researchers from more than one department discipline</b>											
	<table border="1"> <thead> <tr> <th></th> <th><u>2006/07</u></th> <th><u>2007/08</u></th> </tr> </thead> <tbody> <tr> <td>Spend on multidisciplinary grants</td> <td>£24.3m</td> <td><b>£23.3m</b></td> </tr> <tr> <td>Proportion of grant spend going towards multidisciplinary grants</td> <td>47%</td> <td><b>39%</b></td> </tr> </tbody> </table>		<u>2006/07</u>	<u>2007/08</u>	Spend on multidisciplinary grants	£24.3m	<b>£23.3m</b>	Proportion of grant spend going towards multidisciplinary grants	47%	<b>39%</b>	Based on a total (responsive and directed) grant expenditure:  2006/07 = £51.9m 2007/08 = £59.1m
	<u>2006/07</u>	<u>2007/08</u>									
Spend on multidisciplinary grants	£24.3m	<b>£23.3m</b>									
Proportion of grant spend going towards multidisciplinary grants	47%	<b>39%</b>									
<b>8. Expenditure per annum on PhD training</b>											
2005/06 = £20.6m 2006/07 = £21.6m (adjusted) 2007/08 = <b>£23.0m</b>											
<b>9. Expenditure per annum on Masters training</b>											
2005/06 = £3.5m 2006/07 = £3.7m (adjusted) 2007/08 = <b>£4.0m</b>											

### 3. Knowledge generation (stock of publicly available knowledge)

3.1 The stock of publicly available knowledge can in part be quantified through the volume of publications being generated by NERC-funded research. Furthermore, journal papers can give a indication of quality where they are peer reviewed. Through analysis of the number of citations papers receive their impact on the national and international research communities can be gauged. Citations analysis of a body of research can also be aggregated to give a quantitative assessment of its impact.

3.2 Metric 10 gives publications and citations data for the UK environmental sciences.

- The UK ranks 2nd amongst G8 nations with a 10% share of publications.
- The UK ranks 2nd on the share of citations received with its share growing to 13.9% in 2007, **an increase of +8%**.
- The UK's score for citations impact of 1.41 in 2007, up from 1.28 recently, shows an **increase of +10%**, with a world average impact score equal to 1. Consistent improvement by the UK, Germany and the Netherlands has been bypassed by a sharp rise in impact across Scandinavian countries. An unusual rise in French impact puts UK into 3rd place in the G8 for 2007.

These data have been extracted from a report produced by Evidence Ltd for DIUS on the *International comparative performance of the UK research base, July 2008*, pp. 24, 36 and 50.

The report covers a number of research domains; NERC-funded research mostly falls in the environmental domain, but physical sciences and mathematics are also relevant to NERC. G8 comparator group is UK, Canada, France, Germany, Italy, Japan, Russia and USA. 5 years data 2002 - 2006 are averaged for consistency. 2007 data are given to show trend, but are more susceptible to annual variation.

10. Citations: Number, world share and international comparative impact			
<u>UK environmental sciences:</u>	<u>2002 - 2006</u>	<u>2007</u>	<u>Current relative to recent</u>
Share of world ISI journal papers	10.0%	9.8%	-2%
Rank within G8	2nd	2nd	=
Rank within Group of 26 countries	2nd	2nd	=
No. of citations received	47,770	3,322	
Share of world citations	12.9%	13.9%	+8%
Rank within G8	2nd	2nd	=
Rank within Group of 26 countries	2nd	2nd	=
Citation impact score	1.28	1.41	+10%
Rank within G8	2nd	3rd	down 1
Rank within Group of 26 countries	7th	9th	down 2

- 3.3 NERC collects its own data on publications produced from NERC funding and the data is reported under metrics 12 to 15. The total number of NERC -funded publications in 2007 was 6,960, **increasing +5%** in two years. The number of NERC-funded ISI journal publications in 2007 was 4,035, **increasing +6%** in two years.
- 3.4 Metric 13 shows that the shares of total publications by funding mode remain fairly stable. It is NERC policy to maintain support for Responsive Mode in real terms, and this is reflected in sustained publication volumes. Infrastructure publications rose in 2006 due to better reporting; however, infrastructure, still under reports the use made of services and facilities by other modes in generating their publications.

11. Total no. of publications from NERC funding			
2005 = 6,618 2006 = 6,884 2007 = <b>6,960</b>	Publications data collected by calendar year. Total publications includes all journals (ISI, refereed, non-refereed), all books (written, edited, book chapters), maps and multimedia. Some publications may be double counted if attributed to more than one partner or funding mode.		
12. No. of publications in ISI (Thomson-Reuters) journals from NERC funding			
2005 = 3,784 2006 = 3,910 2007 = <b>4,035</b>	These are refereed papers in journals listed on the Institute for Scientific Information (ISI) database held by maintained by Thomson Reuters.		
13. No. of NERC-funded publications in priority areas			
Publications split by funding mode:			
	<u>2005</u>	<u>2006</u>	<u>2007</u>
Responsive:	1,784 (27%)	1,677 (24%)	1,716 (25%)
Core Strategic:	3,334 (50%)	3,440 (50%)	3,296 (47%)
Directed:	744 (11%)	792 (12%)	899 (13%)
Fellows:	410 (11%)	470 (7%)	510 (7%)
Infrastructure:	236 (4%)	501 (7%)	539 (8%)
Unclassified:	110 (2%)	4 (0%)	-
<b>Total:</b>	<b>6,618</b>	<b>6,884</b>	<b>6,960</b>
14. No. of NERC-funded publications per £ million NERC			
2005/06 = 20.5 (ie £48.9k per publication) 2006/07 = 21.8 (ie £45.9k per publication) 2007/08 = <b>20.4</b> (ie <b>£49.1k</b> per publication)	Data calculated on all publications 2007/DEL total resource 2007/08. 2005/06 and 2006/07 figures adjusted since DEL resource (given in metric 1) was restated.		

