

Human Resources in R&D

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This fact sheet presents the latest UIS data on research and experimental development (R&D) available as of June 2019.

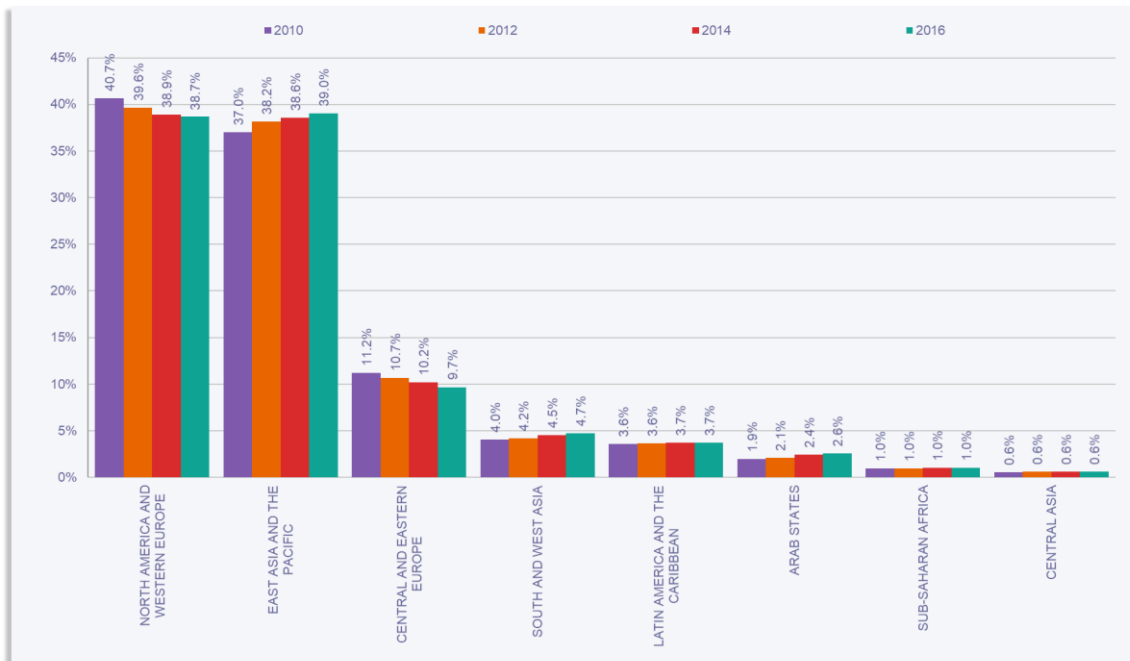
Regional density of researchers and their field of employment

In the drive to strengthen knowledge-based societies, policymakers need to ensure that their countries have an adequate supply of researchers. This fact sheet provides a global overview of countries with the highest concentration of researchers as well as a breakdown by region.

Researchers are professionals engaged in the conception or creation of new knowledge. They conduct research and improve or develop concepts, theories, models, techniques instrumentation, software or operational methods, in the framework of R&D projects (Frascati Manual, 2015). **Figure 1** presents the distribution of researchers across the world by region in 2010, 2012, 2014 and 2016.

Figure 1. Where are researchers located?

