

Science & Development Forum

Accelerating Research in Georgia

Tbilisi, Georgia, 12 March 2015

Managing research at a national level
and in universities

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Agenda

- **Managing research at a national level**
- **Managing research in universities**

Agenda

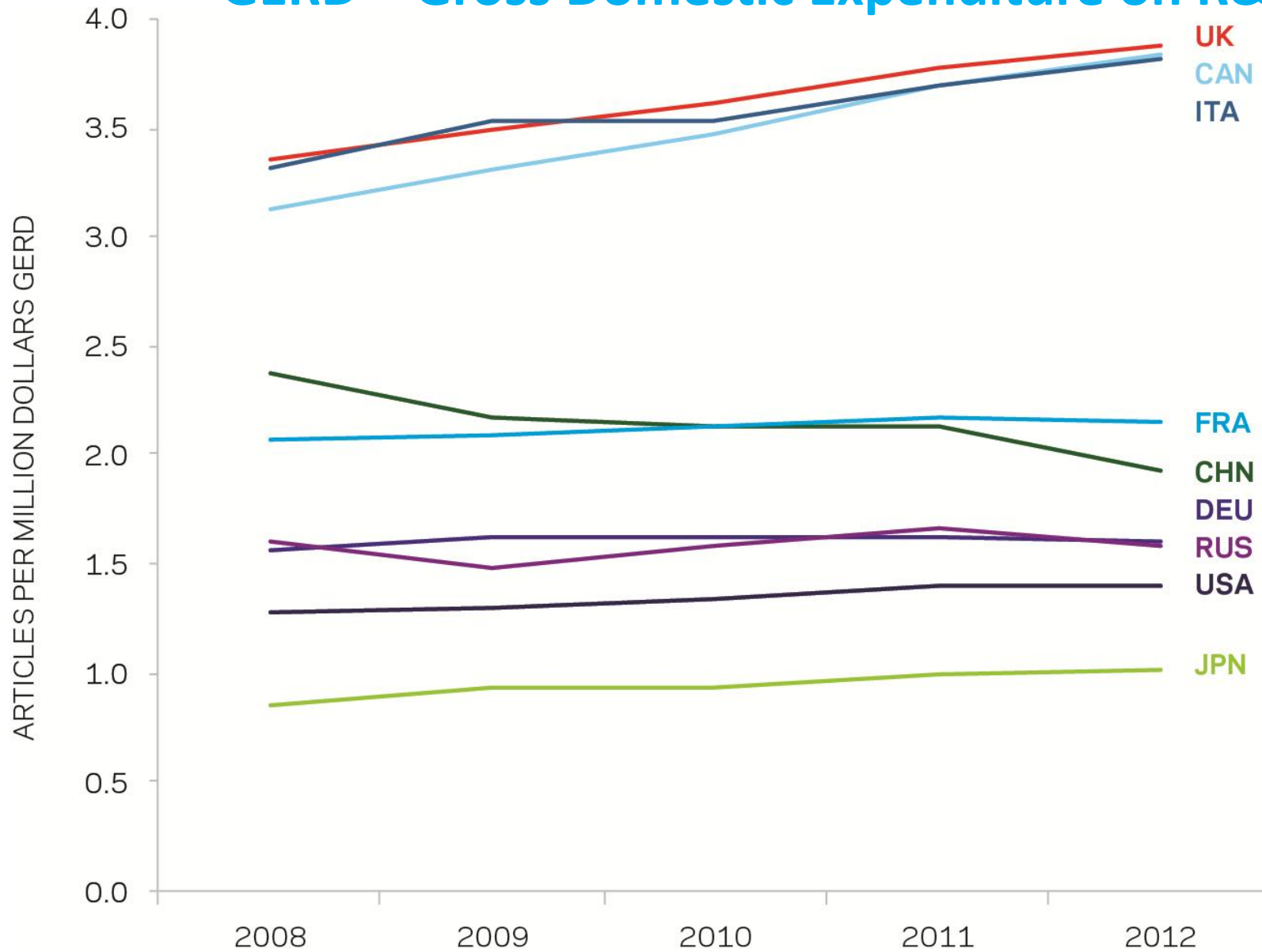
- **Managing research at a national level**
- **Managing research in universities**

Global context

- Research is more **interdisciplinary and more international**
- Traditional discipline structures in universities do not map onto new research programmes
- International funders encourage multi-institution bids
- New funding patterns bring academics together **across international boundaries**
- **Nationally need to measure efficiency and quality in individual subject areas**

Efficiency: article output per \$\$ input (GERD)

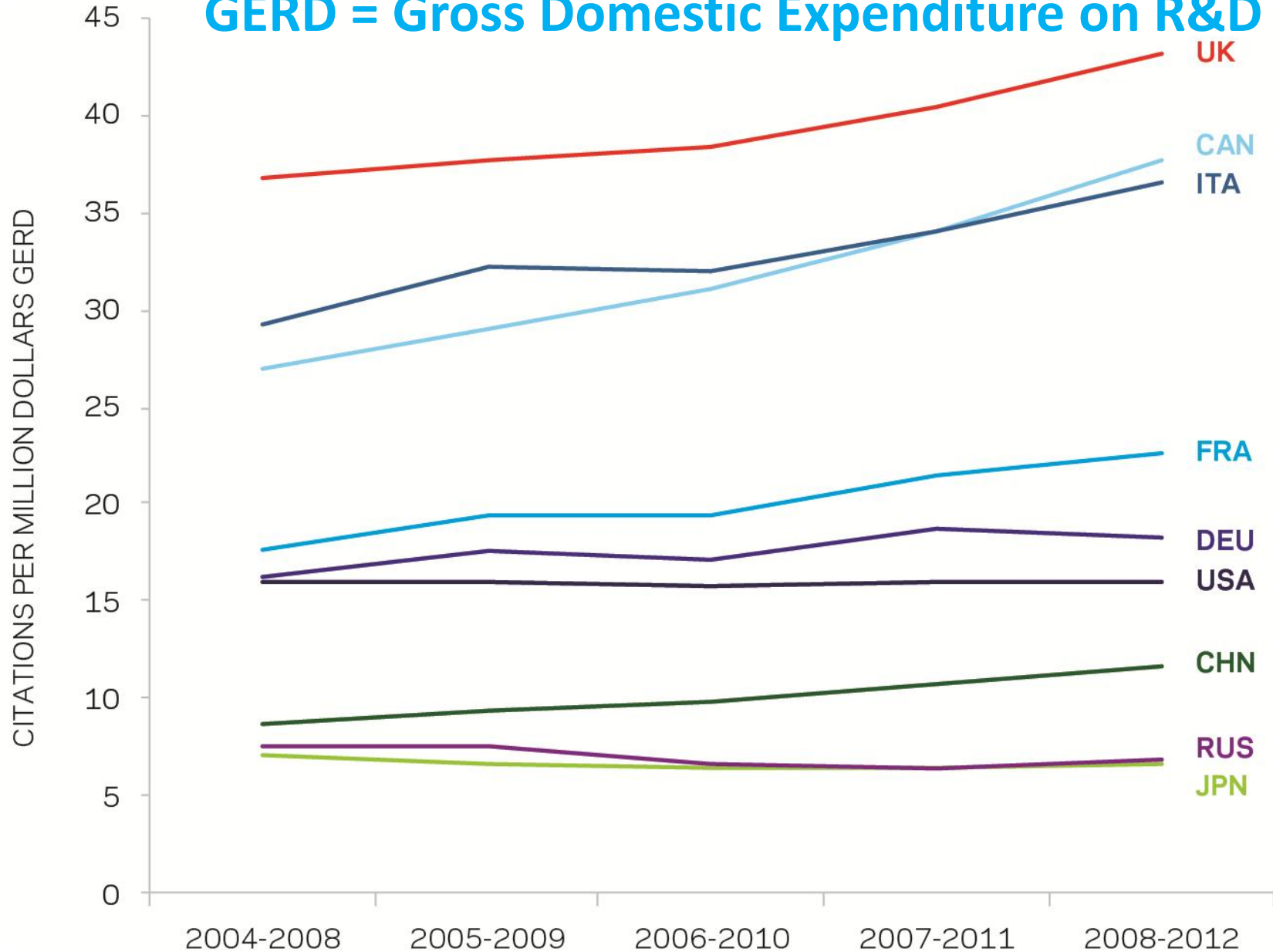
GERD = Gross Domestic Expenditure on R&D