- 3.5 Citations and bibliometric analyses cannot address all aspects of research performance alone. Over the last year a number of research programmes have been evaluated to determine performance against their business objectives, the achievements to date, lessons learned and good practice that can be shared. Highlights are given under metric 15. The full reports and their accompanying management responses can be downloaded from the NERC website at [www.nerc.ac.uk/about/perform/recent-eval.asp](http://www.nerc.ac.uk/about/perform/recent-eval.asp)

<b>15. Outputs from Evaluations of NERC research</b>
<p>Major evaluations reporting in 2007/08:</p> <p><u>Evaluation of the Ocean Margins LINK Programme</u></p> <p>The independent panel concluded that overall the programme had been excellent value for money. The science was high quality, and led to a range of important outputs, including the establishment of successful collaborations between academia and industry.</p> <p><u>Mid-term evaluation of the QUEST Programme</u></p> <p>The independent panel commended NERC for its foresight and courage in launching such an important and challenging programme. They concluded that the programme is generally on track, and that there have already been some major achievements including research outputs, the development of an Earth system science community, and engagement with stakeholders. The panel identified a number of issues potentially affecting performance which have been addressed by the QUEST Programme Board.</p> <p><u>Evaluation of aspects of the UK Energy Research Centre</u></p> <p>This survey of UKERC participants and user organisations (public sector, private sector, NGOs, media) found that UKERC has made good progress towards achieving its objectives, including building a strong profile with major government departments, informing government policy (eg the Energy White Paper), building interdisciplinary research capacity, and strengthening the energy research community.</p>

## 4. Knowledge generation (human capital)

- 4.1 A strong supply of skilled people is important to the long-term health of the research base and to improve productivity for the UK economy as a whole. This section gives metrics on how NERC is contributing to ensuring that the UK has sufficient trained environmental scientists.
- 4.2 Data on functional sustainability is produced biannually by the Higher Education Statistics Agency (HESA) and is shown in metric 16. There is a new basis for reporting for 2006/07 based on academic cost centres. Data are shown for selected disciplines relevant to NERC – Earth, Marine and Environmental Sciences being the most relevant. Age splits apply for those staff who are wholly institutionally financed. Further information on functional sustainability and skills gaps is given in the third Research Councils Report for 2007 on the Health of Disciplines for the UK Research Base Funders' Forum found at [www.rcuk.ac.uk/aboutrcuk/publications/corporate/hod.htm](http://www.rcuk.ac.uk/aboutrcuk/publications/corporate/hod.htm)

### 16. Functional Sustainability (ability of the research base to renew itself):

#### Age profile of permanent academic staff in HEIs by discipline

HESA data for 2006/07 (academics FTE):

<u>Discipline</u>	<u>staff</u>	<u>% under 35</u>	<u>% over 55</u>
Earth, Marine and Environmental Sciences:	2,491	17	27
Biosciences:	9,882	20	21
Chemistry:	3,174	23	18
Mathematics:	2,922	22	32
General Engineering:	2,856	15	30
Geography:	1,613	24	20
Physics:	3,569	22	23

- 4.3 Metrics 17 to 23 address NERC's investment in postgraduate training. The stock of NERC-funded PhDs is 969, for 2007/08.
- 4.4 The number of Masters funded in 2007/08 was 371. The number of Masters students funded has **increased by 36 or +10%** in two years. The number of studentships are static at 290, but number of students funded has increased, due to an increase by HEIs in giving 50% awards.

<b>17. PhD submission rates</b>	
PhD 2000: 87% (in 5yrs) PhD 2001: 85% (in 5yrs) PhD 2002: <b>90%</b> (in 5yrs)  PhD 2003: <b>88%</b> (in 4 yrs)	2003 figures based on 248 returns from 289 eligible starts.
<b>18. Masters submission rates</b>	
Masters submissions within 18 months:  Courses started in 2003 = 91% Courses started in 2005 = <b>95%</b> (restated)	2005 figures are the latest available data.
<b>19. No. of PhDs newly funded</b>	
2005/06 = 328 2006/07 = 321 2007/08 = <b>332</b>	For wholly NERC funded studentships. Excludes Dorothy Hodgkin Postgraduate Awards. Excludes studentships and awards on cross-Council programmes (eg RELU) and NERC/ESRC studentships, where NERC is not the lead Council.
<b>20. Total no. of PhDs funded</b>	
2005/06 = 1,032 2006/07 = 996 2007/08 = <b>969</b>	For wholly NERC funded studentships. Excludes Dorothy Hodgkin Postgraduate Awards. Excludes studentships and awards on cross-Council programmes (eg RELU) and NERC/ESRC studentships, where NERC is not the lead Council.
<b>21. No. of Masters students funded</b>	
2005/06 = 335 2006/07 = 386 2007/08 = <b>371</b>	Masters includes MSc and MRes.
<b>22. Distribution and type of studentships funded in relation to strategic priorities</b>	
Current PhD studentships awarded through Directed Programmes  2006/07 = 11% 2007/08 = <b>8.3%</b>	First data 2006/07. Reporting on wholly NERC funded studentships only. The 8.3% represents 80 PhD studentships apportioned to NCAS, Earth Observation, UKPopNet, RAPID, Environmental Genomics.
<b>23. No. of students (PhDs and Masters) funded per £k administrative costs</b>	
2006/07 = 14 2007/08 = <b>16</b>	Based on £82k office costs for 1,340 PhD and Masters studentships. Second year of reporting on this basis.

- 4.5 NERC not only funds training of environmental scientists, but it also employs them through its Research Centres and some of its Collaborative Centres. Metrics 24 to 27 relate to NERC's employment role.
- 4.6 Total no. of NERC staff (including Research centre staff) 2007/08 = 2,678, **a reduction of 58 or 2%** in two years. Recruitments and departures have been on the rise for the past two years as the move to a joint Council Shared Service Centre and CEH restructuring progress, see metric 24. Note, recruitments include casual contracts, but exclude students. All types of leavers (retirements, voluntary and non-voluntary leavers) have been counted for purposes of calculating retention rate.
- 4.7 The number of active researchers employed by NERC was 1,174 in 2007. CEH restructuring has contributed to the NERC Researchers headcount **decreasing 133 FTE or -10%** over past two years; see metric 26.
- 4.8 The number of post-doctoral research assistants employed on NERC research grants was 1,300 in 2007/08, an **increase of +6%** in two years; see metric 27. Note, NERC has no control over the no. of PDRAs employed on grants. The increase correlates with a rise in the no. of grants funded.

