

# UNESCO SCIENCE REPORT

Table 1.3: World shares of researchers, 2007, 2009, 2011 and 2013

	Researchers ('000s)				Share of global researchers (%)				
	2007	2009	2011	2013	2007	2009	2011	2013	
<b>World</b>	<b>6 400.9</b>	<b>6 901.9</b>	<b>7 350.4</b>	<b>7 758.9</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	
High-income economies	4 445.9	4 653.9	4 823.1	4 993.6	69.5	67.4	65.6	64.4	
Upper middle-income economies	1 441.8	1 709.4	1 952.3	2 168.8	22.5	24.8	26.6	28.0	
Lower middle-income economies	439.6	453.2	478.0	493.8	6.9	6.6	6.5	6.4	
Low-income economies	73.6	85.4	96.9	102.6	1.2	1.2	1.3	1.3	
<b>Americas</b>	<b>1 516.6</b>	<b>1 656.7</b>	<b>1 696.1</b>	<b>1 721.9</b>	<b>23.7</b>	<b>24.0</b>	<b>23.1</b>	<b>22.2</b>	
North America	1 284.9	1 401.2	1 416.1	1 433.3	20.1	20.3	19.3	18.5	
Latin America	222.6	245.7	270.8	280.0	3.5	3.6	3.7	3.6	
Caribbean	9.1	9.7	9.2	8.5	0.1	0.1	0.1	0.1	
<b>Europe</b>	<b>2 125.6</b>	<b>2 205.0</b>	<b>2 296.8</b>	<b>2 408.1</b>	<b>33.2</b>	<b>31.9</b>	<b>31.2</b>	<b>31.0</b>	
European Union	1 458.1	1 554.0	1 623.9	1 726.3	22.8	22.5	22.1	22.2	
Southeast Europe	11.3	12.8	14.2	14.9	0.2	0.2	0.2	0.2	
European Free Trade Association	51.9	56.8	62.9	67.2	0.8	0.8	0.9	0.9	
Other Europe	604.3	581.4	595.8	599.9	9.4	8.4	8.1	7.7	
<b>Africa</b>	<b>150.1</b>	<b>152.7</b>	<b>173.4</b>	<b>187.5</b>	<b>2.3</b>	<b>2.2</b>	<b>2.4</b>	<b>2.4</b>	
Sub-Saharan Africa	58.8	69.4	77.1	82.0	0.9	1.0	1.0	1.1	
Arab States in Africa	91.3	83.3	96.3	105.5	1.4	1.2	1.3	1.4	
<b>Asia</b>	<b>2 498.1</b>	<b>2 770.8</b>	<b>3 063.9</b>	<b>3 318.0</b>	<b>39.0</b>	<b>40.1</b>	<b>41.7</b>	<b>42.8</b>	
Central Asia	21.7	25.1	26.1	33.6	0.3	0.4	0.4	0.4	
Arab States in Asia	31.6	35.6	40.7	44.0	0.5	0.5	0.6	0.6	
West Asia	116.2	119.2	124.3	136.9	1.8	1.7	1.7	1.8	
South Asia	206.2	223.6	233.0	242.4	3.2	3.2	3.2	3.1	
Southeast Asia	2 122.4	2 367.4	2 639.8	2 861.1	33.2	34.3	35.9	36.9	
<b>Oceania</b>	<b>110.5</b>	<b>116.7</b>	<b>120.1</b>	<b>123.3</b>	<b>1.7</b>	<b>1.7</b>	<b>1.6</b>	<b>1.6</b>	
<b>Other groupings</b>									
Least developed countries	45.2	51.0	55.8	58.8	0.7	0.7	0.8	0.8	
Arab States all	122.9	118.9	137.0	149.5	1.9	1.7	1.9	1.9	
OECD	3 899.2	4 128.9	4 292.5	4 481.6	60.9	59.8	58.4	57.8	
G20	5 605.1	6 044.0	6 395.0	6 742.1	87.6	87.6	87.0	86.9	
<b>Selected countries</b>									
Argentina	38.7	43.7	50.3	51.6 <sup>-1</sup>	0.6	0.6	0.7	0.7 <sup>-1</sup>	
Brazil	116.3	129.1	138.7 <sup>-1</sup>	–	1.8	1.9	2.0 <sup>-1</sup>	–	
Canada	151.3	150.2	163.1	156.6 <sup>-1</sup>	2.4	2.2	2.2	2.1 <sup>-1</sup>	
China	– <sup>*</sup>	1 152.3 <sup>b</sup>	1 318.1	1 484.0	– <sup>*</sup>	16.7 <sup>b</sup>	17.9	19.1	
Egypt	49.4	35.2	41.6	47.7	0.8	0.5	0.6	0.6	
France	221.9	234.4	249.2 <sup>b</sup>	265.2	3.5	3.4	3.4 <sup>b</sup>	3.4	
Germany	290.9	317.3	338.7	360.3	4.5	4.6	4.6	4.6	
India	154.8 <sup>-2</sup>	–	192.8 <sup>-1</sup>	–	2.6 <sup>-2</sup>	–	2.7 <sup>-1</sup>	–	
Iran	54.3 <sup>+1</sup>	52.3 <sup>b</sup>	54.8 <sup>-1</sup>	–	0.8 <sup>+1</sup>	0.8 <sup>b</sup>	0.8 <sup>-1</sup>	–	
Israel	–	–	55.2	63.7 <sup>-1</sup>	–	–	0.8	0.8 <sup>-1</sup>	
Japan	684.3	655.5 <sup>b</sup>	656.7	660.5	10.7	9.5 <sup>b</sup>	8.9	8.5	
Malaysia	9.7 <sup>-1</sup>	29.6 <sup>b</sup>	47.2	52.1 <sup>-1</sup>	0.2 <sup>-1</sup>	0.4 <sup>b</sup>	0.6	0.7 <sup>-1</sup>	
Mexico	37.9	43.0	46.1	–	0.6	0.6	0.6	–	
Republic of Korea	221.9	244.1	288.9	321.8	3.5	3.5	3.9	4.1	
Russian Federation	469.1	442.3	447.6	440.6	7.3	6.4	6.1	5.7	
South Africa	19.3	19.8	20.1	21.4 <sup>-1</sup>	0.3	0.3	0.3	0.3 <sup>-1</sup>	
Turkey	49.7	57.8	72.1	89.1	0.8	0.8	1.0	1.1	
United Kingdom	252.7	256.1	251.4	259.3	3.9	3.7	3.4	3.3	
United States of America	1 133.6	1 251.0	1 252.9	1 265.1 <sup>-1</sup>	17.7	18.1	17.0	16.7 <sup>-1</sup>	