Articles per unit GERD, 2008-2012

Quality: output per \$\$ input (GERD)

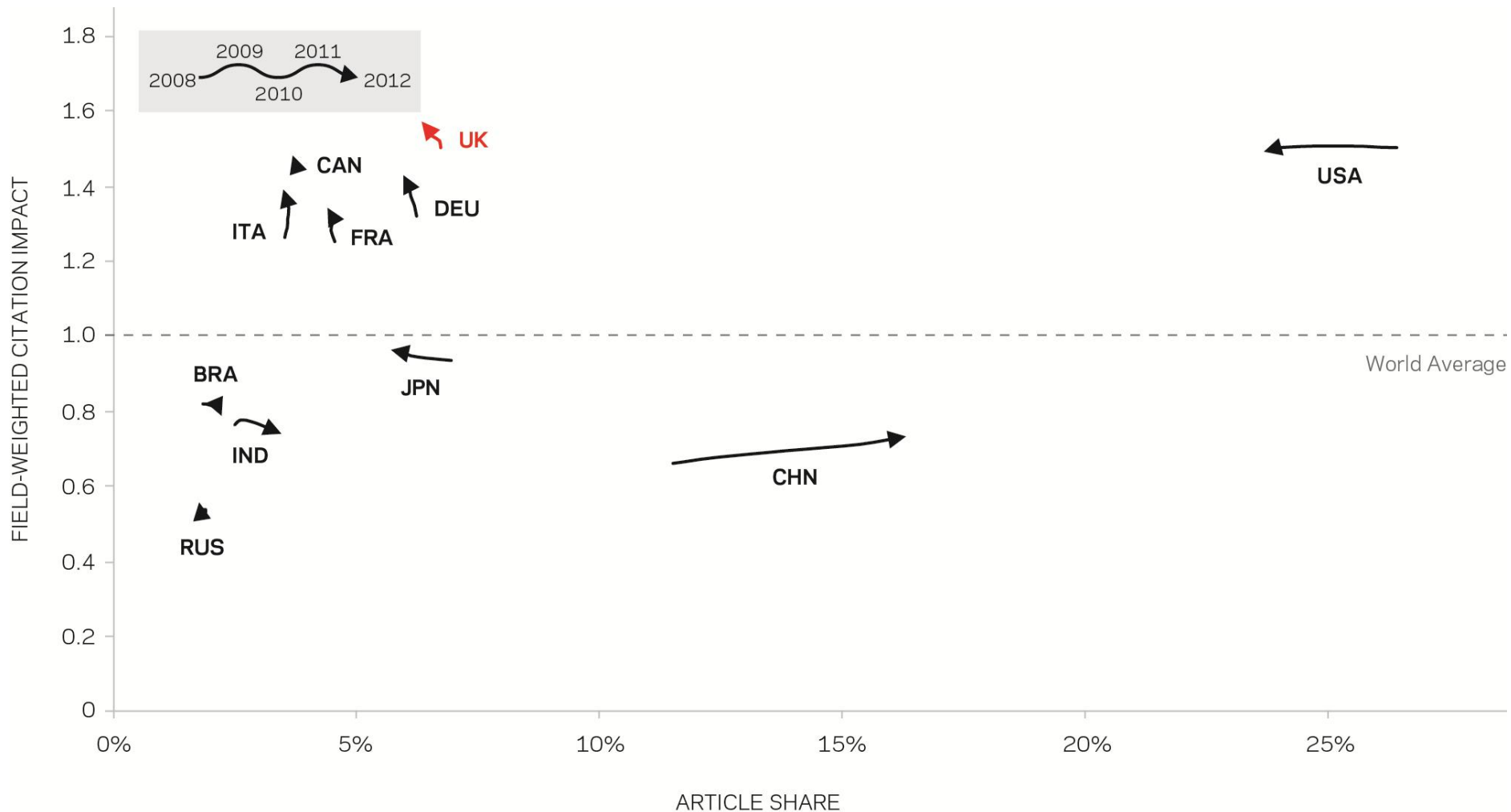
GERD = Gross Domestic Expenditure on R&D



Citations per unit GERD, 2008-2012

Quality: article share and FWCI, 2008-12

FWCI = Field Weighted Citation Index = ratio of citations actually received and the number which would be expected based on the average of the subject field



Quality: measured by subject e.g. UK REF (RAE) across a nation's universities

- REF is a process of expert, peer review
- Each university submits in 36 subject units
- Submissions are assessed by an expert sub-panel for each unit, working under the guidance of four main panels
- Sub-panels apply criteria to produce an overall quality profile for each submission
- **It is expensive and labour intensive BUT it is “owned” (administered) by the academics – “peer review”**

Managing research at a national level

After diagnosis – what is the treatment?

What do we do with this information and ...

how do we take the academics with us?

Managing research at a national level

- Use peer review and an evidence base together to make judgements about strengths and weaknesses
- Focus on strengths
- Identify the areas of quality: invest in them
- Divest too !
- Encourage inter-disciplinarity through structures and funding calls
- Encourage collaboration
- Reward young academics (not by \$\$ but by e.g. shared PhD students etc etc)
- Celebrate ... communicate
- Involve academics (and young ones)

Agenda

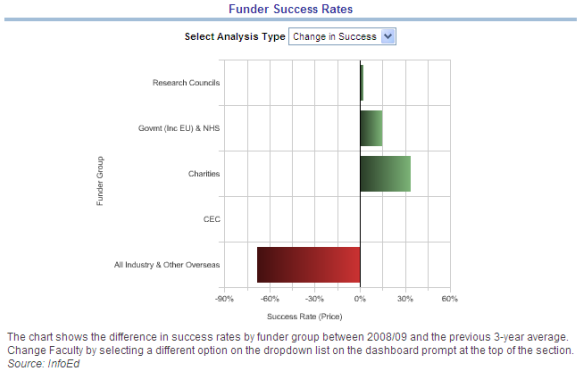
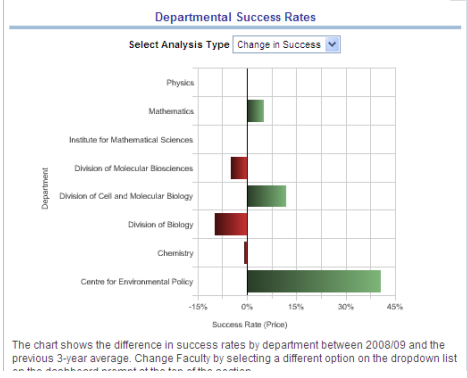
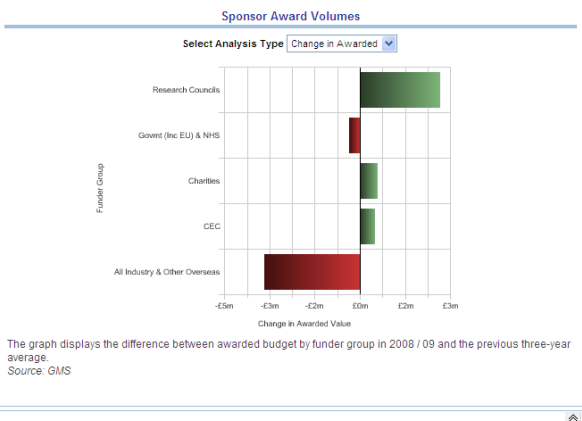
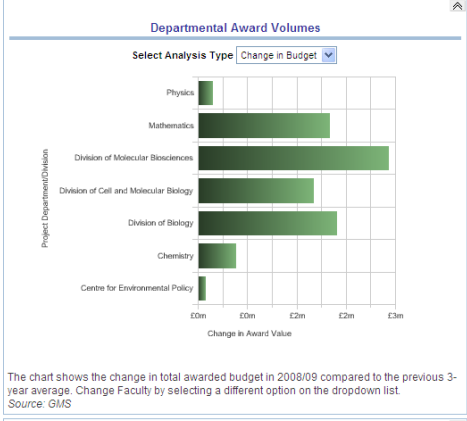
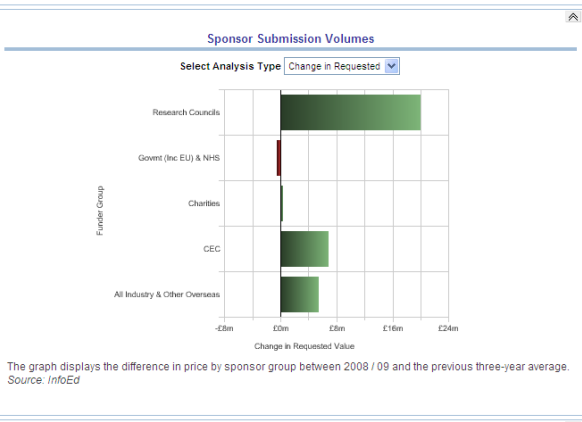
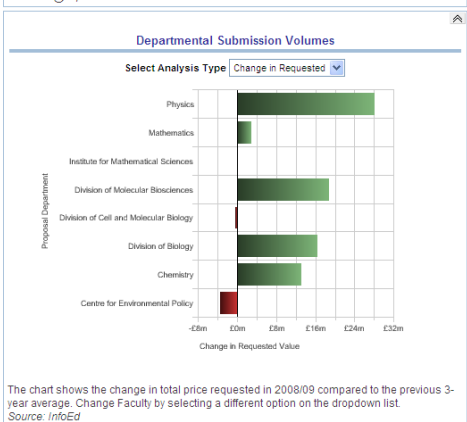
- **Managing research at a national level**
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How does this national strategy get delivered within universities?