<b>24. Sustainability: Recruitment, departures and retention rates for NERC employees</b>			
	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>
Recruitments in year:	259	316	<b>456</b>
Departures in year:	356	383	<b>529</b>
Retention rate in year:	87%	86%	<b>80%</b>
<b>25. Sustainability: Diversity of all NERC staff</b>			
Percentages	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>
Asian/Asian British:	0.62	0.64	<b>0.58</b>
Black/Black British:	0.33	0.30	<b>0.31</b>
Chinese:	0.70	0.64	<b>0.54</b>
Mixed:	0.29	0.30	<b>0.35</b>
Other:	0.58	0.56	<b>0.62</b>
Unknown:	6.91	8.73	<b>8.39</b>
White:	90.57	88.83	<b>89.20</b>
<b>26. No. of active researchers employed by NERC</b>			
Full-Time-Equivalent:	2005/06 = 1,268 2006/07 = 1,197 2007/08 = <b>1,135</b>	For directly employed researchers	
Headcount:	2005/06 = 1,307 2006/07 = 1,240 2007/08 = <b>1,174</b>		
<b>27. No. of post-doctoral research assistants employed on NERC research grants</b>			
2005/06 = 1,216 2006/07 = 1,227 2007/08 = <b>1,300</b>			

4.9 A major contribution to functional sustainability is made through the NERC fellowship scheme. The fellowship scheme provides opportunities for outstanding environmental scientists to devote their time to research, develop their research careers and produce work of international importance. NERC funded 100 Fellows in 2007/08. The focus of these fellowships has been mapped for the first time to the NERC strategic science themes within the new NERC strategy 2007- 2012, *Next Generation Science for Planet Earth*. 45 Fellows map to a single theme, 34 map across two-themes, 21 map across more than two themes.

<b>28. Total no. of Fellows funded</b>		
2005/06 =	98	
2006/07 =	97	
2007/08 =	<b>100</b>	
<b>29. No. of Fellows in priority areas</b>		
Total NERC Fellows by the NERC strategic science themes:		
	<u>2007/08</u>	
Climate system		14
Biodiversity		44
Sustainable use of natural resources		5
Earth system science		23
Natural hazards		8
Environment, pollution and human health		4
Technologies		2
<b>30. Diversity of Fellows</b>		
Percentages	<u>2006/07</u>	<u>2007/08</u>
white (British)	55	<b>59</b>
white (Irish)	1	<b>1</b>
white (Other)	25	<b>29</b>
Asian/Asian British	2	<b>1</b>
Mixed	2	<b>1</b>
unknown/not disclosed	15	<b>9</b>
Based on optional reporting via Joint electronic Submissions (Je-S) system. Second year of reporting on this basis.		

## 5. Framework conditions (public engagement)

- 5.1 Framework conditions describe the social and policy environment within which research and innovation operates. This section addresses how NERC contributes to one of these conditions: public engagement.
- 5.2 Metric 31 shows trends in public attitudes to science. The Research Councils worked collectively through the RCUK science in society unit to deliver the third UK Public Attitudes to Science Survey (funded by DIUS). Published in January 2008 it shows increased interest and a more positive attitude by the public in science, science policy and environmental issues. Previous surveys published by OSI/MORI in 2005 and by the Wellcome Trust in 2000 provided the comparative data.

31. Sustainability: Survey trends in public attitude to science issues	
<p>Selected data from Public Attitudes to Science Survey 2008:</p> <p>“I am amazed by the achievements of science”: Agree = <b>82%</b> (2008), up from 75% (2000); <b>change +7%</b></p> <p>“Science is such a big part of our lives we should all take an interest”: Agree = <b>79%</b> (2008) up from 74% (2000); <b>change +5%</b></p> <p>Interested in environmental issues: Agree = <b>89%</b> (2008) up from 82% (2000); <b>change +7%</b></p>	<p>Data for environmental issues question included both those moderately and very interested.</p>

### Cross-Council activities delivered through RCUK science in society unit

- 5.3 The Research Councils spent £1.2m collectively through the RCUK science in society unit in 2007/08. This funded a range of initiatives including public dialogue, national school enrichment schemes which support the DCSF STEM programme objectives (such as Researchers in Residence, and joint activity at science and arts festivals to open up RC-funded work to a broader audience).
- 5.4 The Research Councils have invested significantly in supporting public engagement within HEIs through the development of the Beacons for Public Engagement scheme (£9.2m over four years, in collaboration with the funding councils and the Wellcome Trust). This initiative will pilot ways to improve rewards, recognition and support for academics undertaking public engagement.
- 5.5 The RCUK public dialogue on energy research provided valuable insight into the public's priorities for energy research, and has led to the development (in progress) of a guide for researchers on what the public considers important in this area of research.

- 5.6 Metrics 32 to 36 below give an indication of the activities directed towards public engagement, both at the NERC corporate level and amongst the NERC research community. Public engagement activities are difficult to define consistently and accurately. Figures for the NERC-funded research community are published for the first time in this year. These should be treated with caution, but do give a measure of the overall volume of activity taking place.
- 5.7 Metric 33 shows staff days spent on science in society activities across NERC (corporate and Research Centre teams) has **increased by 458 days or +8%** in two years.
- 5.8 The number of events organised by the NERC community is published for the first time at metric 34. Data from NERC Research Outputs Database (ROD), reporting on events organised by NERC Centres or by NERC grant holders. Total no. of public focussed events has **increased by 445 or +18%** in two years.

<b>32. Sustainability: Expenditure on science in society activities</b>			
<u>For NERC corporate team</u>  Recurrent expenditure:  2005/06 = £230k 2006/07 = £218k 2007/08 = <b>£278k</b>		Figures for corporate team in Swindon Office, calculated as 77% of total recurrent expenditure (split between science in society and corporate activities).	
<b>33. Sustainability: No. staff days spent on science in society activities</b>			
<u>For NERC corporate team</u>  Staff days on science in society activities:  2005/06 = 1,204 days 2006/07 = 1,280 days 2007/08 = <b>1,299 days</b>		Corporate data calculated as no. of FTEs in post reduced to 77% (being the science in society to corporate split).  Research and Collaborative Centre data taken from NERC Research Outputs Database (ROD). Covers work dedicated to events, producing written materials, media activities, other activities (eg Nuffield scholarships).	
<u>Within Research and Collaborative Centres</u>  Staff days on science in society activities:  2005/06 = 4,723 days 2006/07 = 4,974 days 2007/08 = <b>5,086 days</b>			
<b>34. No. of events focussed on engagement with the public</b>			
Events organised by NERC community:			
	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>
Open Days/Exhibitions	477	612	<b>688</b>
Lectures/Talks/Debates	1,538	1,654	<b>1,607</b>
School Activities	656	741	<b>801</b>
Total events	2,651	3,007	<b>3,096</b>