-n/+n = data are for n years before or after reference year

b: break in series with previous year for which data are shown

## GLOBAL TRENDS IN HUMAN CAPITAL

### Widespread growth in researchers, little change in the global balance

Today, there are some 7.8 million researchers worldwide (Table 1.3). Since 2007, the number of researchers has risen by 21%. This remarkable growth is also reflected in the explosion of scientific publications.

The EU remains the world leader for the number of researchers, with a 22.2% share. Since 2011, China (19.1%) has overtaken the USA (16.7%), as predicted by the *UNESCO Science Report 2010*, despite a downward readjustment of the Chinese figures since this publication's release. Japan's world share has shrunk from 10.7% (2007) to 8.5% (2013) and the Russian Federation's share from 7.3% to 5.7%.

The Big Five thus still account for 72% of all researchers, even if there has been a reshuffle in their respective shares. Of note is that the high-income countries have ceded some ground to the upper middle-income countries, including China; the latter accounted for 22.5% of researchers in 2007 but 28.0% in 2013 (Table 1.3).

As Figure 1.3 highlights, once countries are prepared to invest more in research personnel and in publicly funded research, the propensity of businesses to invest in R&D also increases (the size of the bubbles). Public and privately funded research have different aims, of course, but their contribution to national growth and welfare depends on how well they complement one another. This holds for countries of all income levels but it is clear that the relationship becomes powerful above a certain threshold in researcher density and publicly funded R&D intensity. Whereas one can find a few countries with a relatively high intensity of business-funded R&D in the lower left-hand quadrant of the graphic, none in the upper right-hand quadrant have a low intensity of business R&D.