The job of a university leader is to

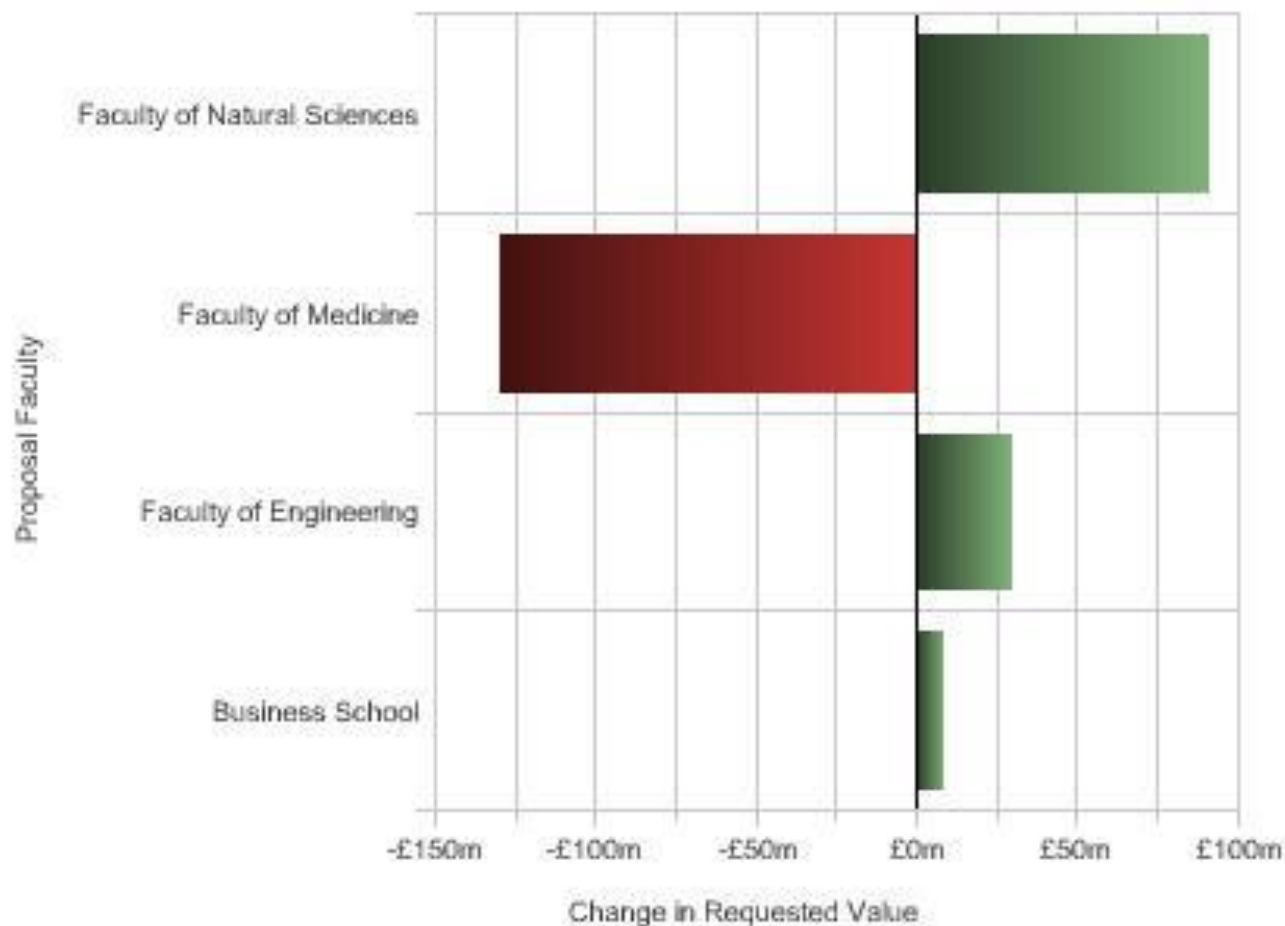
- understand what is going on in their university (what is high quality, efficient)
- decide where they want to grow and shrink
- encourage changes in behaviour such as collaboration and mobility – mobility increases funding
- incentivise behaviours to achieve desired outcomes
- benchmark progress
- support academics

