

# The Value of Science

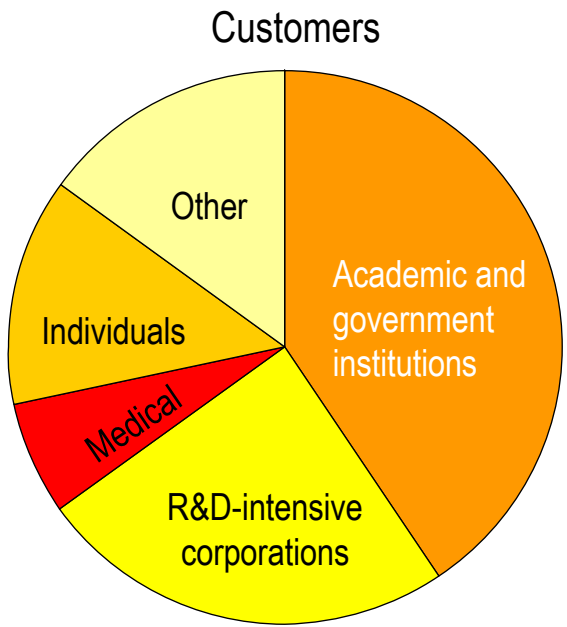
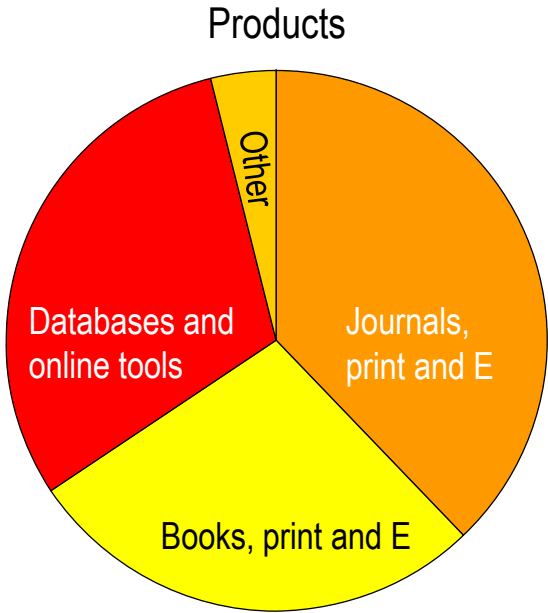
## The role of information providers

November 22, 2010

Chatham House, London

Dr Nick Fowler, Director of Strategy, Elsevier

# Overview of Scientific, Technical and Medical (STM) Information industry



# Science publishers have a privileged vantage point on science



## Each year

- 3 million articles submitted
- 300,000 peer reviewers
- 1.5 million articles published
- 30 million readers
- 2 billion digital article downloads
- 30 million article citations