<b>35. No. of NERC events focussed on public participation and engagement</b>	
<p>NERC corporately organised public events:</p> <p>2005/06 = 14 2006/07 = 13 2007/08 = 11</p>	<p>Relates to public events organised specifically by Swindon Office. This year's highlights included the formal launch of NERC's new strategy: <i>Next Generation Science for Planet Earth (2007 - 2012)</i>.</p>
<b>36. No. and details of activities organised or participated in by the NERC Science and Society Team in response to emerging issues of public concern</b>	
<p>Event - <i>Climate Science: Communicating the uncertainties</i> - organised by NERC and the Parliamentary Office for Science and Technology. Over 120 policy makers, leading climate scientists and representatives from the risk based insurance industry and the media world explored some of the issues surrounding the communication of climate science at Portcullis House, in London, in November 2007.</p>	<p>A list of NERC organised events aimed at the general public, young people, policy makers, business and schools can be found at: <a href="http://www.nerc.ac.uk/events">www.nerc.ac.uk/events</a></p>

## 6. Framework conditions (financial sustainability)

- 6.1 Ensuring that future research capability is maintained requires adequate and sustained investment in research infrastructure. Robust financial management is expected from universities and public laboratories to achieve sustainable levels of research activity and investment.
- 6.2 Metric 37 shows the NERC contribution to the RCUK Efficiency savings. By 2007/08 annual efficiency savings of £26.77m have been achieved. The consistent trend of increasing savings in each category, over the three years covering the Spending Review period 2005 - 2008, shows NERC contributing towards the success of the whole RCUK Efficiency Delivery Project meeting its savings targets across all Research Councils.
- 6.3 Specific examples of NERC savings include the restructuring of the Centre of Ecology and Hydrology, resulting in the closure of sites at Dorset and Banchory; reprioritisation of NERC funding to meet areas of increased strategic importance, such as the integrated marine sciences programme Oceans 2025; and securing and leveraging funding from a range of commercial partners.
- 6.4 NERC provides long-term support for the environmental sciences in the form of national capability. Much of this delivered through its Research and Collaborative Centres. This section looks at national capability investments in terms of the additional provisions made through Services and Facilities, dedicated Data Centres and ships.

<b>37. NERC contribution to the Efficiency metrics (as finalised by the RCUK Efficiency Delivery Project Board) which cover reducing expenditure on administration, reprioritisation of spend, increased efficiency of research institutes, and growing the level of co-funding</b>			
<u>For the Spending Review period 2005 - 2008</u>			
	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>
Reducing the proportion of Research Council expenditure attributable to administration costs	£0.22m	£0.23m	<b>£0.28m</b>
Demonstrating effective reprioritisation of programme spend	£2.38m	£5.06m	<b>£14.72m</b>
Increasing the efficiency of Research Council institutes	£2.25m	£4.16m	<b>£5.13m</b>
Growing the level of co-funding of research	£2.47m	£5.21m	<b>£6.63m</b>
<b>Total annual efficiency saving:</b>	<b>£7.32m</b>	<b>£14.66m</b>	<b>£26.77m</b>
<b>38. Sustainability: Value of Research Council capital investment in facilities, ships, research and data centres</b>			
New capital investment:	2005/06 = £32.0m (adjusted) 2006/07 = £36.8m 2007/08 = <b>£37.0m</b>		Excludes capital grants paid to HEIs = £11.6m in 2007/08.
Net book value capital assets: (adjusted)	2005/06 = £264.3m 2006/07 = £297.4m 2007/08 = <b>£333.4m</b>		

<b>39. Investment in and details of new facilities entering service as a result of NERC funding</b>			
<p>2005/06: Two new nodes of Molecular Genetics Facility established with allocations of £350k pa, mostly recoverable from grants (restated data)</p> <p>2006/07: No new facilities <i>RRS James Cook</i> research vessel; total cost = £40m</p> <p>2007/08: Two additional nodes of the Geophysical Equipment Facility were established as 'pay-as-you-go' from research grants; costs are cruise dependent and were £30k in-year.</p>			
<b>40. Usage of NERC supported facilities by academia</b>			
No. of users by type (across all Services and Facilities):			
	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>
HEI academic	463	444	481
NERC Research Centre	87	95	109
NERC fellow	15	14	9
NERC PhD	139	136	225
Other PhD	125	202	123
Commercial	192*	159	142
Total	1,021	1,044	<b>1,095</b>
Based on use of 23 NERC Services and Facilities plus aircraft facilities. NERC ships are not included.			
* 2005/06 Commercial users data restated.			
<b>41. National and international standing of NERC funded strategic facilities through rolling review programmes</b>			
<p>Outcomes from Services Review Group:</p> <p>2006: recommended renewal for 5 of 7 facilities considered 2007: recommended renewal of all 5 facilities considered 2008: recommended renewal of all 8 facilities considered</p>			<p>In all cases, the high quality and outputs compared very favourably with international benchmarks.</p>
<b>42. Details of facilities funding ceased</b>			
<p>2005/06: No facilities ceased.</p> <p>2006/07: Baseline funding of Ecotron (£260k pa) ceased.</p> <p>2007/08: Baseline funding for ICP facility (£279k) ceased.</p>			<p>OUUSF (£140k pa), initially to be sunset, was revived following a NERC review.</p>
<b>43. Change in Research Council spend on and between facilities</b>			
2007/08: No significant changes in support levels.			

6.5 Metric 44 shows the number of long-term datasets maintained by NERC's dedicated Data Centres. Examples of datasets maintained are :

- The National River Flow Archive (NRFA), a component of the Environmental Information Data Centre at CEH, has a history that dates back to the mid-1930s, when it was originally established as the Inland Water Survey. In 1982, the Archive was transferred to the Institute of Hydrology, now CEH Wallingford. The NRFA is the UK's focal point for hydrometric data, providing stewardship of, and access to, daily and

monthly flow data for some 1300 gauging stations nationally, with the first data dating from 1841.

- The British Atmospheric Data Centre maintains the Met Office's Hadley Centre HadGEM1 control integration dataset. Part of the Hadley Centre's contributions to the fourth assessment report of the Intergovernmental Panel on Climate Change was based on the HadGEM1 model. The dataset provides all the available data from the control integration – run with pre-industrial levels of CO<sub>2</sub> and other forcings.
- The National Geoscience Data Centre holds a comprehensive collection of geological and environmental information on the surface and subsurface of Great Britain, and offshore, which is available to the public, industry and academia. The Data Centre manages over 450 earth science datasets, physical collections, records and other information gathered or generated by the BGS, or its precursors, in addition to data provided by external organisations.
- The NERC Earth Observation Data Centre holds the (A)ATSR multimission archive, which has 17 years of (A)ATSR data, processed to common formats from three satellite instruments. This provides climate scientists with a unique time-series of high accuracy sea surface temperature measurements.