Internal tools: Imperial's Research Dashboard



Faculty Submission Volumes

Select Analysis Type

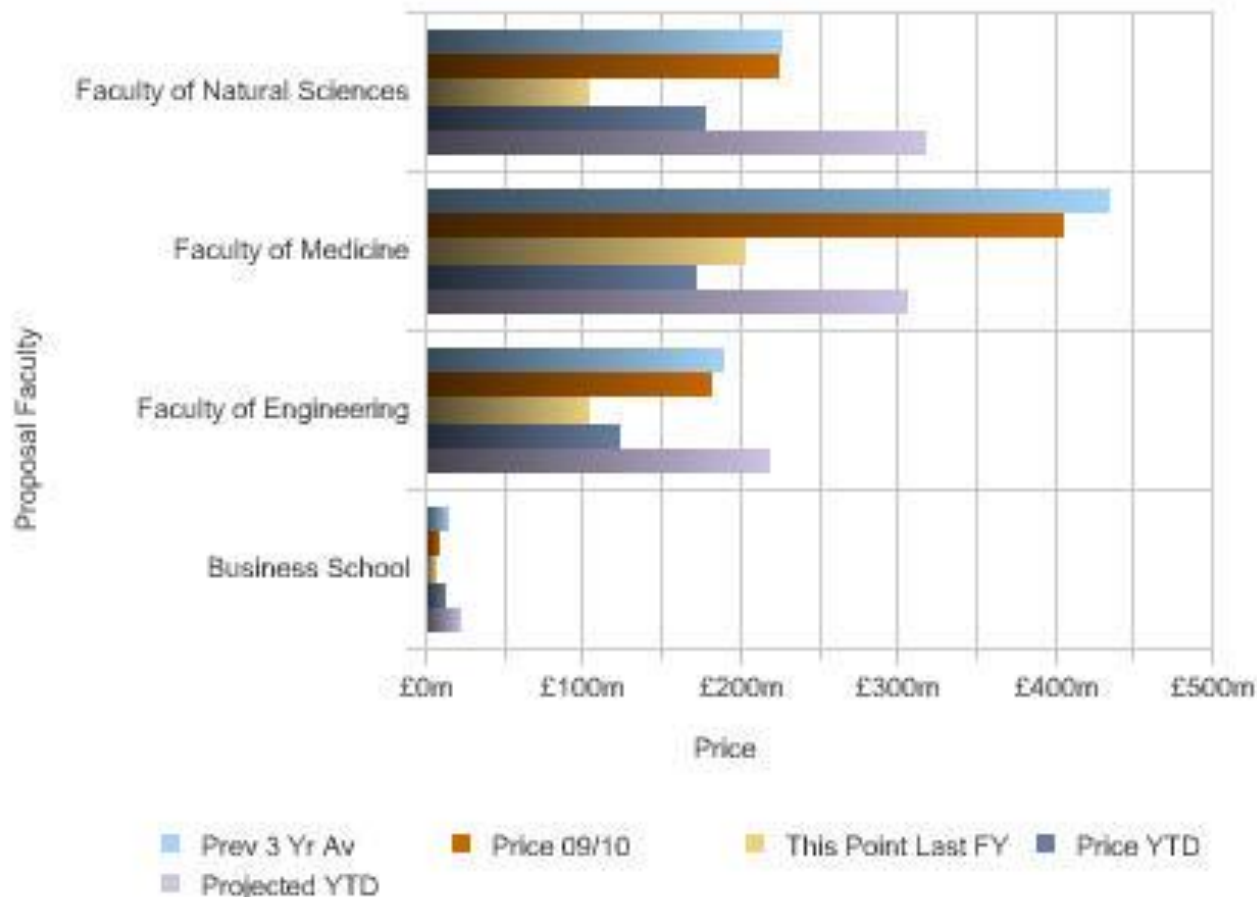


The chart displays the difference in total requested value between the projected current year total and the previous 3-year average.

Source: InfoEd

Faculty Submission Volumes

Select Analysis Type

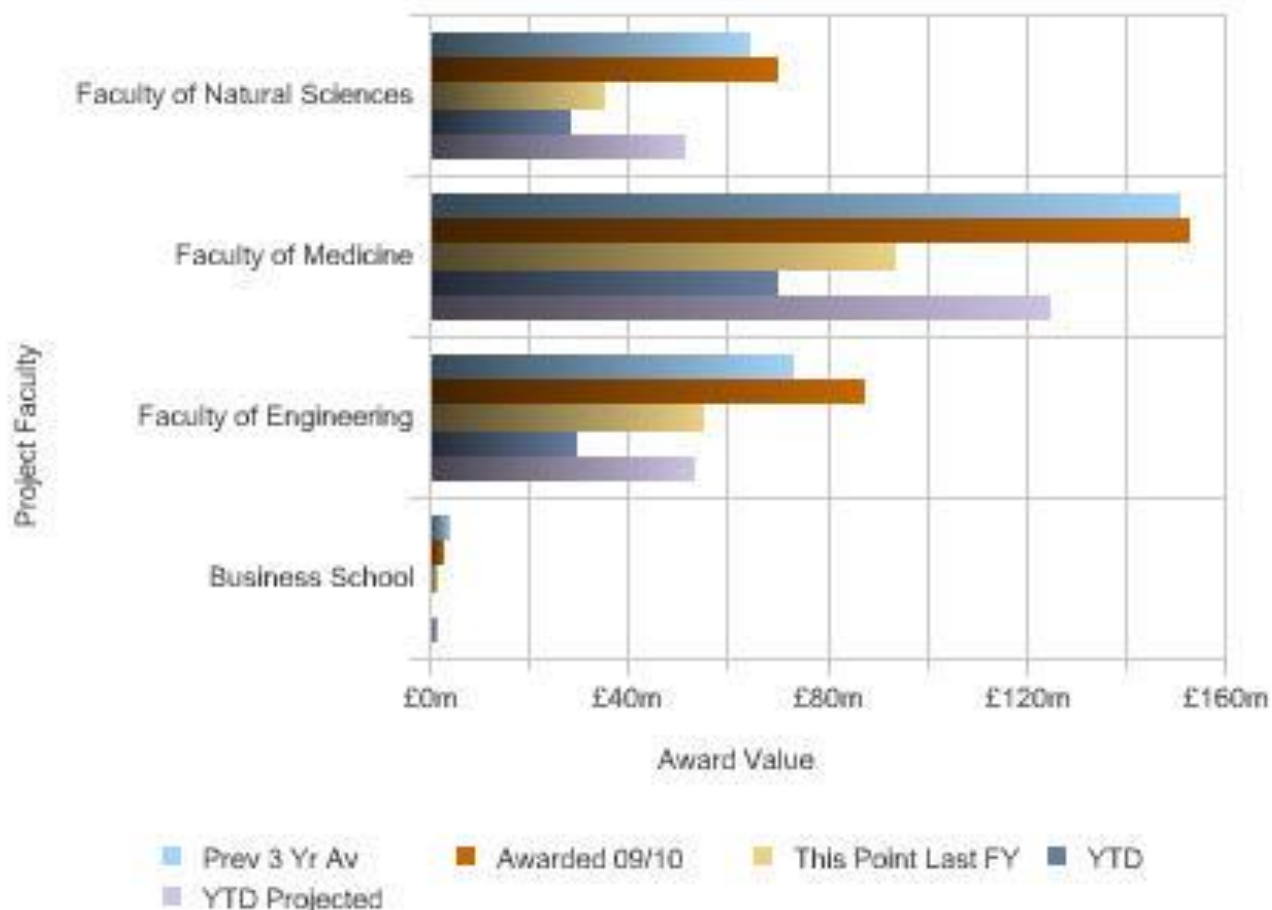


The graph displays the requested amount for the previous three-year average, the previous financial year total, the amount at this point in the previous financial year, the current financial year to date and the linear projected total for the current year.