# Publication impact, societal impact: Nobel prize examples



2010 Nobel Prize winner

Idea

Publication impact

Societal impact

Medicine



Robert Edwards



IVF

THE LANCET

44x average

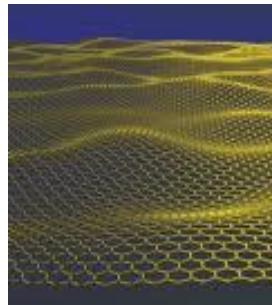


4 million births

Physics



Andrew Geim, Konstantin Novoselov



Graphene

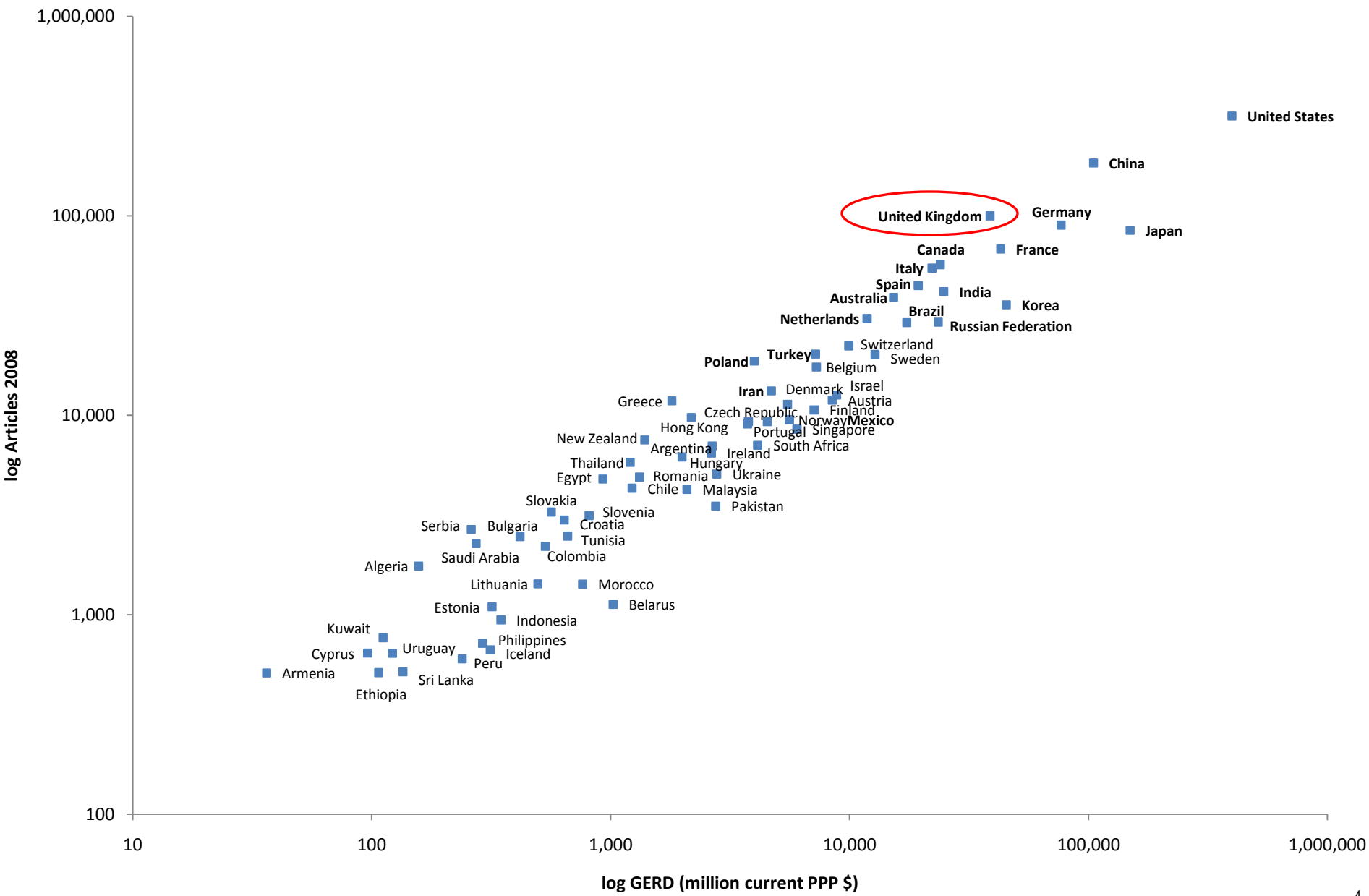
nature

23x average

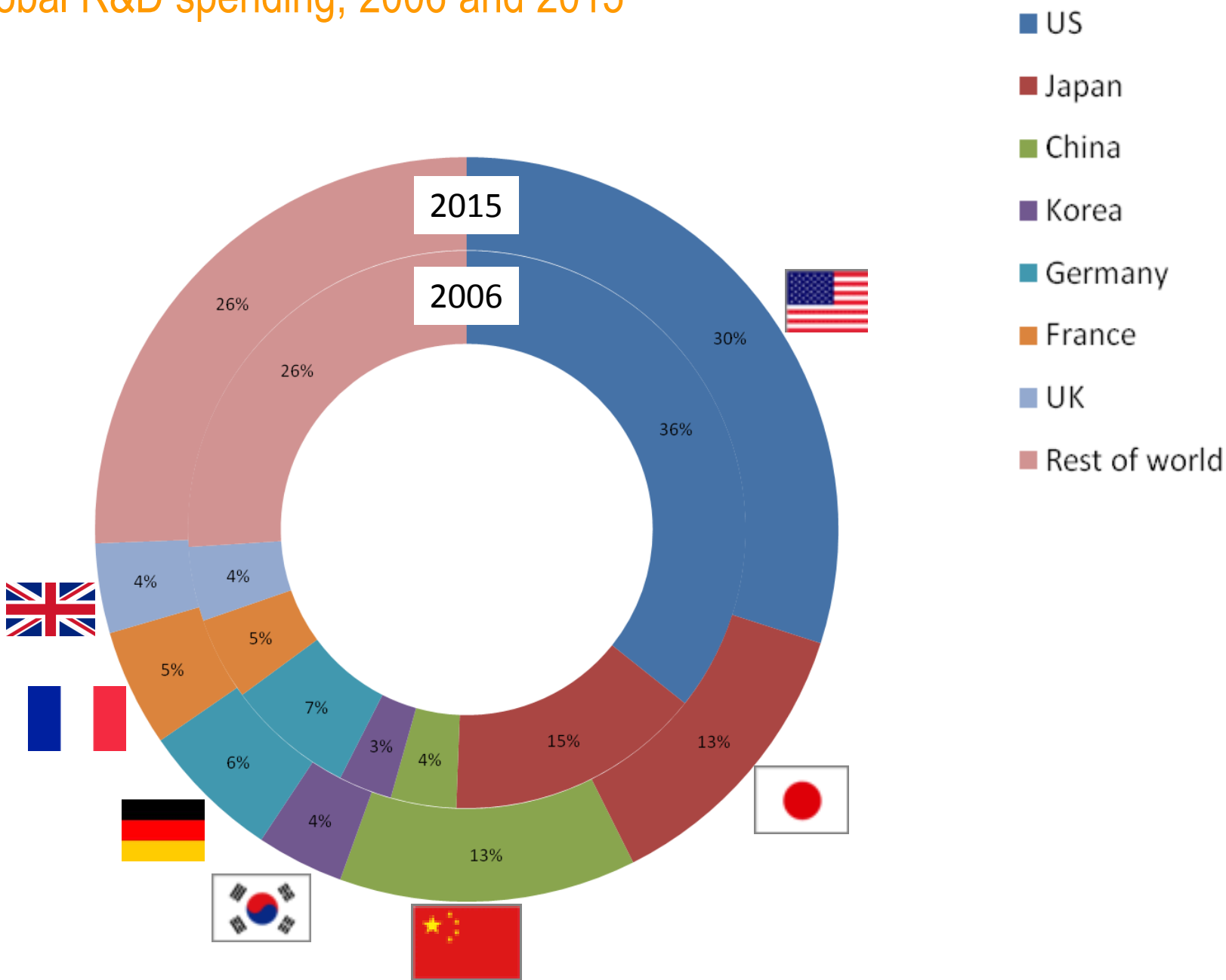


Faster computers,  
lighter aeroplanes

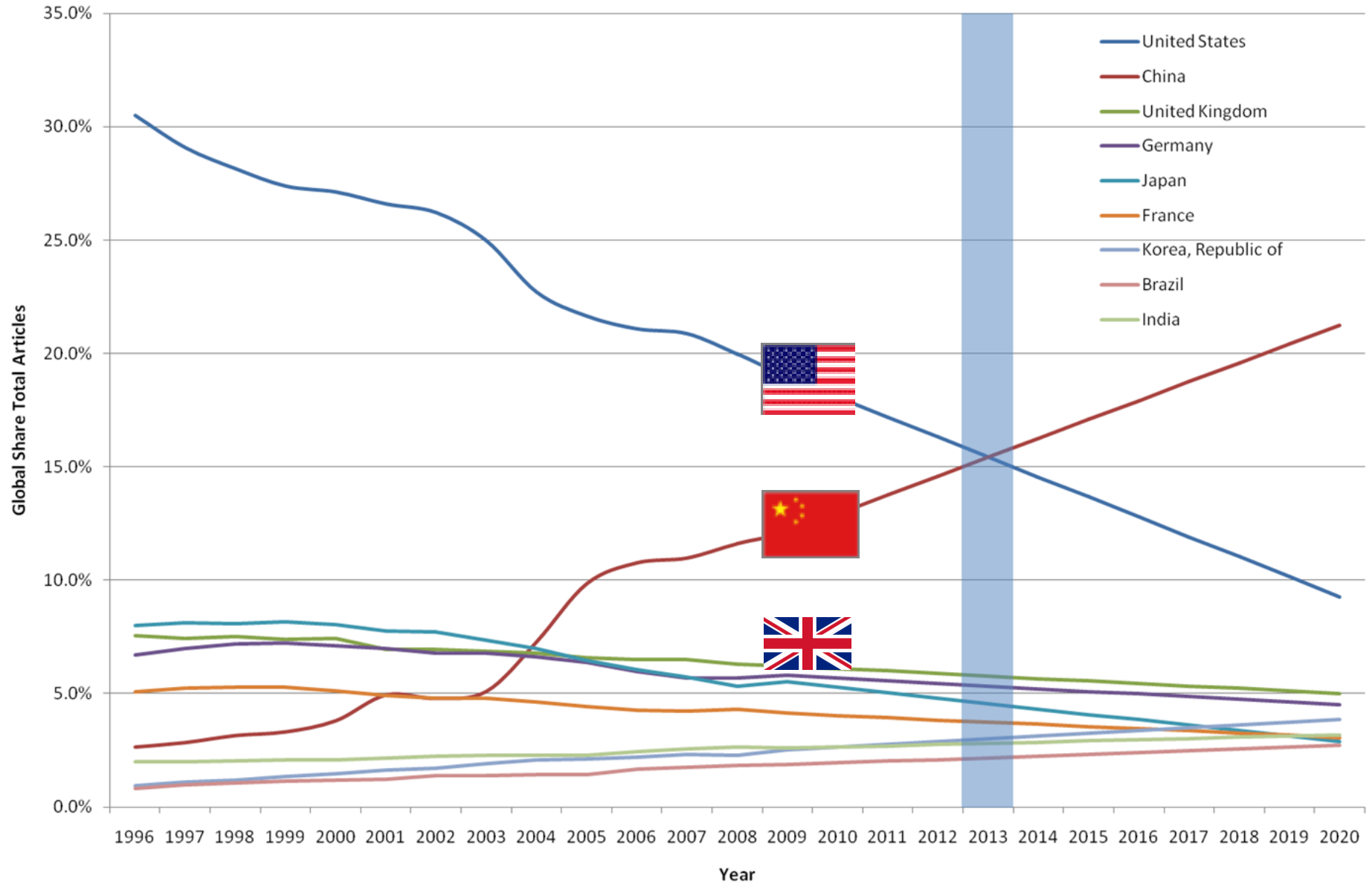
# R&D funding vs article outputs by country



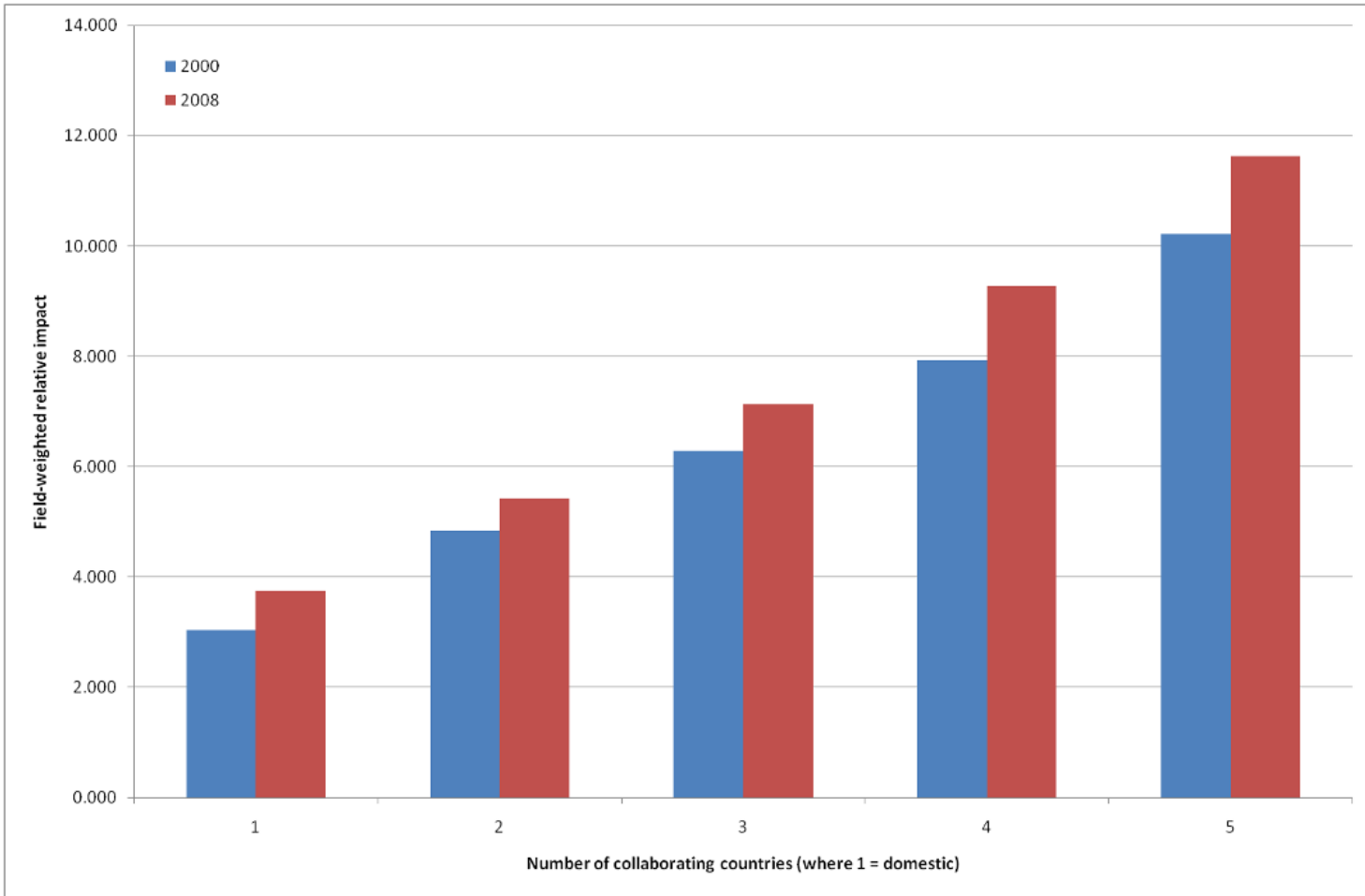
# Share of global R&D spending, 2006 and 2015