Shares of world researchers by principal regions, 2010, 2012, 2014 and 2016



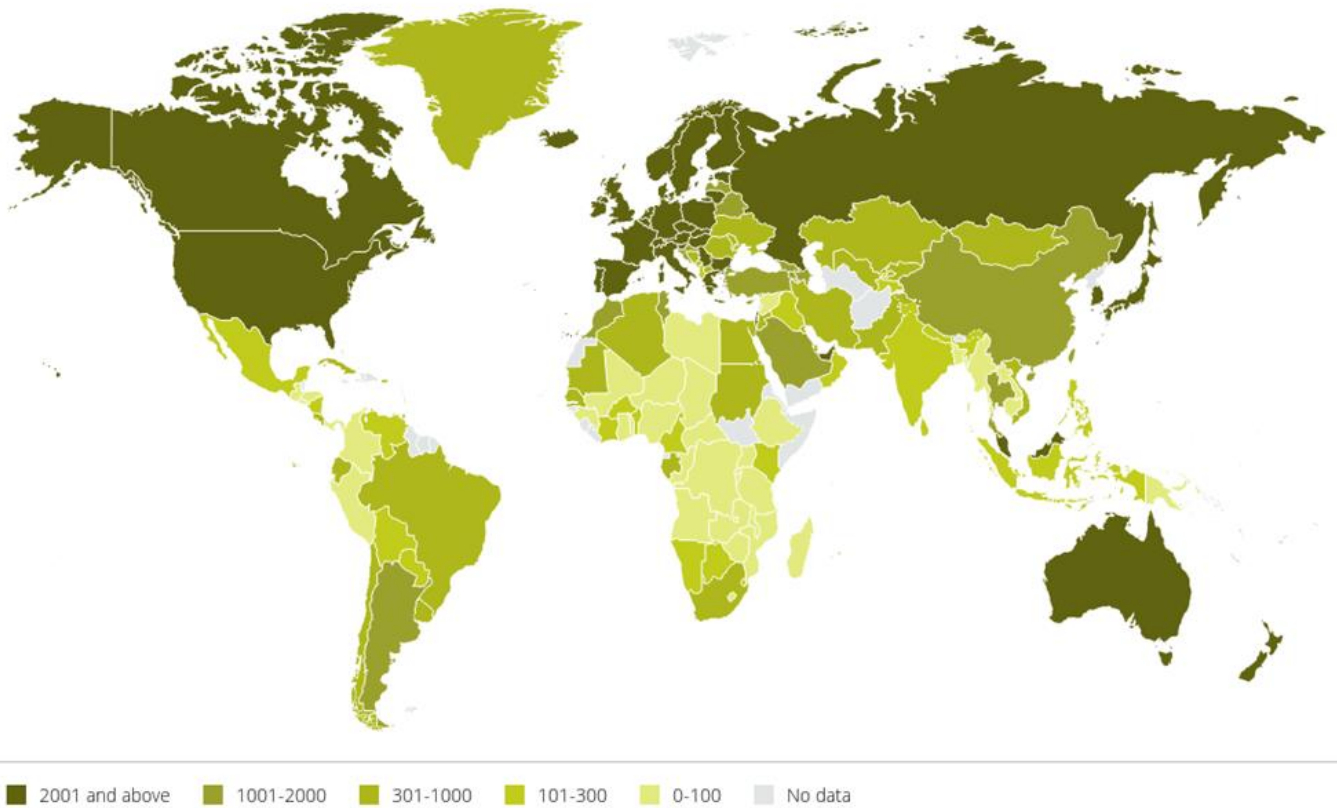
Source: UNESCO Institute for Statistics estimates, February 2019.



Figures 2 and 3 illustrate the distribution of researchers per 1 million inhabitants. The data are expressed in full-time equivalents (FTE), which are a measure of the actual volume of human resources devoted to research and development (R&D). It is important to note when interpreting the data that headcounts (HC) were used for countries where FTE figures were not available.

Figure 2. How are researchers distributed?