Source: InfoEd

Faculty Award Volumes

Select Analysis Type

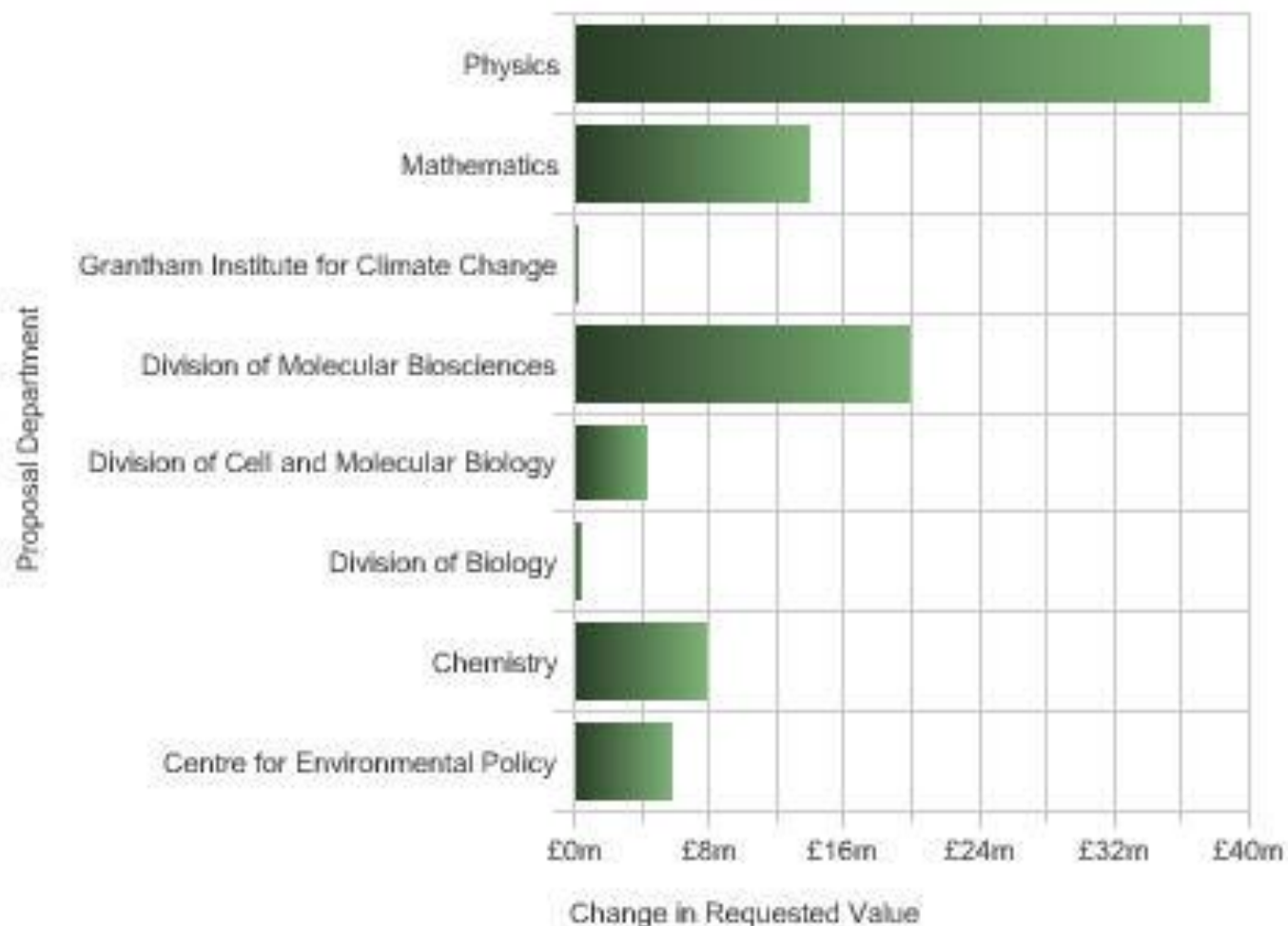


The graph displays the awarded amount for the previous three-year average, the previous financial year total, the amount at this point in the previous financial year, the current financial year to date and the linear projected total for the current year.

Source: GMS

Departmental Submission Volumes

Select Analysis Type



The chart displays the difference in total requested value between the projected current year total and the previous 3-year average.

Source: InfoEd

Now there are commercial harvesting systems e.g. Pure

Editor Master data REF2014 Reporting Administrator

University of York (+ underlying organisations) Change

STAFF 1,348 Today 1,703 All time
STUDENTS 1,131 Today 2,328 All time
APPLICATIONS / FUNDING 0 This year 6,080 All time
PROJECTS 3,198 This year 3,145 All time
RESEARCH OUTPUT 533 This year 34,397 All time
CITATIONS 0 This year 274,759 All time
ACTIVITIES 33 This year 1,508 All time

2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 Add widget

Top 10 research output types

Count

- Article
- Paper
- Chapter
- Book
- Chapter (peer-reviewed)
- Book/Film/Article review
- Conference contribution
- Commissioned report
- Scientific review
- Working paper

Choose a content type

EDITORIAL

- Activities
- Applications / Funding
- Impacts
- Projects
- Funded Projects
- Non-funded Projects
- Research output**

REF2014

- REF1a/c (Staff REF2014)
- REF1b (ISC REF2014)
- REF2 (Outputs REF2014)
- REF3a (Impact template)
- REF3b (Impact case study)
- REF5 (Environment template)
- Units of assessment

MASTER DATA

- Equipment/facilities
- Events
- External organisations
- External person

Matrix (analysis)

Organisation	2005	2006	2007	2008	2009	2010
Faculty Of Science	386	350	339	817	784	125
Faculty Of Engineering	311	376	331	663	712	231
Professional Services	69	73	63	39	49	12
Faculty Of Law, Arts And Social Sciences	134	119	100	202	216	164
Faculty Of	78	70	104	198	274	69

Table (analysis)

Organisation	Author's gender	Research output year	Count
Faculty Of Science	Female	2008	291
		2009	265
	Male	2008	702
Faculty Of Engineering	Female	2008	165
		2009	192
		2010	70

Chart (analysis)

Listing

1.1. 2009

An experimental and finite element study of the low-cycle fatigue failure of a galvanised steel lighting column
 Assouline, L., Tahri, J. & Rivlin, J. 2009
 Research output: Contribution to conference types > Paper

Temperature gradient effects on moisture transport in porous building materials
 Baker, P., Gebhardt, G. & McLean, R. 2009 In: Building Services Engineering Research and Technology, 30, 1, p. 27-48, 11 p.
 Research output: Contribution to journal - Article

An optimal gains matrix for time-delay feedback control
 Riggs, J. & Milnes, C. 2009
 Research output: Contribution to conference types > Paper

1.2. 2010

RAQ Test
 McQueen, J., Atkinson, P., Speck, B. & Auld, D. (ed.) 2010 In: Journal to be assigned.
 Research output: Contribution to journal - Article