# Share of published journal articles, 1996-2020 (projected)



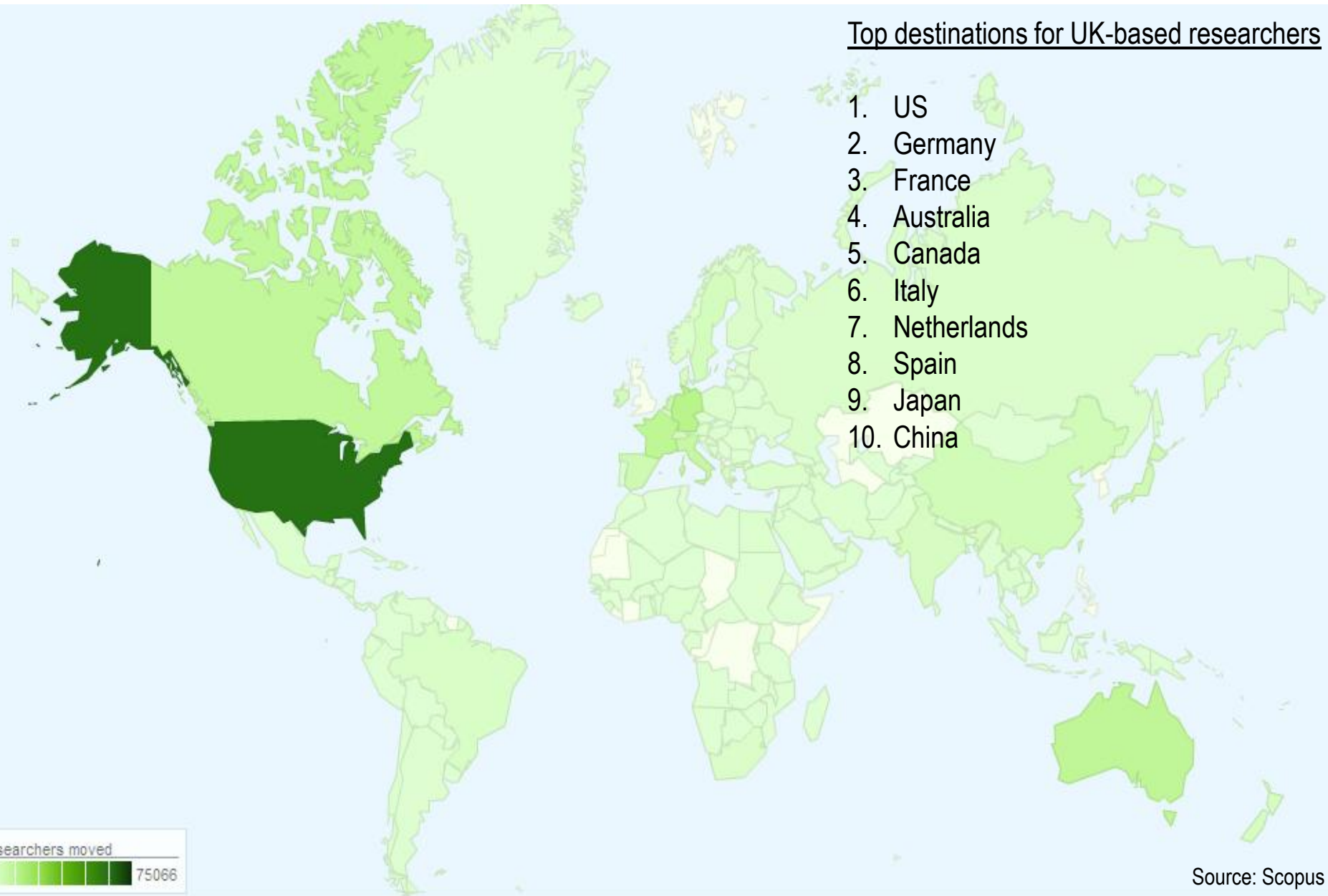
# Science is becoming more collaborative