Researchers per million inhabitants, 2017 or latest year available



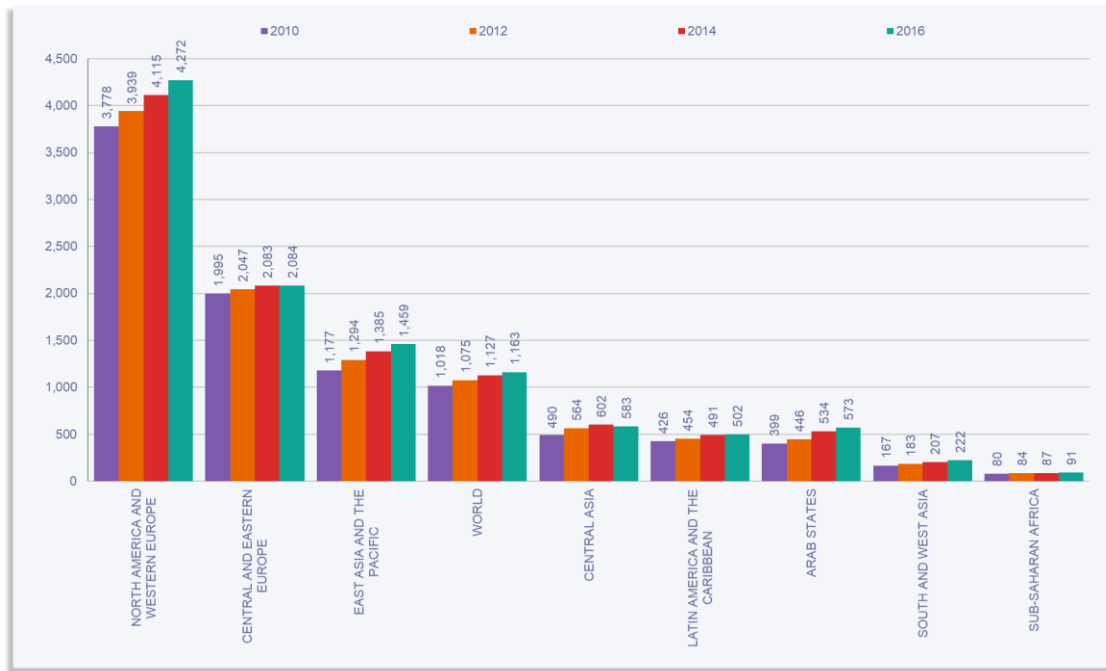
Notes: The data presented in this map are based on FTE. However, HC is used for the following countries as data by FTE were not available: Armenia, Azerbaijan, Bangladesh, Belarus, Benin, Bermuda, Bolivia, Burkina Faso, Burundi, Cameroon, Central African Republic, Côte d'Ivoire, Cuba, Gabon, Guinea, Kyrgyzstan, Libya, Mauritania, Mongolia, Nauru, Nepal, Nicaragua, Peru, Saint Lucia, Saint Vincent and the Grenadines, Saudi Arabia, Seychelles, Sudan, Tajikistan, Trinidad and Tobago, and US Virgin Islands. This should be taken into consideration when interpreting the data.

Source: UNESCO Institute for Statistics, June 2019.



Figure 3. How are researchers distributed?

Researchers per 1 million inhabitants by region, 2010, 2012, 2014 and 2016

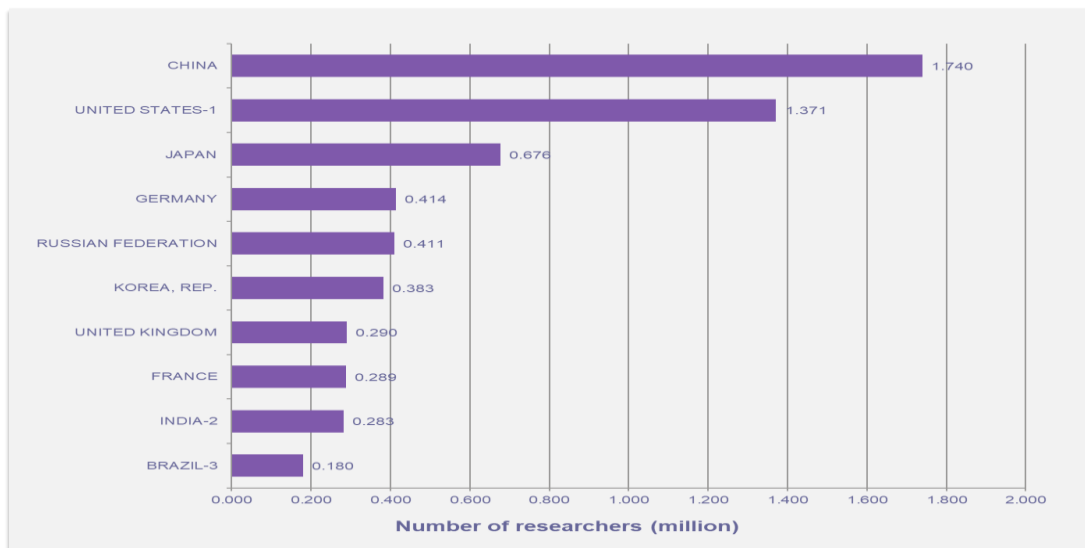


Source: UNESCO Institute for Statistics estimates, February 2019.