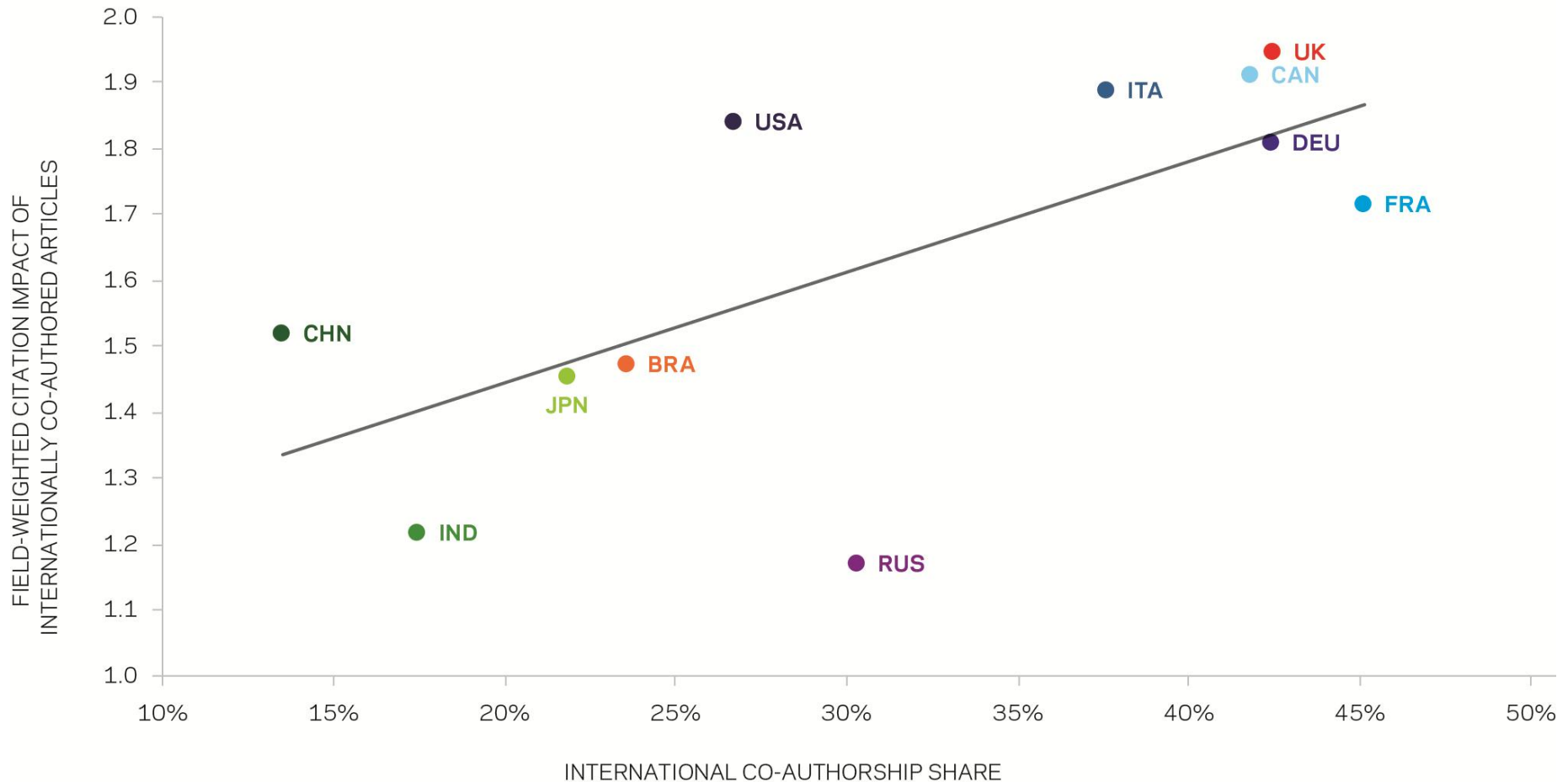
Table

Title	Type	pages	Publication date	Visibility
RAQ Test	Article	n/a	1/01/10	Publicly
An experimental and finite element study of the low-cycle fatigue failure of a galvanised steel lighting column	Paper	n/a	1/01/09	Publicly
Temperature gradient effects on moisture transport in porous building materials	Article	11	1/01/09	Publicly
An optimal gains matrix for time-delay feedback control	Paper	n/a	1/01/09	Publicly

Raw data spreadsheet

	A	B	C	D	E	F	G	H
1	organisatio	organisatio	organisatio	organisatio	organisatio	person(O)	person(O)	person
2	511	Medical Inf.	499	Department	517	Virtual Cen	11845	Lasse Rie
3	499	Department	517	Virtual Cen	511	Medical Inf.	4688802	Jens Steen
4	505	Center for I	499	Department of Health Science and Technology				
5	505	Center for I	499	Department of Health Science and				3556418
6	505	Center for I	499	Department	7268761	Center for Robotic Research		Jan P
7	505	Center for I	499	Department of Health Science and				12195
8	505	Center for I	499	Department of Health Science and				7258469
9	517	Virtual Cen	479	The divison	1335308	Digital Desi		10944
10	517	Virtual Cen	511	Medical Inf.	499	Department	1794605	Mette Danc
11	502	Center for I	499	Department of Health Science and				11648
12	502	Center for I	499	Department	111	Department	1837581	Mads Lous
13	505	Center for I	499	Department of Health Science and				12900
14	505	Center for I	499	Department of Health Science and Technology				
15	505	Center for I	499	Department of Health Science and				2891577

Collaboration works: quality of output (measured by FWCI) correlated with international collaboration

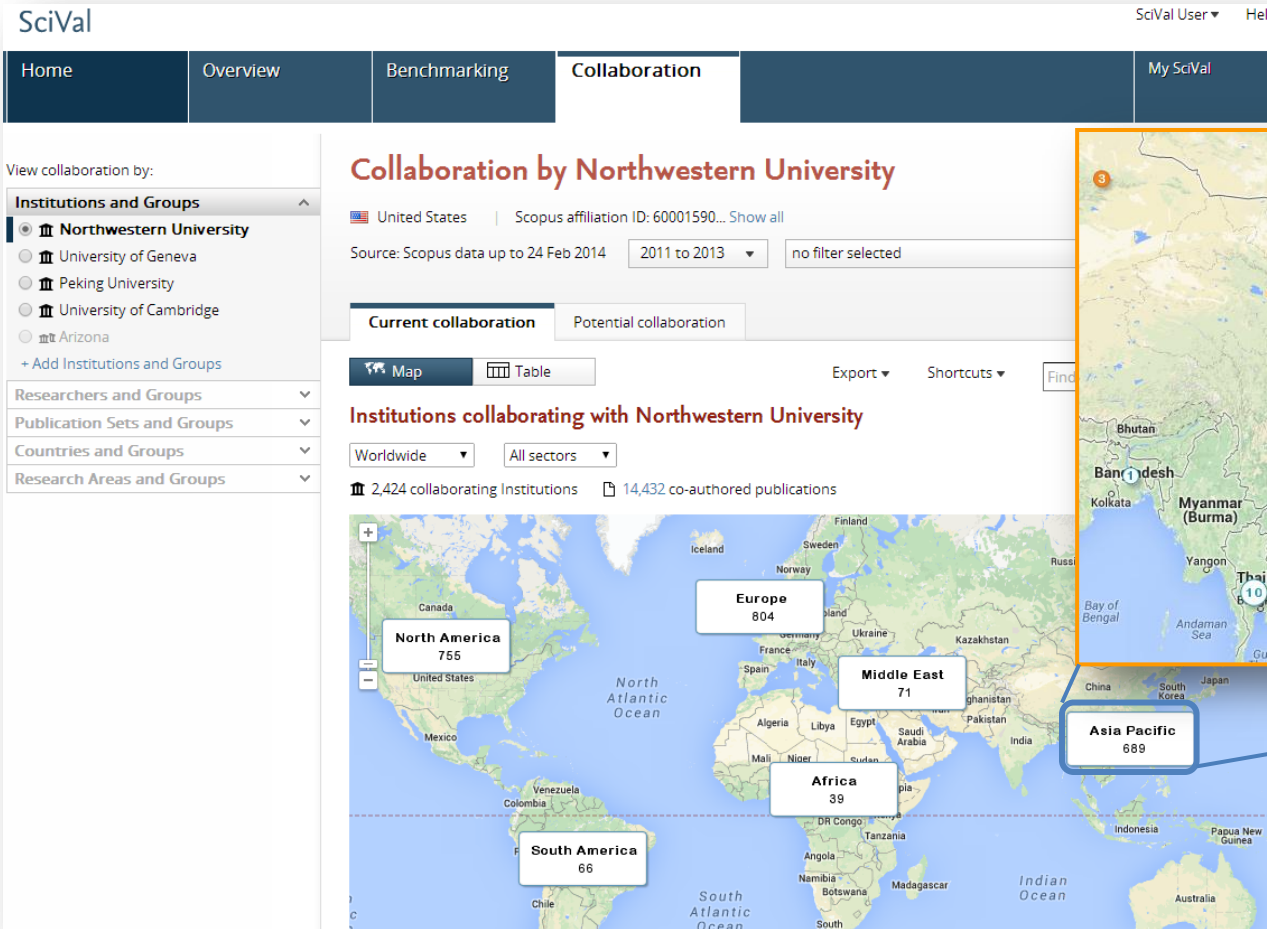


Correlation between international co-authorship share and field-weighted citation impact of internationally coauthored articles, 2008



Collaboration

“My Rector is going to China; who do our academics collaborate with there and how can we expand?”



Drill into the Google map to identify your collaboration partners in China

International research partnerships

Cambridge research initiative example: Energy, Academic Collaborators in Asia-Pacific