- International scientific collaboration is generally acknowledged as a positive force driving national impact and prestige
- Domestic articles ('1') have no collaboration partners have around 3 times fewer citations per article than those with four collaborating countries ('5')

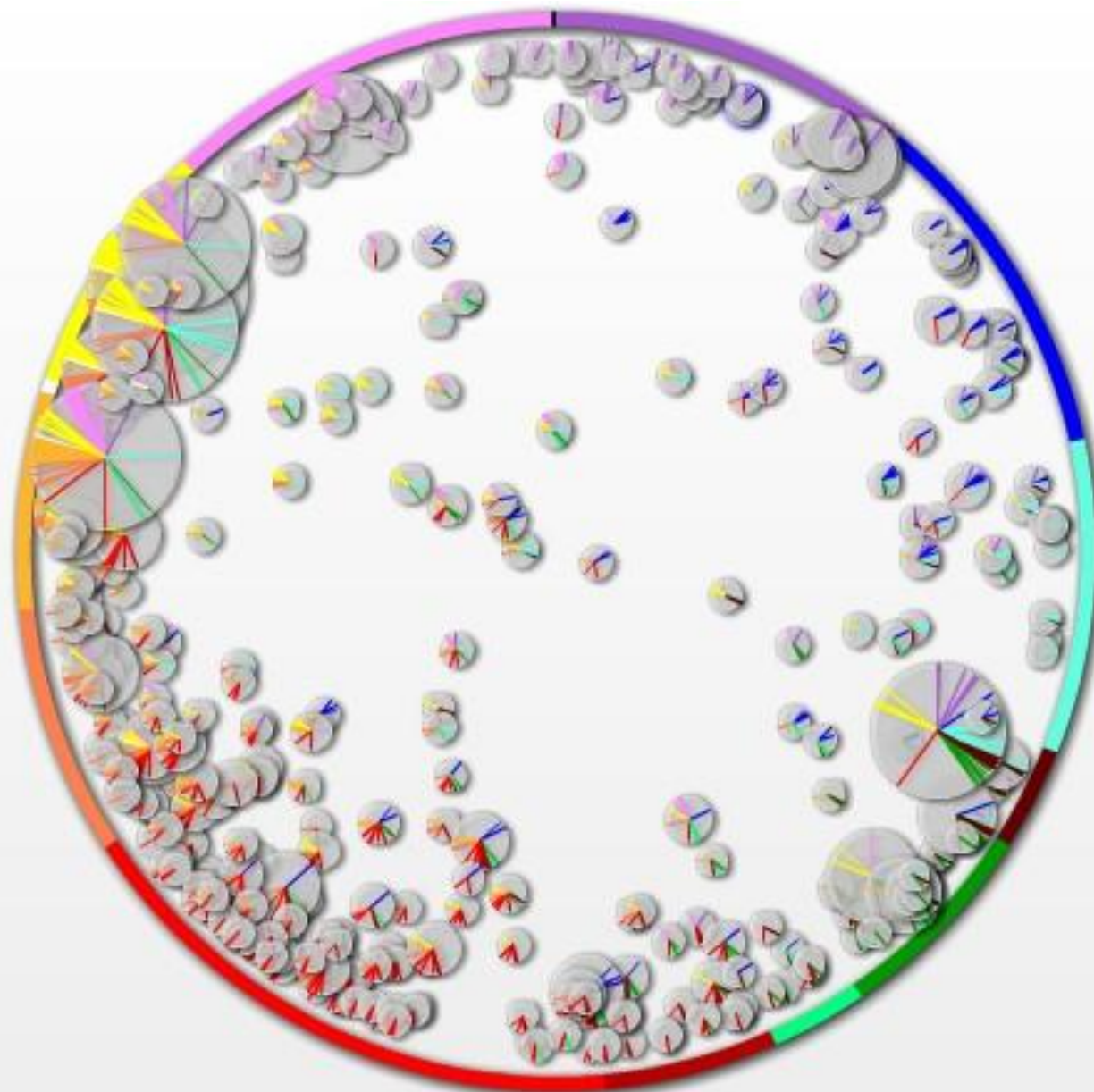
# Scientists are more mobile

Destinations of researchers formerly affiliated with UK institutions



# Science is becoming more interdisciplinary

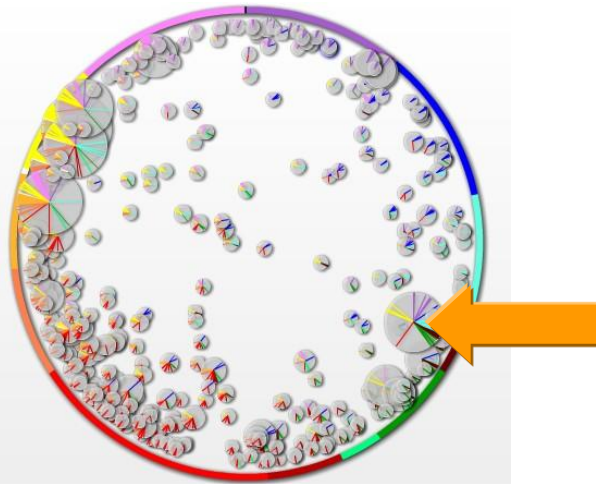
Map of UK research strengths, 2009



- Math & Physics
- Chemistry
- Engineering
- Earth Sciences
- Biology
- Biotechnology
- Infectious Diseases
- Medical Specialities
- Health Sciences
- Brain Research
- Humanities
- Social Sciences
- Computer Science
- Other