Researchers from lower income countries are still pursuing career opportunities abroad but their destination of choice is widening. This may be partly because the 2008 crisis has somewhat tarnished the image of Europe and North America as an Eldorado. Even countries suffering from brain drain are also attracting researchers. For instance, Sudan lost more than 3 000 junior and senior researchers to migration between 2002 and 2014, according to the National Research Centre. Researchers were drawn to neighbouring countries such as Eritrea and Ethiopia by the better pay, which is more than double that offered to university staff in Sudan. In turn, Sudan has become a refuge for students from the Arab world, particularly since the turmoil of the Arab Spring. Sudan is also attracting a growing number of students from Africa (Chapter 19).

Researchers per million inhabitants				
	2007	2009	2011	2013
	959.2	1 009.8	1 050.4	1 083.3
	3 517.0	3 632.3	3 720.4	3 814.1
	620.9	723.9	813.0	888.1
	187.8	187.8	192.2	192.9
	98.7	109.6	119.1	120.7
	1 661.2	1 776.1	1 780.8	1 771.6
	3 814.6	4 081.5	4 052.0	4 034.1
	415.8	448.3	482.7	487.7
	223.0	235.4	220.2	200.8
	2 635.4	2 717.4	2 816.4	2 941.9
	2 911.8	3 081.9	3 202.0	3 388.3
	575.4	659.9	734.8	772.0
	4 112.4	4 390.4	4 757.0	4 980.8
	2 208.8	2 115.3	2 160.2	2 170.4
	156.8	151.8	164.1	168.8
	77.0	86.0	90.6	91.4
	474.0	418.1	467.2	494.5
	630.6	684.4	740.8	785.8
	351.6	395.0	399.7	500.0
	259.2	272.5	294.4	303.1
	1 224.1	1 226.9	1 249.1	1 343.2
	133.7	141.0	143.1	145.0
	991.9	1 090.1	1 197.6	1 279.1
	3 173.8	3 235.7	3 226.8	3 218.9
	57.7	62.2	65.0	65.5
	390.7	360.5	397.8	417.0
	3 205.9	3 346.7	3 433.7	3 542.3
	1 276.9	1 353.2	1 408.0	1 460.7
	983.5	1 092.3	1 236.0	1 255.8 <sup>-1</sup>
	612.0	667.2	710.3 <sup>-1</sup>	–
	4 587.7	4 450.6	4 729.0	4 493.7 <sup>-1</sup>
	– <sup>a</sup>	852.8 <sup>b</sup>	963.2	1 071.1
	665.0	457.9	523.6	580.7
	3 566.1	3 726.7	3 920.1 <sup>b</sup>	4 124.6
	3 480.0	3 814.6	4 085.9	4 355.4
	137.4 <sup>2</sup>	–	159.9 <sup>-1</sup>	–
	746.9 <sup>+1</sup>	710.6 <sup>b</sup>	736.1 <sup>-1</sup>	–
	–	–	7 316.6	8 337.1 <sup>-1</sup>
	5 377.7	5 147.4 <sup>b</sup>	5 157.5	5 194.8
	368.2 <sup>-1</sup>	1 065.4 <sup>b</sup>	1 642.7	1 780.2 <sup>-1</sup>
	334.1	369.1	386.4	–
	4 665.0	5 067.5	5 928.3	6 533.2
	3 265.4	3 077.9	3 120.4	3 084.6
	389.5	388.9	387.2	408.2 <sup>-1</sup>
	714.7	810.7	987.0	1 188.7
	4 143.8	4 151.1	4 026.4	4 107.7
	3 731.4	4 042.1	3 978.7	3 984.4 <sup>-1</sup>

Note: Researchers are in full-time equivalents.

Source: estimations by UNESCO Institute for Statistics, July 2015