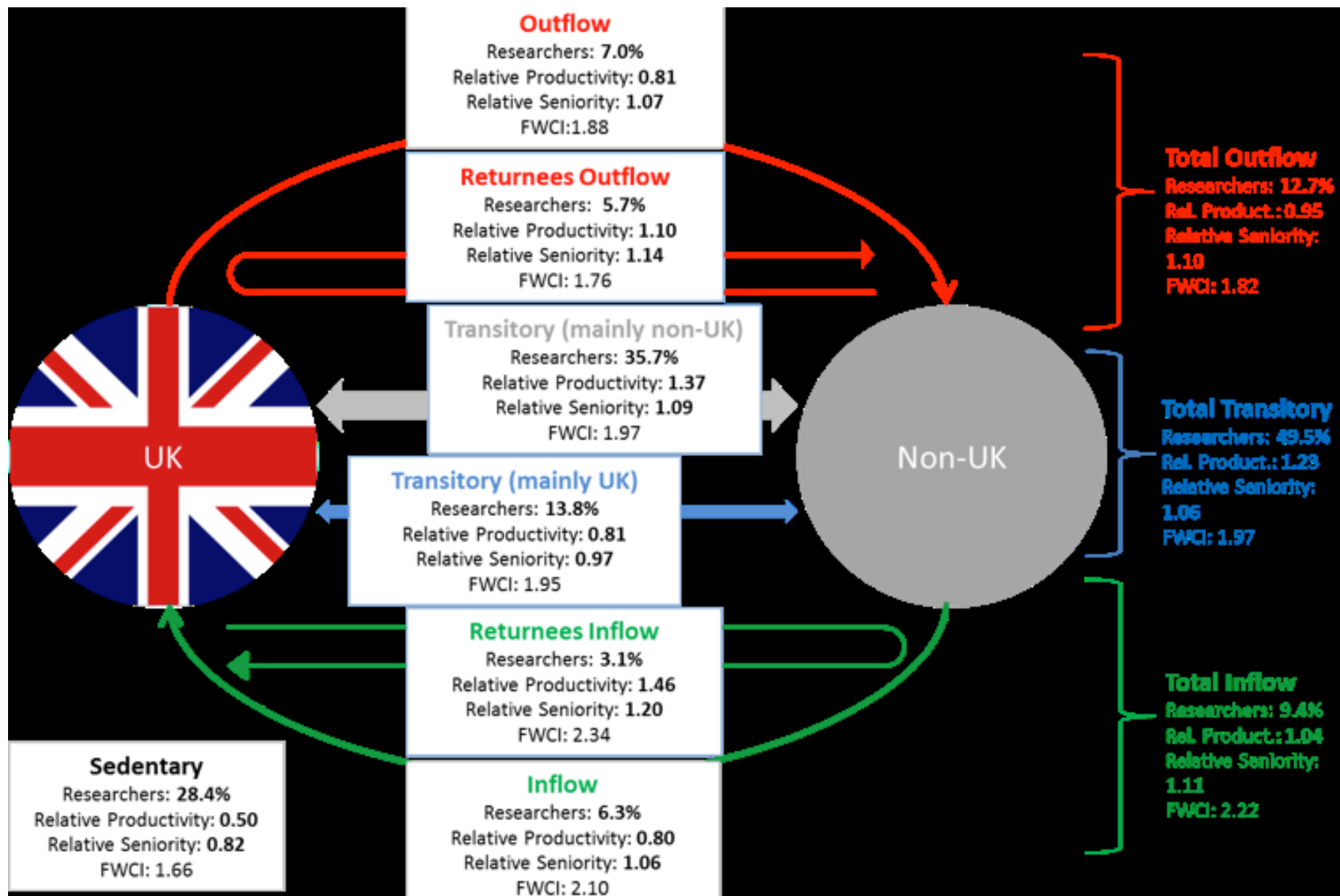
Top Asia-Pacific institutions collaborating with Cambridge in Energy, based on co-authorship

Institution	Co-authored publications	Co-authors at the University of Cambridge	Co-authors at the other institution
Tsinghua University	8 ▲	14 ▲	21 ▲
University of Sydney	6	11 ▲	8 ▼
National University of Singapore	5	14 ▲	7 ▼
Peking University	4 ▲	2 ▲	4 ▲
University of Tokyo	4 ▼	4 ▼	3 ▼
Monash University	3 ▲	2 ▲	1 ▲
Graduate University of Chinese Academy of Sciences	3 ▲	2 ▲	2 ▲
Huazhong University of Science and Technology	3 ▲	8 ▲	9 ▲
Tianjin University	3 ▲	9 ▲	6 ▲
CAS - Changchun Institute of Applied Chemistry	3	6	3
CAS - Shenyang Institute of Applied Ecology	3 ▲	2 ▲	5 ▲
Indian Institute of Science Bangalore	3 ▲	6 ▲	3 ▲
Hokkaido University	3 ▼	3 ▼	5 ▼

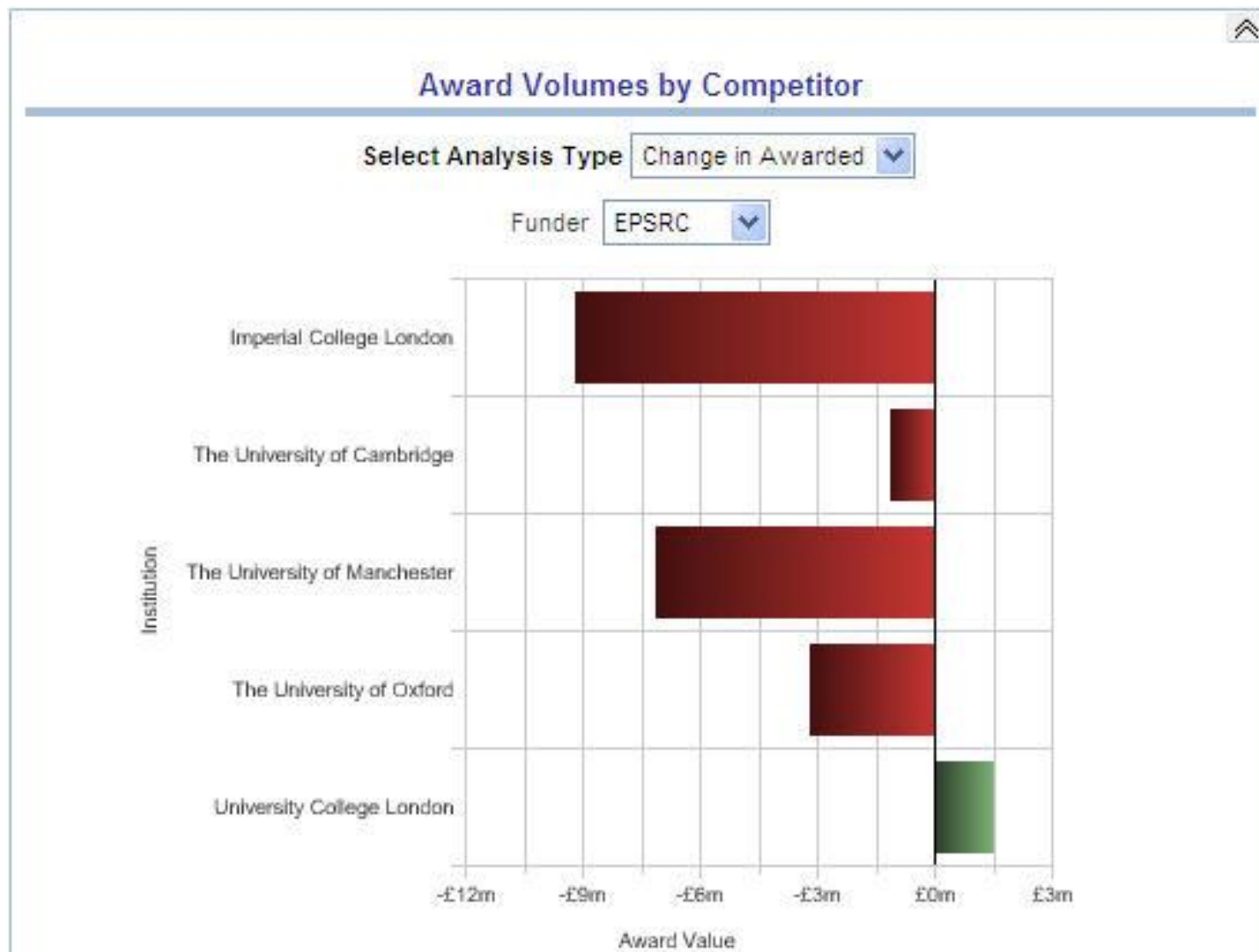
Top Asia-Pacific institutions not collaborating with Cambridge in Energy, based on authorship

Institution	Publications	Authors
China University of Petroleum	4,497 ▲	5,174 ▲
SINOPEC	2,816 ▲	4,187 ▲
Xian Jiaotong University	2,346 ▲	2,584 ▲
Zhejiang University	2,307 ▲	2,826 ▲
China University of Mining And Technology	1,935 ▲	2,973 ▲
Japan Atomic Energy Agency	1,837 ▲	1,637 ▲
Harbin Engineering University	1,588 ▲	2,131 ▲
Wuhan University	1,450 ▼	1,871 ▼
Dalian University of Technology	1,423 ▲	1,980 ▲
Korea Atomic Energy Research Institute	1,361 ▼	1,256 ▼
Shandong University	1,244 ▲	1,568 ▲
University of Science and Technology of China	1,188 ▲	1,773 ▲

Mobility works: international mobility of UK researchers 1996-2012



Benchmark progress



The graph displays the difference in awarded budgets between the financial year 2008 / 09 and the previous three-year average. 2009 / 10 figures will be used instead once all funders have published complete information for that period.