# UK distinctive competency example

## Climate change and sea levels



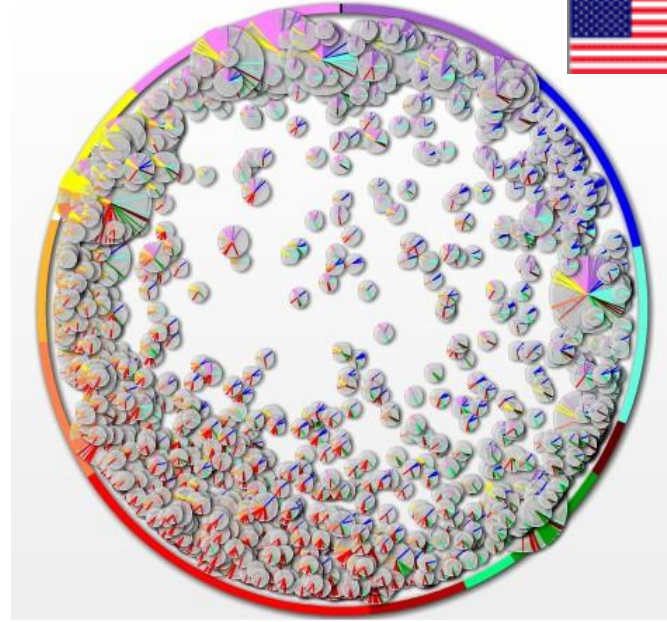
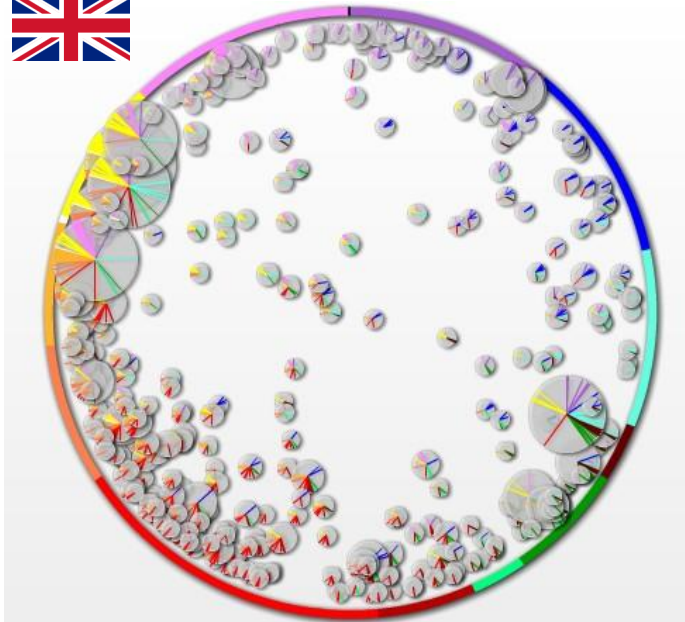
Country		Fractionalized articles	Total articles	RL	SotA	Cited
1.	United States	4,350.5	10243	0.89	0.29	27,566.4
2.	United Kingdom	4,140.0	7183	1.12	0.89	30,199.7
3.	Germany	1,687.5	3577	0.29	1.37	12,157.0
4.	France	1,459.7	2937	0.29	0.65	9,210.5
5.	Canada	1,215.7	2666	0.18	-0.24	7,128.8
6.	China	1,094.7	2294	0.09	0.61	3,730.9
7.	Australia	951.3	2011	0.13	0.65	5,555.1
8.	Italy	856.5	1813	0.15	0.39	4,231.2
9.	Netherlands	719.4	1480	0.12	1.13	5,414.2
10.	Spain	693.0	1434	0.12	0.11	3,738.8

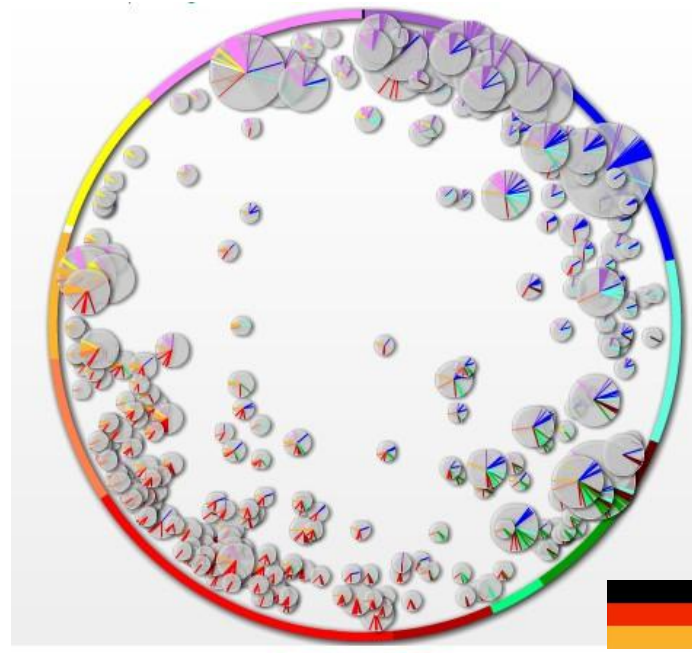
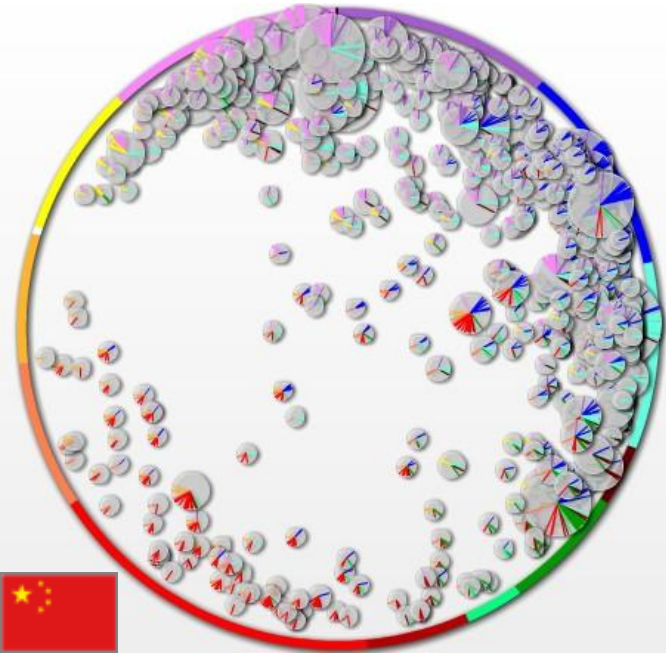
Institution (Country)			Fractionalized articles	Total articles	RL	SotA	Cited
1.	British Antarctic Survey	GBR	309.3	468.0	1.06	2.10	2,800.0
2.	University of Oxford	GBR	301.0	521.0	0.95	1.47	2,914.5
3.	CNRS	FRA	253.7	500.0	0.66	0.87	2,084.3
4.	Met Office	GBR	238.7	434.0	0.86	2.36	3,928.3
5.	University of Reading	GBR	230.3	396.0	0.76	2.12	3,505.8
6.	University of Colorado	USA	228.4	514.0	0.88	1.56	1,769.0
7.	University of Bristol	GBR	224.8	377.0	0.67	2.03	2,102.8
8.	University of Durham	GBR	222.9	337.0	0.52	-0.71	1,402.1
9.	NOAA	USA	219.6	528.0	0.65	1.81	3,048.7
10.	U.S. Geological Survey	USA	217.2	447.0	0.36	-1.05	1,130.4