Figure 4 shows the world’s leading countries (top 10) in terms of the number of researchers.

Figure 4. Which countries host the greatest number of researchers?

Number of researchers, 2017 or latest year available



Notes:-1 = 2016, -2 = 2015, -3 = 2014; Data are based on FTE.

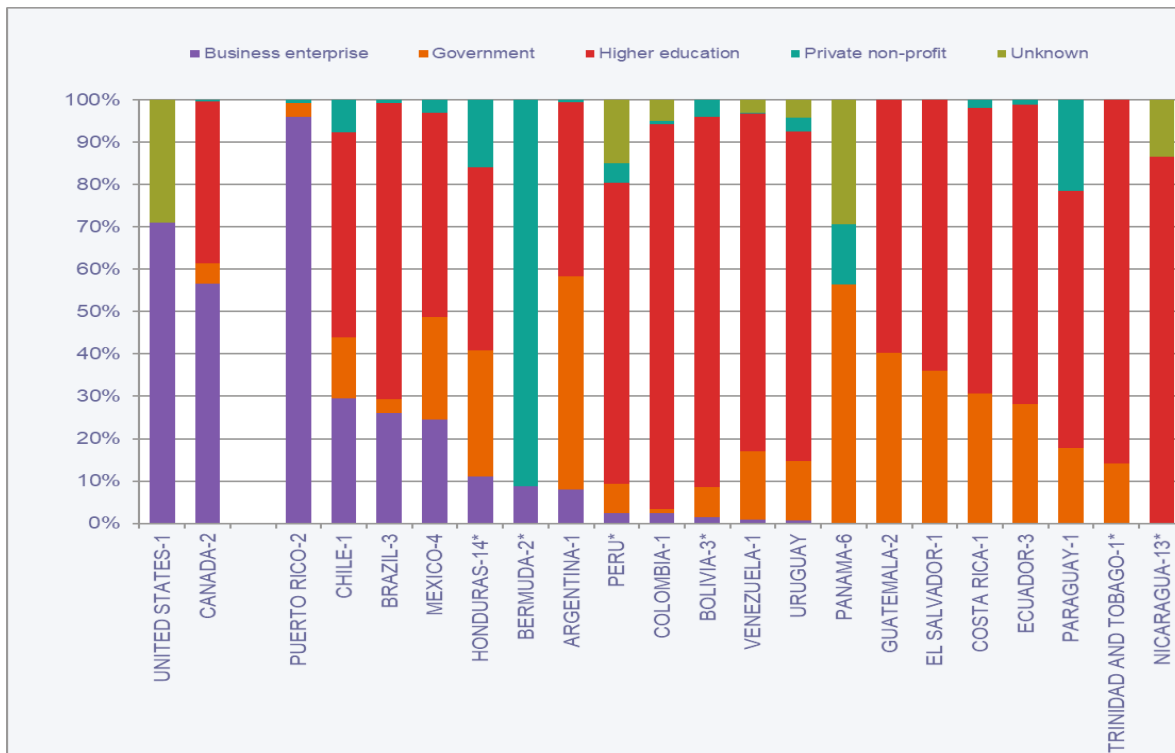
Source: UNESCO Institute for Statistics, June 2019.



Figures 5, 6 and 7 illustrate the percentage of researchers by sector of employment expressed in FTE (or HC where data by FTE were unavailable). One FTE may be thought of as one person-year. Thus, a person who normally spends 30% of their time on R&D and the rest on other activities (such as teaching, university administration and student counseling) would be denoted as a 0.3 FTE. Similarly, if a full-time R&D worker is employed at an R&D unit for only six months, this results in an FTE of 0.5.

Figure 5. A breakdown of researchers in the Americas

Percentage of researchers by sector of employment (FTE), 2017 or latest year available



Notes:-1 = 2016, -2= 2015, -3 = 2014, -4 = 2013, -6= 2011, -13 = 2004, -14 = 2003.

