CaSE 2014 Budget briefing: putting the figures in context

Since 13/14 we have seen the total research base budget (combining capital and resource) increase in cash terms from £5.5bn in 13/14 to £5.8bn in 15/16. Today's announcements of £222m investment over 5 years, bring the 15/16 figure closer to £5.9bn. The year on year increase is due to additional capital commitments – reaching £1.1bn in 2015/16. The long term commitment to investing £1.1bn per year in real terms up to 2020/21 shows that the Government recognises the enormous long term growth potential that comes from investing in science.

The flat-cash science budget will have been eroded by inflation by over £1bn by the end of 15/16

The cumulative erosion of the ringfenced science budget will be over £1.1bn from the beginning of SR10 period up to 15/16. We are now entering a fifth year of a flat-cash settlement for the science budget at £4.6bn with another flat cash settlement agreed for 15-16. Deflation will continue to affect the research budget every year that flat cash is maintained.

CaSE analysis shows total government R&D expenditure has reduced by over £400m a year since 2009/10

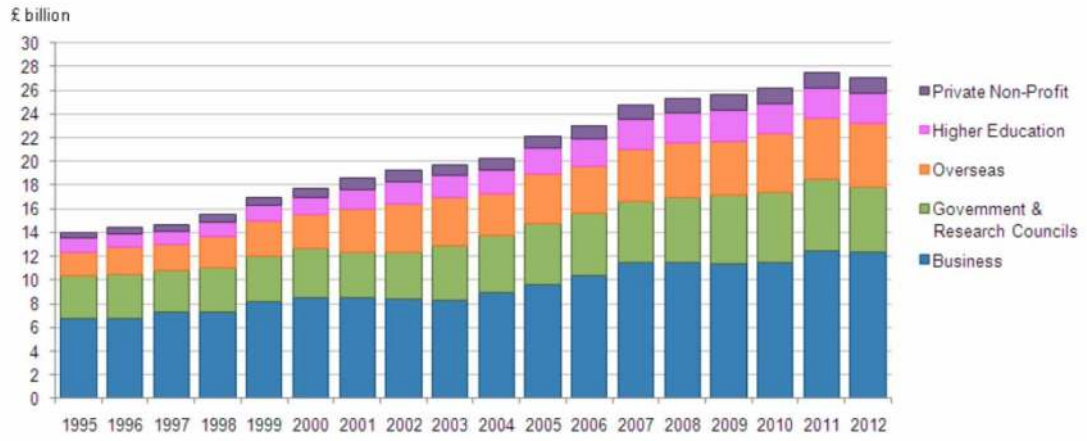
In the two years since 2009/10 the total R&D expenditure has seen a reduction of £856m in real terms. Total expenditure includes Civil and Defence departmental expenditure as well as spend from research councils, HE funding councils and the indicative UK contribution to the EU R&D budget. This reduction is evenly split over the two years with a £428m cut in both years. Total Government spend on R&D is down from £10,545m in 2009/10 to £9,689m in 2011/12. This is the lowest level in real terms since 2001/02.[1]

GERD 2012 – UK below EU-28 average

However in 2012, the UK spent 1.72% of Gross Domestic Product (GDP) on research and development (R&D) which is a decrease from 1.77% in 2011,[2] including a reduction in Government and Business investment. As the below graph shows the reduction in 2012 was the reversal of an historic upwards trend.

[1] These figures are taken from SET stats released in 2013 and the full CaSE analysis with more detail on departmental R&D spend is also attached.
[2] http://www.ons.gov.uk/ons/dcp171778_355583.pdf

Figure 6: Composition of UK GERD by funding sector, 1995 to 2012

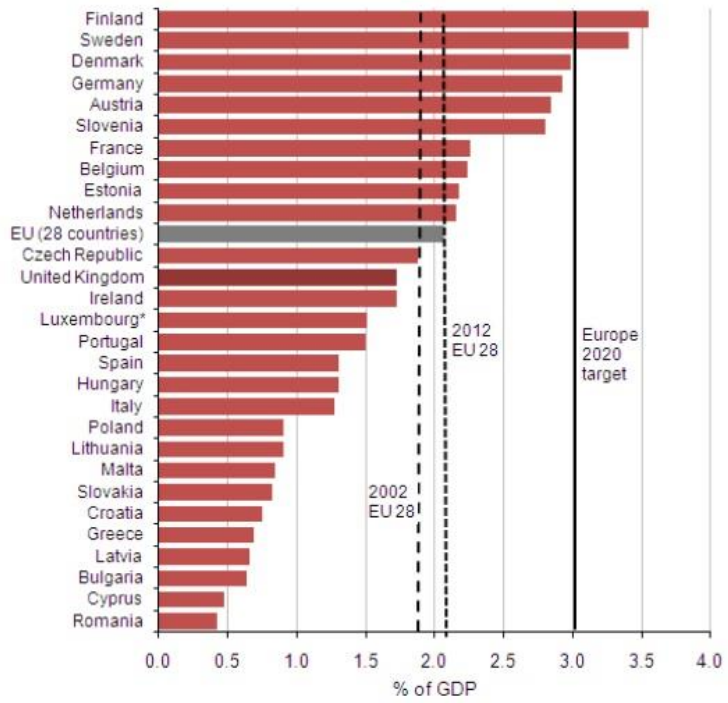


Source: Office for National Statistics

International comparisons show that UK R&D expenditure in 2012 was below the EU-28 average of 2.08% of GDP (which rose from 2.03% in 2011).[3] Unlike our international competitors, the UK currently has no target for increasing investment in R&D.