<b>44. Summary of long-term environmental datasets maintained</b>	
<p>No. of environmental datasets maintained collectively by NERC Data Centres:</p> <p>2006/07 = 5,166 2007/08 = <b>5,434</b></p>	<p>Second year of reporting on this basis. The NERC data centres are refining their definition of what constitutes a dataset and the total number of datasets is a best available estimate.</p>
<b>45. No. of new datasets published by the Data Centres</b>	
<p>2006/07 = 623 2007/08 = <b>268</b></p>	<p>Second year of reporting on this basis. The number of discrete datasets is intrinsically difficult to quantify. Work is underway to develop definitions common across NERC's Data Centres.</p>
<b>46. Examples of where Data Centres acted quickly to rescue internationally / nationally important datasets, or to produce new data products to meet customer needs</b>	
<p>The NRFA and the NGLA together produced a study of the wet summer of 2007. This confirmed that the floods were a very singular event and does not support the idea that the exceptional river flooding was linked to climate change. This conclusion is contained within a comprehensive hydrological appraisal of the summer 2007 floods carried out by CEH scientists.</p> <p>The Antarctic Environmental Data Centre has worked with BAS scientists to make datasets stretching back over 20-30 years of predator populations from Bird Island and Signy Island in the sub-Antarctic more easily accessible, through the web and integrated Oracle databases. This has made it much easier to maintain these datasets over the long-term and to supply the data to the principal stakeholders, which, as well as BAS scientists, include the Foreign and Commonwealth Office, the Commission for the Conservation of Antarctic Marine Living Resources, and the Agreement on the Conservation of Albatrosses and Petrels.</p> <p>In February 2008 a new version of the NERC Data Discovery Service was launched. The service allows users to find data resources held by the NERC Data Centres and other providers, both UK and worldwide. The Data Discovery Service uses technology developed as part of the NERC eScience funded NERC Data Grid Project and is a first step towards an integrated, cross-NERC data delivery system.</p>	

6.6 Metric 47 addresses ship utilisation rates. Data on ships operated in Antarctica by BAS are included for first time this year. These ships also have a logistical role and therefore their utilisation data are not directly comparable with the Marine Facilities Programme.

#### Marine Facilities Programme

The increased utilisation of the vessels at sea for 2007/08 when compared to 2006/07 is due to a number of factors:

- The full entry into service of the new build, *RRS James Cook*;
- The major propulsion control system failure experienced by *RRS Discovery* in January/February 2007 (i.e. in FY 2006/07);
- The more effective mobilisations of *RRS James Cook* in Pacific ports – the vast majority of portable scientific equipment for 6 cruises was loaded on board prior for sailing for the Caribbean/Pacific in November 2007.

#### British Antarctic Survey

Port logistics includes all loading and discharging of science cargo alongside Antarctic Stations. Excludes those operations when carried out at sea.

Time at sea includes the Annual Supply Time Charter for the *RRS Ernest Shackleton*. The decline in time at sea in 2007/08 was due to the extended refit in 2007 of the *RRS James Clark Ross* when contractors caused significant delays.

<b>47. Ship utilisation rates</b>			
	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>
Total NERC fleet days at sea (Marine Facilities Programme and BAS combined)	994	905	<b>1,048</b>
<u>Marine Facilities Programme (MFP):</u>	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>
Total combined days at sea for RRS James Cook and RRS Discovery	460	354	<b>535</b>
Fleet utilisation:			
at sea	63%	54%	<b>73%</b>
mobilisation/demobilisation	10%	27%	<b>15%</b>
maintenance, recertification and lay up	27%	19%	<b>12%</b>
<u>British Antarctic Survey (BAS):</u>	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>
Total combined days at sea for RRS James Clark Ross and RRS Ernest Shackleton	534	551	<b>513</b>
Fleet utilisation:			
at sea	73%	75%	<b>70%</b>
port logistics	11%	11%	<b>8%</b>
mobilisation/demobilisation	3%	5%	<b>4%</b>
maintenance, recertification	13%	9%	<b>18%</b>

## 7. Knowledge exchange efficiency

- 7.1 Improved knowledge exchange promotes better economic impact. Knowledge exchange efficiency requires the active involvement of all stakeholders, amongst and between academia, the public sector and the private sector. This section sets out to measure the performance of the mechanisms used by NERC to promote knowledge exchange, whether promoting:
- The ease of collaboration and co-operation; or
  - The transit of information flows.
- 7.2 NERC is committed to supporting a number of schemes at the policy and regulatory interface. These schemes are highly focussed on specific aspects of KE enhancement, making this the largest section within this report. Please note that Research Councils are jointly considering ways of rationalising the metrics used in this section for reporting in future years.
- 7.3 The metrics in this section have been broadly grouped into the following themes:
- Networks and partnerships
  - Policy level KE
  - Commercialisation
  - Collaboration in research
  - Collaboration in training
  - Movement of trained people

## Networks and partnerships

<b>48. Interactions with partners and users - Knowledge Transfer Partnerships, Knowledge Transfer Networks, and Small Business Research Initiative</b>					
<u>Small Business Research Initiative (SBRI)</u>	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>	<p>All active KT grants included. Some partners have multiple relationships with a number of different grants; however, these have all been counted as individual partnerships.</p> <p>'Partners' are those organisations named in proposals as contributing to project (eg finance, personnel resource, participation on steering committee); 'interactions' generally represent looser affiliation by organisations.</p> <p><u>Additional information</u></p> <p><b>10</b> KT Networks supported in 2007/08, two having ended.</p>	
No. of contracts running	9	11	<b>4</b>		
No. of unique users	8	10	<b>4</b>		
<u>Knowledge Transfer Partnerships (KTPs)</u>					
No. running	8	12	<b>12</b>		
<u>KT Call - Networks scheme</u>					
Partnerships:	public	7	8		<b>15</b>
	private	8	8		<b>11</b>
Interactions:	public	21	37		<b>47</b>
	private	23	24		<b>27</b>
<u>KT Call - Good Ideas Scheme</u>					
Partnerships:	public	-	19	<b>18</b>	
	private	-	8	<b>11</b>	
<b>49. No. of Knowledge Transfer Partnerships supported</b>					
	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>		
No. currently supporting	8	12	<b>12</b>		
New in year	6	5	<b>4</b>		
<b>50. NERC involvement in business services and networks</b>					
<p>Affiliate peer review college membership currently stands at 29 (March 2008). 17 members are due to leave at the end of May 2008, and 24 new members are being invited to join.</p> <p><u>Knowledge Transfer Networks:</u> We currently have involvement with three KTNs through researchers we support. In addition we have supported the Sensors and instrumentation KTN financially and by proposing joint events within the NERC remit.</p> <p>Examples of KTN activities:</p> <p>The Sensors and Instrumentation KT Network held two meetings with a focus on NERC science and working with the user community to identify needs and requirements, and potential blocks to the commercialisation of products.</p> <p>An event was held at NOCS to showcase new technologies and generate links between the research base and potential investors and licensees.</p>			<p>Numbers on the affiliate peer review college dipped in 2006/07 as no recruitment exercise was undertaken whilst a review was underway. Current recruitment exercise should return membership to pre-review level.</p>		