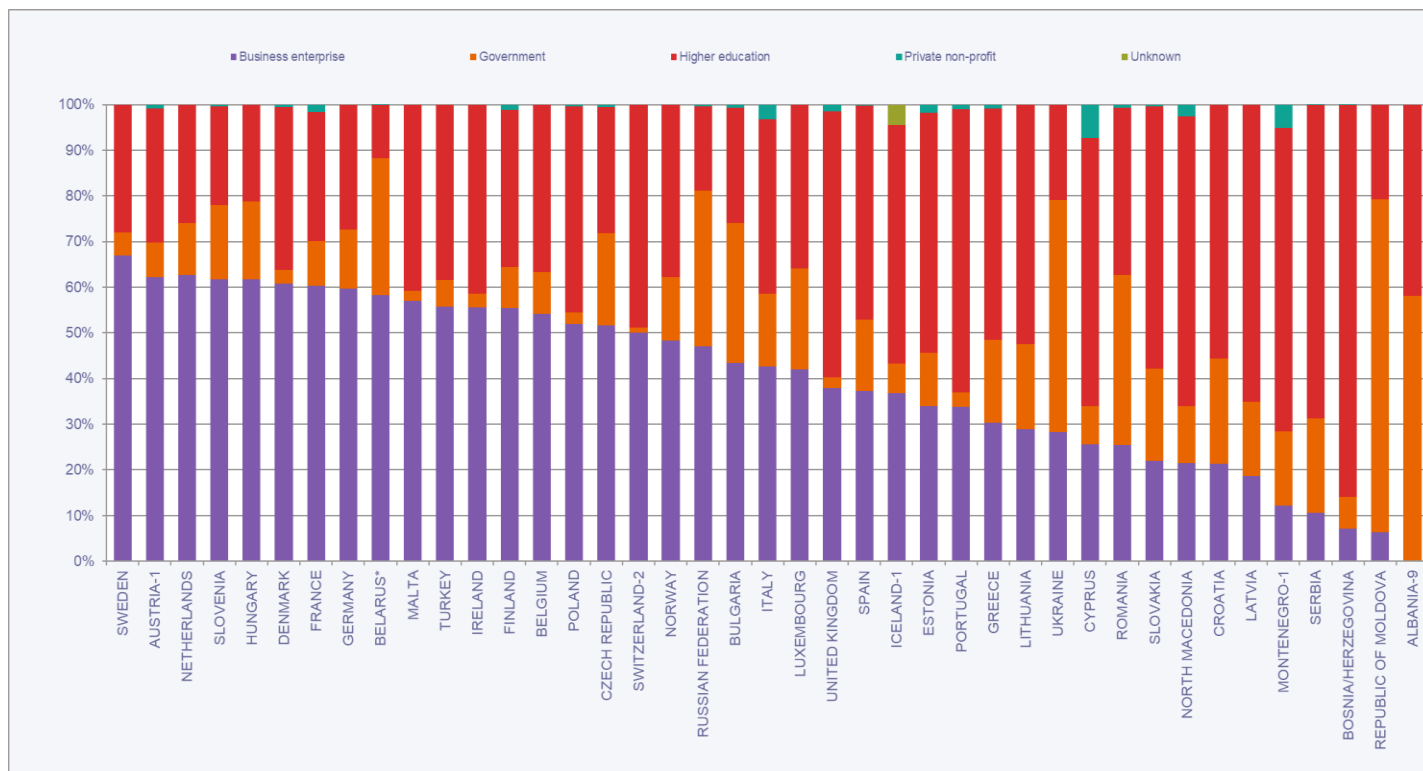
* = based on HC data.

Source: UNESCO Institute for Statistics, June 2019.



Figure 6. A breakdown of researchers in Europe

Percentage of researchers by sector of employment (FTE), 2017 or latest year available



Notes: -1 = 2016, -2 = 2015, -9 = 2008.