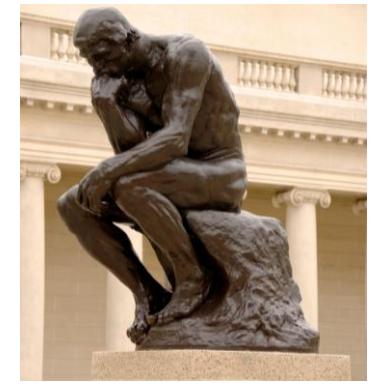
# Science is becoming more interdisciplinary



- Math & Physics
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- Engineering
- Earth Sciences
- Biology
- Biotechnology
- Infectious Diseases
- Medical Specialities
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- Humanities
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- Other



# Implications of observations are challenging



## Observations

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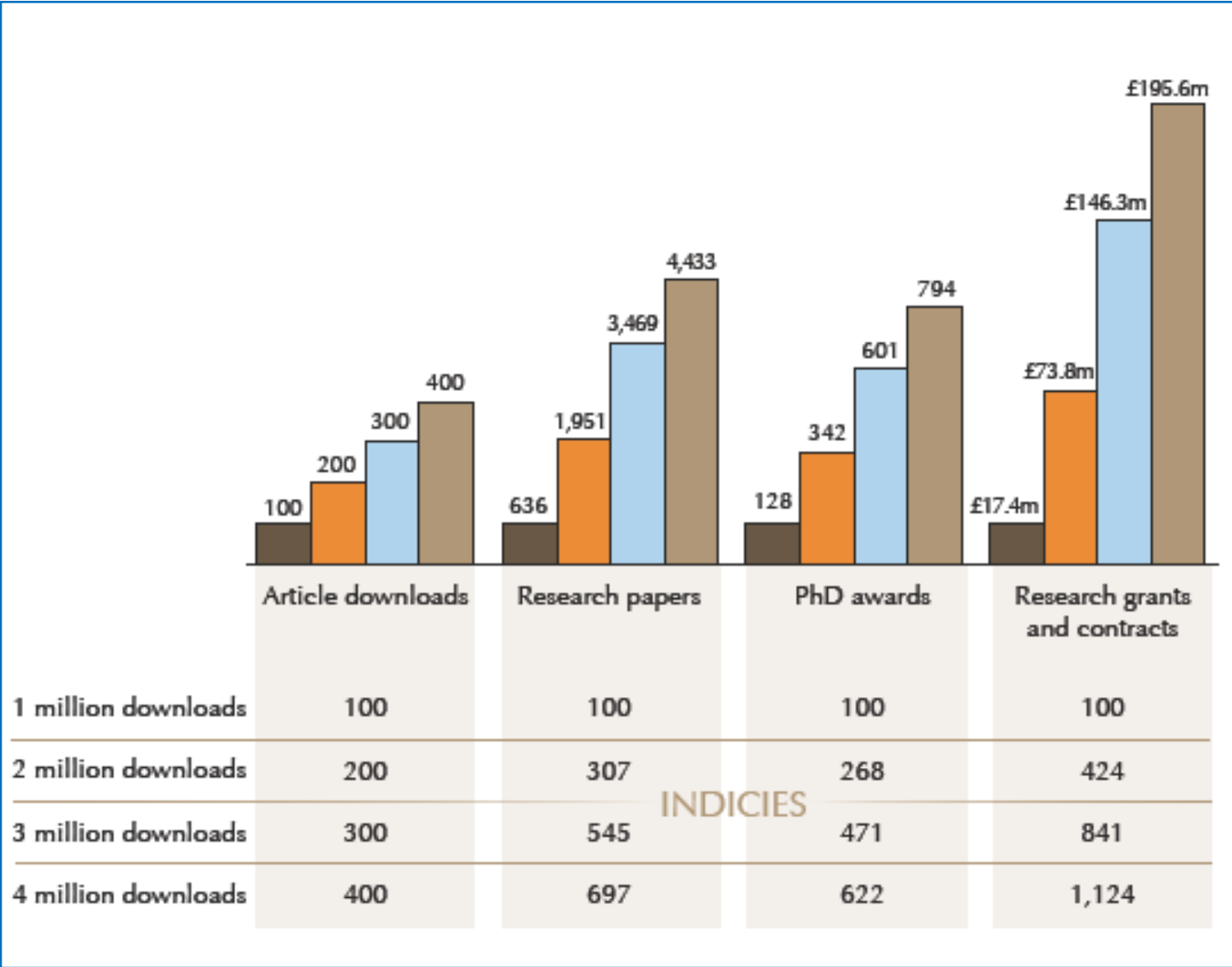
1. R&D spending drives R&D outputs, and new global leaders are emerging
2. Science is becoming more collaborative
3. Scientists are more mobile geographically
4. Science is becoming more interdisciplinary