<b>51. Spend on people and knowledge flow activities</b>				
Expenditure:	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>	Spend was lower due to the funding round being held later in the year. However, total KT allocations rose in 2007/08.  The new Knowledge Transfer scheme allows more flexibility. It incorporates all Network and Good Idea activities and the tail spend on the M&FMB grant.
Good Ideas scheme	£508k	£766k	<b>£191k</b>	
Networks scheme	£117k	£193k	<b>£57k</b>	
Knowledge Transfer scheme	-	-	<b>£718k</b>	
Royal Society Industrial Fellowships	£50k	£50k	<b>£50k</b>	
Knowledge Transfer Partnerships	£64k	£88k	<b>£136k</b>	
M&FMB KT grant	£117k	£97k	-	
COAPEC minor KT grant initiative	-	£18k	-	
<b>Total</b>	<b>£856k</b>	<b>£1,211k</b>	<b>£1,152k</b>	
<b>52. No. and value of academic-user networks</b>				
	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>	Change in basis of reporting. During 2007/08 the Networks and Good Ideas activities have been incorporated into a larger, more flexible, Knowledge Transfer scheme.
No. of active networks	7	8	<b>10</b>	
Networks scheme expenditure	£117k	£193k	<b>£57k</b>	
<b>53. Average final project grades of NERC-funded KTP projects</b>				
KTP average project gradings:		Grading based on scale of 1 to 5, 1 being excellent.		
2005/06 = 1.5 (based on 2 completing projects) 2006/07 = 2 (based on 1 completing project) 2007/08 = 2 (based on 2 completing projects)		NERC has funded <b>29</b> projects through the Knowledge Transfer Partnerships Scheme since agreeing to become a sponsor in 1996.		
<b>54. Satisfaction of organisations involved in exchanges and networks</b>				
KT Partnerships review found that partners were usually highly satisfied. Highest returns are experienced by larger companies working with Russell group universities.				
<b>55. Moderated self-assessment of quality of Research Council knowledge transfer activities subject to external challenge (as per Innovation Report 2003)</b>				
NERC data from RCUK user-satisfaction survey 2007:		External Challenge Reports discontinued. Replaced by RCUK user-satisfaction surveys.		
Extent to which users felt their needs were met through 12 types of interaction:		Research Councils UK User satisfaction survey Final Report September 2007 was produced by PriceWaterhouseCoopers and can be found at: <a href="http://www.rcuk.ac.uk/cmsweb/downloads/rcuk/economicimpact/ussurvey.pdf">www.rcuk.ac.uk/cmsweb/downloads/rcuk/economicimpact/ussurvey.pdf</a>		
average score was 3.45 (on a scale 1 to 5, with 5 highest) = 61% satisfied * <sup>1</sup>		* <sup>1</sup> Report fig. 139, p.185		
Service delivery: 57% satisfied, with 11% dissatisfied * <sup>2</sup>		* <sup>2</sup> Report fig. 141, p.187		
Communications: 83% satisfied, with 7% dissatisfied * <sup>2</sup>		* <sup>3</sup> Report fig. 146, p.192		
Relationship: 83% satisfied, with 11% dissatisfied * <sup>3</sup>		* <sup>4</sup> Report fig. 150, p.198		
63% of users would speak highly of NERC, with 19% critical.* <sup>4</sup>		Figures shown here aggregate 'very' and 'quite' satisfied as satisfied, and similarly dissatisfied aggregates 'very' and 'quite' dissatisfied.		

## Policy level knowledge exchange

- 7.4 The scale and effectiveness of science to policy activities is reported for the first time this year by metric 56. It shows for grants and programmes reporting in the NERC Research Outputs Database how many are considered relevant to policy and how many then go on to provide policy advice to government. These proportions are fairly stable. However, where advice is being given the actual instances of engagement have **risen by 211 or +28%** in two years to 957.

<b>56. Science to policy: scale and effectiveness</b>				
	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>	Data taken from NERC Research Outputs Database (ROD). First year this metric has been published.
Proportion of projects/programmes reporting policy relevant outputs	63%	61%	<b>63%</b>	
Proportion of project/programmes relevant to policy providing advice to Government	26%	27%	<b>27%</b>	
No. of reported instances of advice being provided to Government	746	821	<b>957</b>	
<b>57. No. of Parliamentary PhD secondments</b>				
2005/06 = 3 2006/07 = 4 2007/08 = 6				
<b>58. User representation on major NERC policy and strategy bodies</b>				
As at end March 2008: Council 5 of 17 ( <b>29%</b> ) Science and Innovation Strategy Board 1 of 18 ( <b>6%</b> ) Audit Committee 2 of 4 ( <b>50%</b> )		While the proportion of user representation on NERC Council and the Council Audit Committee has remained broadly level compared to this time last year, the proportion of user representation on the Science and Innovation Strategy Board (SISB) has dropped considerably.  For SISB, this has been due to the retirement from the Board of three user representatives, including the Chair. Open recruitment was undertaken to select a new Chair and new members for the Board during 2007 and this has resulted in both an overall increase in the numbers of members on SISB and in the numbers of members who are from an academic or NERC Research/Collaborative Centre background, compared to last year.		
<b>59. NERC staff involvement/membership on major user boards and committees</b>				
Data recorded in 2007 for participation at a corporate level on <b>53</b> major boards/committees.		Latest available data. These cover interfaces by Swindon Office staff with over <b>20</b> major user organisations at the national and international level. Typical examples include: the Department of Food and Rural Affairs, the British National Space Centre and committees at the European level.		

## Commercialisation

- 7.5 Total commercialisation expenditure in relation to specific schemes has **increased by +49%** in two years to £1.153m, see metric 60. The main outcomes reported by the Commercialisation team are published for the first time under metric 61; in particular, two trading companies were spun-out from NERC Research Centres: Microbial Solutions Ltd and Oxford Expression Technologies Ltd.