CaSE calls for the Government to capitalise on their current position and commit to a long-term target for increasing the level of investment in UK science.

Figure 9: EU countries GERD as a percentage of GDP (R&D intensity), 2012



Source: Eurostat

Notes:

1. * = Luxembourg data is for 2011.

[3] http://www.ons.gov.uk/ons/dcp171778_355583.pdf

Our international competitors have stated their commitment to increasing investment in R&D

President Park of South Korea plans to increase the total expenditure on research and development to 5% of GDP by 2017, up from 4% in 2011. The government's investment in basic science will rise from 35.2% of that total to 40% by 2017. She also aims to set up a new overarching 'ministry of future innovative science'.

China spent over 1 trillion yuan (£106.3 billion) on research and development in 2012, representing 2% of the country's GDP.

In Germany, the Federal Ministry of Education and Research's 2013 budget has increased by 6.2% compared to last year – placing it at a total of 13.7 billion euros (£11.6 billion).

Brazil's total R&D spending is expected to increase in 2013 to $31.9 billion (£20.3 billion), an 8.1% increase over the $29.5 billion it spent in 2012.

In the United States, the 2014 Science and Technology R&D Budget proposes $142.8 billion (£91 billion) for federal R&D, an increase of $1.9 billion or 1.3 percent over the 2012 enacted level.

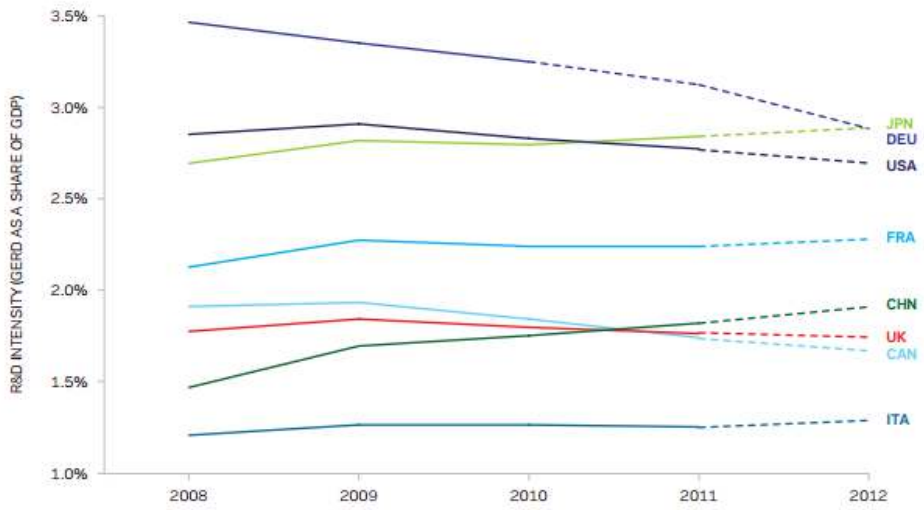
The Singaporean government plans to continue increasing investment through its Research, Innovation and Enterprise 2015 plan which allocates S$16.1 billion (£8.2 billion) for 2011-15. This is an overall increase of 19% over the previous 5-year period and a commitment of 1% of expected GDP to public sector research and innovation.

Our international competitors spend more on R&D and UK spend is projected to continue to decrease[4]

In monetary terms UK GERD decreased from $37.2b in 2008 to $36.5b in 2011, and extrapolation to 2012 suggests that it decreased to $36.1b in 2012. By contrast, in 2011 Germany spent more than twice as much (at $80.4b) on GERD than the UK, China five times as much (at $183.2b), and the US ten times as much ($366.3b). UK GERD represents just 3.2% of the global total GERD expenditure of over $1.14 trillion in 2011.

[4] BIS published a report in 2013 on the international comparative performance of the UK research base written by Elsevier – it concluded that, "the UK research base shows areas of potential vulnerability. With stable or decreasing R&D expenditure or human capital inputs it may not be possible to sustain its position as a world-leading research nation on this basis indefinitely."