## Challenges

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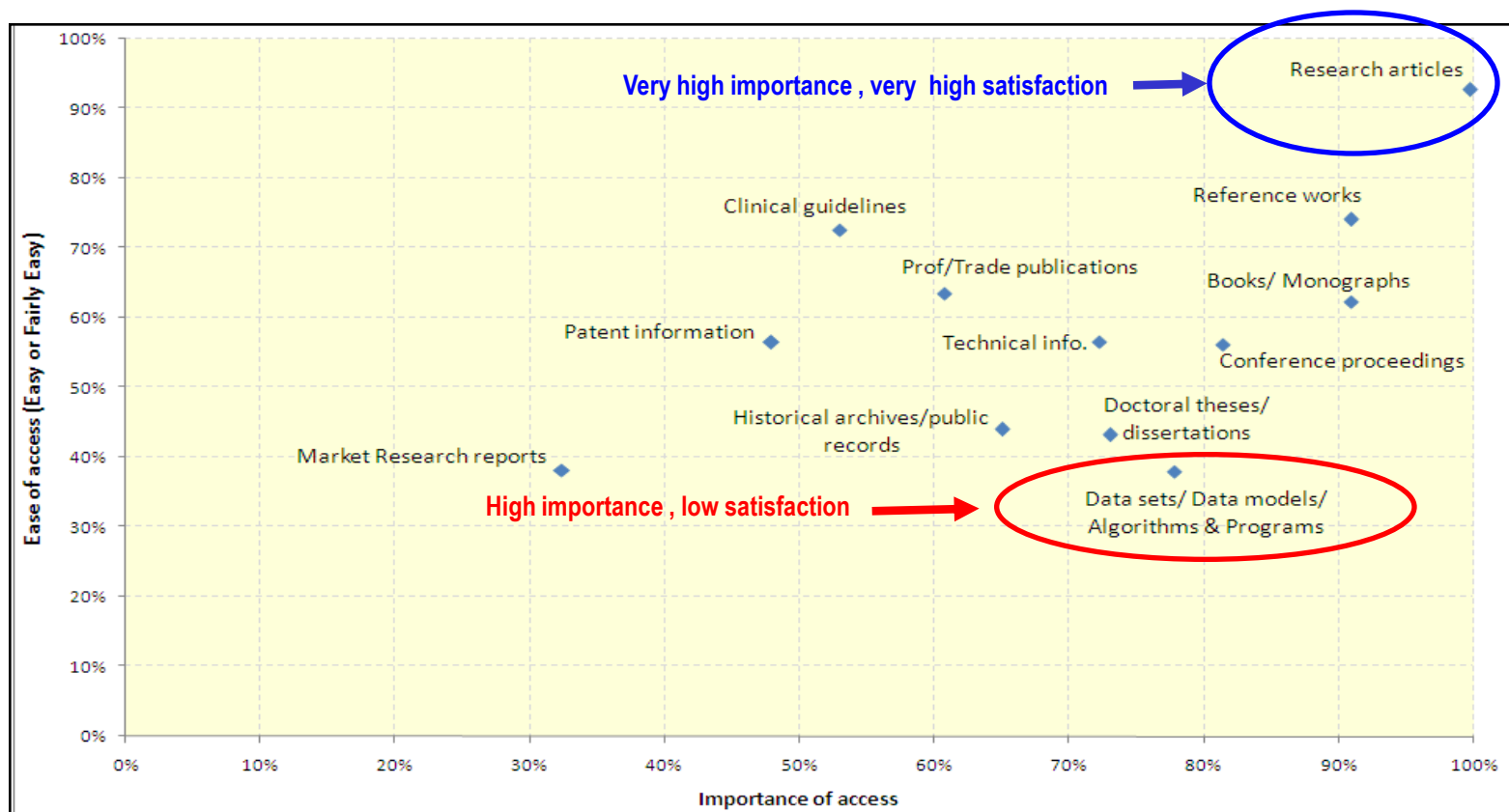
- How to hold and grow share given global shift
- How to find and build links with the right partners
- How to identify, attract and retain the best
- How to allocate funds across subjects and departments

# Collaboration area (1 of 4): quality content to drive research efficiency



Source: "E-journals, their use, value and impact", 2009 RIN/Ciber

# Collaboration area (2 of 4): enhanced access to scientific research data



## • Elsevier is taking steps to facilitate access to experimental data sets

- Link data sets to journal articles, e.g. Pangaea, CCDC
- Support and drive guidelines with key partners, e.g.
  - Wellcome Trust
  - NSF
  - Bill and Melinda Gates Foundation



BILL & MELINDA GATES foundation

wellcome trust



Cambridge Crystallographic Data Centre



# Collaboration area (4 of 4): tailored information to manage research impact



# Summary