<b>60. Spend on commercialisation and enterprise activities</b>				
<u>Specific commercialisation activities for NERC Research Centres:</u>	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>	
Core management of commercialisation projects	£202k	£340k	<b>£417k</b>	
PSRE2 challenge funding	£120k	£223k	<b>£97k</b>	
NERC Innovation Fund	£98k	£42k	<b>£344k</b>	
<u>Specific commercialisation activities for HEIs:</u>				
Business Plan Competition	£10k	£60k	<b>£69k</b>	
Follow on Fund	205k	£181k	<b>£195k</b>	
Young Entrepreneurs Scheme (Biotechnology)	£10k	£20k	<b>£31k</b>	
Total commercialisation expenditure:	£645k	£866k	<b>£1,153k</b>	
<b>61. Spin-outs and other commercialisation team outcomes</b>				
	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>	
No. of companies setup and no. of spin-outs	0	0	<b>2</b>	First year this metric has been published.  Excludes spin-outs within HEIs (see example given in metric 1) or Collaborative Centres.
No. of licence agreements through commercialisation activities	0	1	<b>2</b>	
No. of commercialisation outcomes in other forms (eg joint ventures)	0	1	<b>0</b>	
Total no. of commercialisation outcomes	0	2	<b>4</b>	
<b>62. No. of patents filed (and granted) by NERC grant holders</b>				
Patents filed:	2005/06 = 4 2006/07 = 6 2007/08 = <b>10</b>	Number of patents filed showing an upward trend.  Likely other patents that have been filed from HEIs are linked to NERC research, but also as a result of research funded by many sources going back some way; hence, PIs have not declared them to NERC. See example given in metric 1.		
Patents granted:	2005/06 = 5 2006/07 = 2 2007/08 = <b>0</b>			
<b>63. Income from contract research, data, licensing, etc.</b>				
<u>Research Centres</u>	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>	* 2005/06 and 2006/07 figures restated; this is due to change in interpretation of non-grant-in-aid funding where there is no exchange of transactions.
Earned income (contract research) *	£36.2m	£33.9m	<b>£33.4m</b>	
Royalties and licence income	£1.8m	£2.0m	<b>£2.8m</b>	
<b>Total</b>	<b>£38.0m</b>	<b>£35.9m</b>	<b>£36.2m</b>	
<u>Data Centres</u>				Earnings for Collaborative Centres and for HEIs not included in this metric.
Data or software licensing income	£2.5m	£2.0m	<b>£1.9m</b>	

## Collaboration in research

- 7.6 Public sector co-authorship of NERC-funded ISI journal papers has **increased from 12% to 15%** in two years. International co-authorship has **increased from 38% to 49%** in two years. Private sector co-authorship is **static at 4%**. See metric 65.
- 7.7 To improve Knowledge Exchange performance, from 2008/09 proposals submitted under Standard grant, Partnership and Consortia schemes must provide KE plans.

<b>64. Proportion of research grants and value of research spend on collaborative research with users</b>			
Expenditure on collaborative research:			
	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>
Connect B	£596k	£727k	<b>£333k</b>
Partnership Research Grants	-	£55k	<b>£231k</b>
Ocean Margins (LINK)	£595k	£246k	-
<b>Total:</b>	<b>£1.2m</b>	<b>£1.0m</b>	<b>£0.6m</b>
<p>Figures are for 50:50 matched schemes and relate only to the NERC contribution. Other partnership income on individual awards is not recorded centrally.</p> <p>Connect B awards are no longer available; they have been replaced by Partnership Research Grants which are often slow to start spending, since NERC requires submission of a signed collaboration agreement.</p> <p>The Ocean Margins LINK programme has now finished so there is no spend associated with this.</p>			
<b>65. No. of NERC funded ISI (Thomson-Reuters) publications with public and private sector and international co-authors</b>			
No. of co-author(s):	<u>2005</u>	<u>2006</u>	<u>2007</u>
public sector	450 (12%)*	563 (16%)*	<b>625 (15%)</b>
private sector	142 (4%)	144 (4%)	<b>158 (4%)</b>
international	1,406 (38%)	1,722 (44%)	<b>1,874 (46%)</b>
<p>* Public sector co-authorship figures restated for 2005 and 2006.</p> <p>Data based on total no. of ISI journal publications reported for NERC:            2005 = 3,784            2006 = 3,910            2007 = 4,035</p>			
<b>66. No. of organisations collaborating on current research grants</b>			
Collaborative partners on grants funded in 2007/08:			
<u>partner organisation type</u>	<u>Responsive</u>	<u>Directed</u>	
Government	7	27	
UK HEI	14	11	
Overseas institute	98	39	
Industrial/Commercial	1	12	
Other	14	29	
<b>Total</b>	<b>134</b>	<b>118</b>	
<p>New basis for reporting this year. Data taken from collaborations indicated in grant proposals.</p> <p>Figures report the number of unique organisations collaborating on Responsive Mode and on Directed Programme grants. Some organisations, such as the Met Office, collaborate on more than one grant.</p> <p>The UK HEI category covers other collaborators in addition to the host organisations of the Principal Investigators.</p>			

## Collaboration in training

- 7.8 From 2006/07 NERC raised the number of CASE studentships awarded by annual Open CASE competition from 20 to 35. The 38 studentships funded in 2007/08 included replacements for 3 terminations from previous years. Hence, the stock of open CASE PhD studentships funded in 2007/08 was 87, an **increase of +33%** in two years. Correspondingly, expenditure on PhD CASE studentships has **risen by +35%** in two years.

67. No. Open CASE studentships				
	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>	CASE – Co-operative Awards in Science and Engineering.
No.	58	71	<b>87</b>	
New in year	19	33	<b>38</b>	
68. % of studentships that are CASE				
% of <b>total</b> no. of PhDs that are CASE:  2005/06 = 30% 2006/07 = 30% 2007/08 = <b>31%</b>  % of <b>new</b> PhDs that are CASE:  2005/06 = 28% 2006/07 = 31% 2007/08 = <b>31%</b>				CASE - Co-operative Awards in Science and Engineering.  Relates to wholly NERC-funded studentships. Does not include jointly-funded Dorothy Hodgkin Postgraduate Awards.  Calculated from: total no. of CASE PhDs (304) out of total no. of PhDs (969); and new CASE PhDs (102) out of new PhDs (332).
69. Spend on collaborative (eg CASE) and vocational postgraduate training				
Expenditure:	<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>	For wholly NERC funded PhDs; does not include the Dorothy Hodgkin Postgraduate Awards. Masters includes MSc and MRes.  <u>Additional information</u>  Expenditure on Open CASE (as a specific competition with all CASE PhDs):  2005/06 = £1.3m 2006/07 = £1.2m 2007/08 = <b>£1.7m</b>
PhD CASE:	£4.8m	£5.5m	<b>£6.5m</b>	
Expenditure on Masters:	£3.5m	£3.3m	<b>£3.8m</b>	
Total (CASE and Masters):	£8.3m	£8.7m	<b>£10.3m</b>	
70. Resource contribution by employers to collaborative post-graduate training				
Contribution by project partners to CASE PhDs (value; % of CASE funding):  2005/06 = £0.66m; 14% 2006/07 = £0.74m; 14% 2007/08 = <b>£0.68m; 10%</b>				First year this metric has been published.
71. Satisfaction of CASE and Industrial CASE partners in the training process				
Last survey conducted 2004 reporting: <b>95%</b> end-user partner satisfaction with CASE schemes				