Figure 2.2 — *R&D intensity (GERD as a share of GDP) for UK and comparators, 2008-12. All 2012 values (and also 2011 for Japan) are extrapolated from OECD data. UK ranking in EU27 is amongst 20 (of 27) countries with available data and in OECD is amongst 38 (of 41) countries with available data. Source: OECD MSTI 2013/1.*



	2008	2012	Change 2008-12	CAGR 2008-12	UK Rank 2008	UK Rank 2012
UK	1.78%	1.75%	-0.03%	-0.5%	-	-
G8	2.53%	2.41%	-0.12%	-1.2%	6	5
EU27	1.89%	2.05%	0.16%	2.0%	8	13
OECD	2.00%	1.98%	-0.02%	-0.3%	16	21

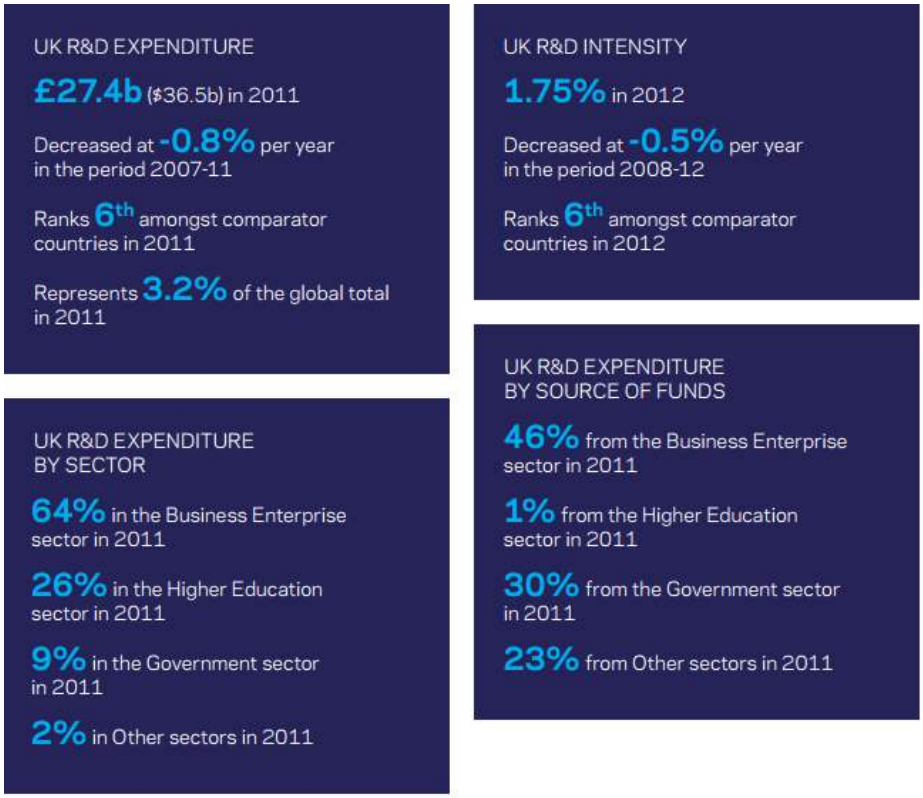
Interestingly this report goes on to show that the UK's research strength and focus is around the social sciences and health/natural sciences whereas our competitors – particularly Germany and emerging nations – are strongly focused on physical sciences, mathematics and computer sciences.[5]

Another recent report from BIS, Insights from international benchmarking of the UK science and innovation system, reports similar concerns:

"There is a sustained, long-term pattern of under-investment in public and private research and development (R&D) and publicly funded innovation. This under-investment is structural, not the result of any particular spending decisions. The UK's total investment in R&D has been relatively static at around 1.8% of GDP since the early 1990s and was around £27bn in 2011. In contrast, the US alone spends around £250bn (2.8% of GDP) on R&D per annum. China increased its R&D by 28% in 2009 and 15% in 2010, to roughly £125bn (1.8% of GDP), and South Korea doubled its expenditure between 2003 and 2011 to around £35bn (4.0% of GDP). France and Germany have consistently invested substantially more than 2% of their GDP in R&D, with aspirations to increase this to 3% or more. Public sector support for innovation is harder to compare, but such data as exist suggest that UK funding is very low."

Below are some of the R&D stats helpfully broken down[6]:

[5] Found on pg 52 and 53 of the International comparative performance report.
[6] These figures are from the BIS international comparative performance of the UK research base written by Elsevier. Where it states UK comes 6th, this is out of the G8.



Data from R&D Trends Forecast Research published in January 2012 shows a reduction in 35% of industrial R&D laboratories located in the UK and the emergence of new nations hosting international R&D laboratories such as Thailand and Argentina.[7]

Figure 6.1 Locations of industrial international R&D laboratories

	2011	2010	Change
China	36	34	+ 6%
Germany	24	31	- 23%
France	23	19	+21%
England	17	26	-35%
India	16	22	-28%
Brazil	12	19	-37%
Japan	12	17	-30%
Canada	11	16	-32%
Singapore	11	16	-32%
Belgium	8	10	-20%
Netherlands	7	10	-30%
Italy	6	11	-66%
Australia	6	5	+20%
Korea	5	5	0%
Switzerland	5	3	+66%
Mexico	4	9	-56%
Sweden	4	5	-20%
Spain	3	7	-58%
Taiwan	3	3	0%
Thailand	3	–	
Argentina	2	–	
Austria	2	–	

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[7] 2012 R&D Trends Forecast *Research-Technology Management* January 2012