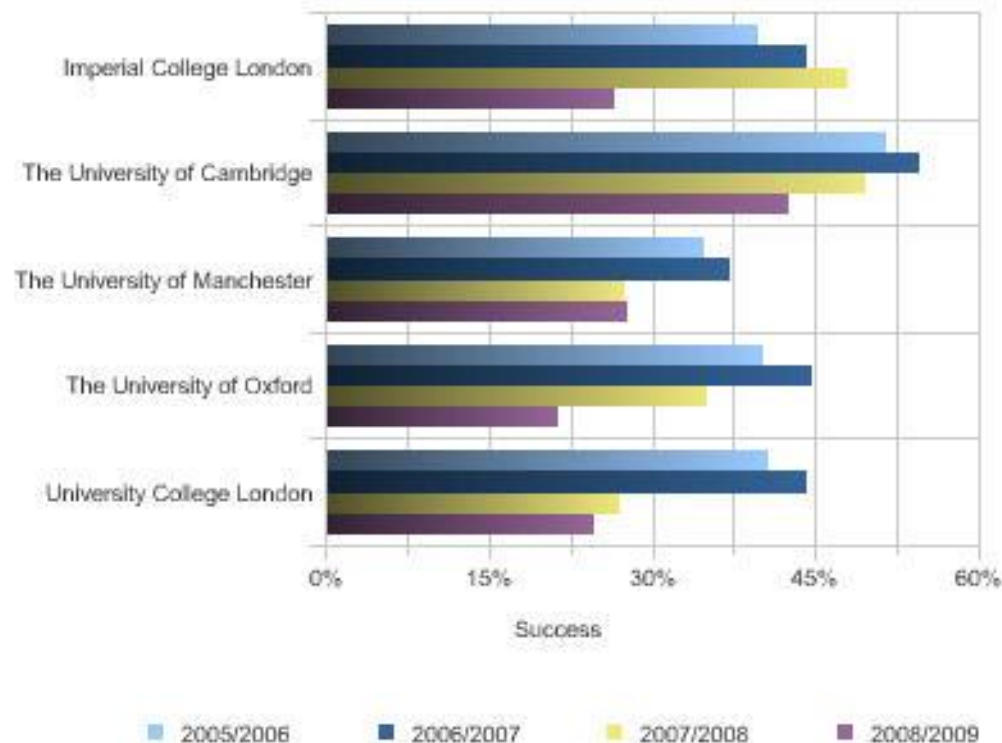
Central Funds, Infrastructure, Equipment and Knowledge Transfer awards are excluded.

Benchmark progress

Annual Success Rates by Competitor

Select Analysis Types

Funder



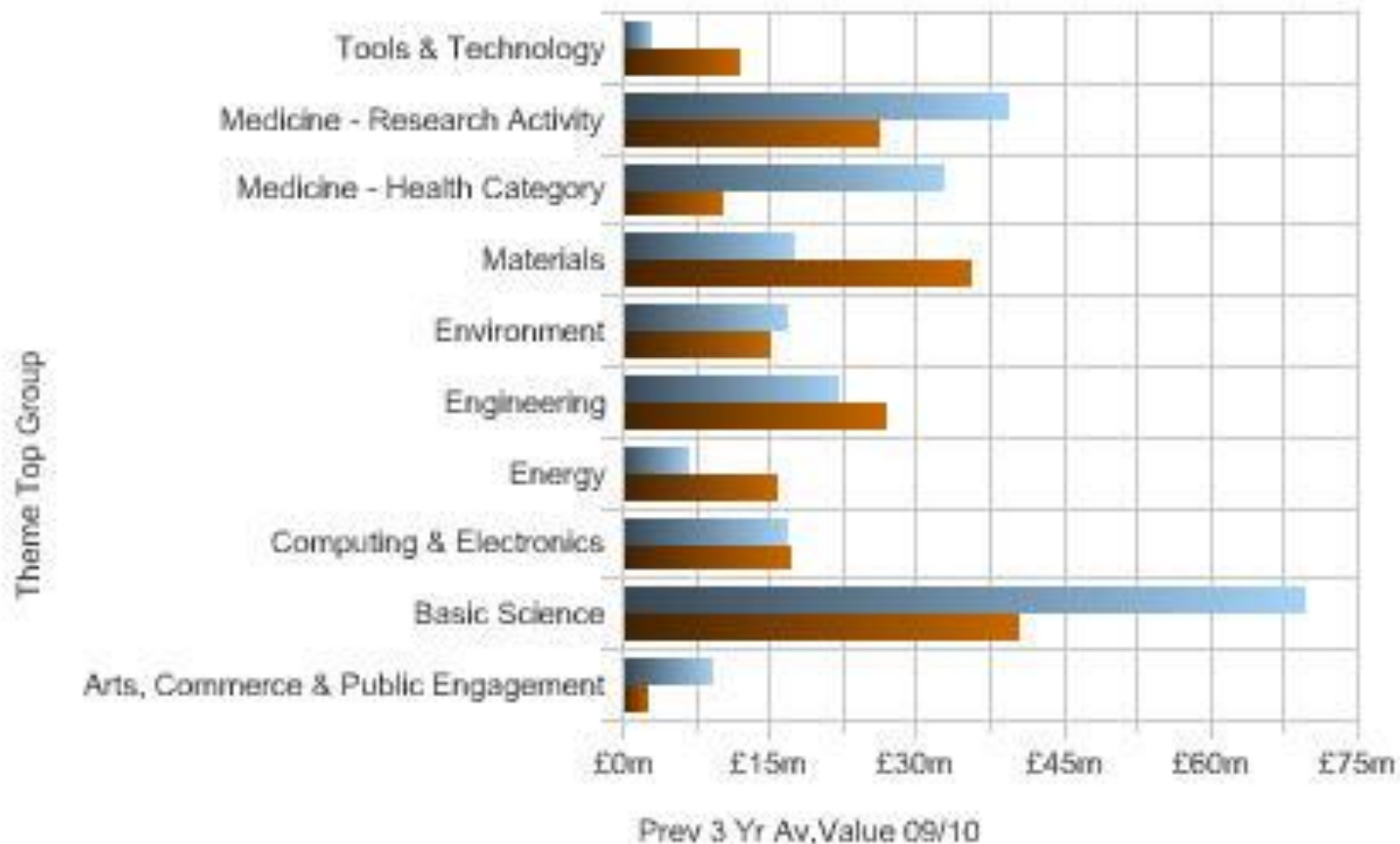
The graph displays the success rate (value awarded compared to value requested) per year, according to decision date. Please note that the Research Councils do not all publish the same figures, hence the variety of years displayed per funder. Also note that no drilldown information is available for these figures as the Research Councils do not publish information about individual submissions that were not funded.

Benchmark progress

Award Volumes by Research Theme

Select Analysis Type ▾

Institution ▾



With this evidence and information what can we do to improve?

Constantly examine, refresh and change strategy ...

- **investment?**
- **disinvestment?**
- **promote activities which the evidence shows are successful**
- **know who are our competitors and collaborators**
- **support academics**
- **invest in the young (PhDs)**
- **involve academics in decision making & funding decisions**
- **create drivers which encourage change and improve productivity**

With this evidence and information what can we do to improve?

- understand changing external landscape of research
- recognise old models/structures & constantly review
- overcome resistance to change
- drive evidence-based decisions
- successful collaboration is between academics (not between universities)
- devolve, incentivise and empower academics
- **the role of university leaders is to facilitate and support ... not to control**

Thank you

John Green

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Analytics reports:
<http://www.snowballmetrics.com/reports/>