## Movement of trained people

- 7.9 A major means for exchanging knowledge is through the movement of people. Metric 72 shows the pattern of first destinations for PhD and Masters finishers, reported by the Higher Education Statistics Agency (HESA) for the environmental domain. HESA request destination data from all undergraduate and postgraduate completers (via their HEI) and get around a 70% return rate. This is the second year of reporting on this basis.

<b>72. Sustainability: Recruitment and retention trend in HEIs by domain collected by HESA - pattern of first destinations for PhDs and Masters</b>			
<b>PhD finishers first destinations*</b>			* This is based on the 204 records for 2004/05 and 156 records for 2005/06 returned from HESA.
Percentages:	<u>2004/05</u>	<u>2005/06</u>	
Permanent academia	2	4	
Fixed term academia	28	24	
Further training	17	3	
Teacher training	0	9	
Private sector	26	34	
Public sector	11	12	
Other	2	4	
Not employed	11	7	
Not know	3	3	
<b>Masters finishers first destinations**</b>			
Percentages:	<u>2004/05</u>	<u>2005/06</u>	
Permanent academia	0	0	
Fixed term academia	4	6	
Further training	25	19	
Teacher training	1	2	
Private sector	41	50	
Public sector	18	9	
Other	5	3	
Not employed	6	10	
Not known	0	1	

- 7.10 The pattern of first destinations for NERC Fellows is shown below. Data has been collected via NERC's on Research Outputs Database. Fellows report for the two years post completion of their award. Reporting compliance was 100% in 2007/08.

<b>73. Sustainability: First destination of Fellows</b>				
<b>Fellows first destination:</b>				
		<u>2005/06</u>	<u>2006/07</u>	<u>2007/08</u>
HEI	<i>academic</i>	28 (62%)	44 (76%)	42 (67%)
	<i>research</i>	12 (27%)	11 (19%)	19 (30%)
	<i>other</i>	1 (2%)	0 (0%)	0 (0%)
	HEI (sub-total)	41 (91%)	55 (95%)	61 (97%)
	Private sector, research related:	1 (2%)	2 (3%)	0 (0%)
	Public sector, research related:	3 (7%)	1 (2%)	2 (3%)
	Total responses	45	58	63

#### 7.11 Improving information on careers and diversity:

The research councils, through the RCUK Research Careers and Diversity Unit (RCDU), have collaborated with the Equality Challenge Unit on a study to map equality data in higher education. The study investigated the main data sources, identified where current data gaps lie and suggested where improvements could be made. The RCDU are now working with the Higher Education Statistics Agency (HESA) and the funding councils to fill the gaps and improve the data on which the research councils can draw in the future.

The research councils are also working together to obtain better information on the career paths followed by those who have completed their research studies. This will contribute to the evidence of the outcomes from investments in research training and the impact of research graduates. An analysis of options for the collection of information relating to UK Doctoral Graduates reported in April 2008. Follow-up work will continue to track doctoral graduates' career paths over a number of years. Initial results of this work will be available in May 2009 and will be included in the 2008/09 EIRFs.

## Glossary

(A)ATSR	- (Advanced) Along Track Scanning Radiometer (class of Earth observation instruments using infrared)
BAS	- British Antarctic Survey
BGS	- British Geological Survey
CASE	- Co-operative Awards in Science and Engineering
CEH	- Centre for Ecology and Hydrology
COAPEC	- Coupled Ocean Atmospheric Processes & European Climate programme
DCSF	- Department for Children, Schools and Families
DEL	- Departmental Expenditure Limit
DIUS	- Department for Innovation, Universities and Skills
ESA	- European Space Agency
ESRC	- Economic and Social Research Council
FREE	- Flood Risk from Extreme Events directed programme
FTE	- full time equivalent
FY	- financial year
Gershon	- Sir Peter Gershon, author of <i>Releasing resources to the front line: Independent Review of Public Sector Efficiency</i> , July 2004
HadGEM1	- the Met Office Hadley Centre global environment model, including a detailed representation of the atmosphere, land surface, ocean and cryosphere.
HESA	- Higher Education Statistics Agency
HEI	- Higher Education Institute
ICP	- Inductively Coupled Plasma facility
ISI	- Institute for Scientific Information
IODP	- Integrated Ocean Drilling Program
Je-S	- Joint electronic-Submission (cross-Council grants administration IT system)
LINK	- Industry-research base partnership programmes, sponsored by Departments and Research Councils
KE	- Knowledge Exchange
KT	- Knowledge Transfer (current term now Knowledge Exchange)
KTN	- Knowledge Transfer Network
KTP	- Knowledge Transfer Partnerships
M&FMB	- Marine and Freshwater Micro-Biology programme
MFP	- Marine Facilities Programme
MTEM	- time-lapse multichannel transient electromagnetic data
NCAS	- National Centre for Atmospheric Science
NEODC	- NERC Earth Observation Data Centre
NGLA	- National Ground Level Archive, British Geological Survey
NRFA	- National River Flow Archive
NGO	- Non-Governmental Organisation
NOCS	- National Oceanography Centre, Southampton
OSI	- Office of Science and Innovation (superseded by the Science and Innovation Group within DIUS)
OUUSF	- Open University Uranium -Series Facility
PDRA	- post-doctoral research assistant
PI	- Principal Investigator
PSA	- Public Service Agreement
PSRE	- Public Sector Research Exploitation fund
QUEST	- Quantifying and Understanding the Earth System
RAPID	- RAPID Climate Change directed programme
RRS	- Royal Research Ship
RCUK	- Research Councils UK
RELU	- Rural Economy and Land Use cross-Council programme
ROD	- Research Outputs Database
SBRI	- Small Business Research initiative
UKERC	- UK Energy Research Centre
UKPopNet	- UK population biology network