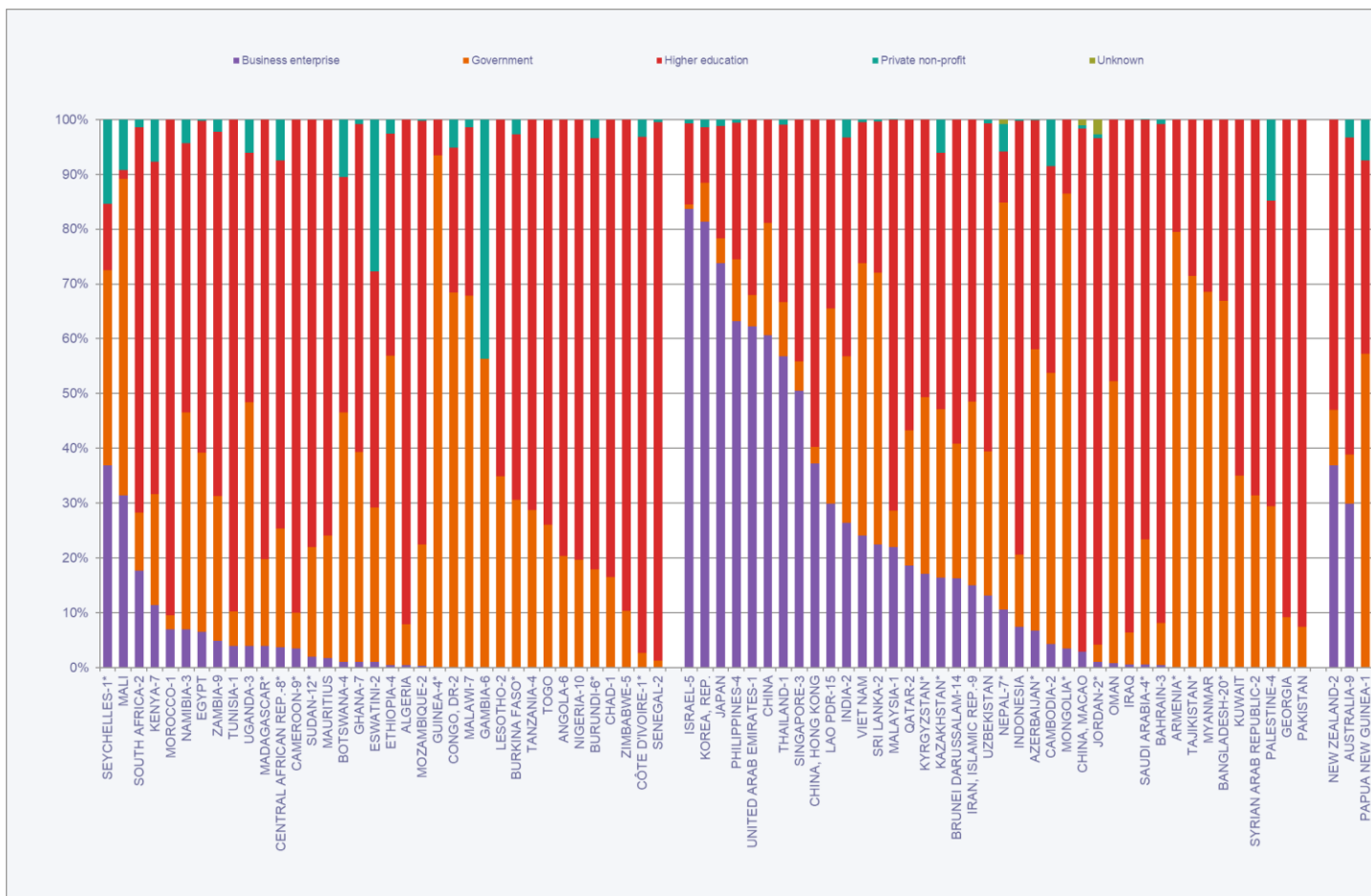
* = based on HC data.

Source: UNESCO Institute for Statistics, June 2019.



Figure 7. A breakdown of researchers in Africa, Asia and the Pacific

Percentage of researchers by sector of employment (FTE), 2017 or latest year available



Notes: -1= 2016, -2= 2015, -3 = 2014, -4 = 2013, -5 = 2012, -6 = 2011, -7 = 2010, -8 = 2009, -9= 2008, -10 = 2007, -11 = 2006, -12 = 2005, -14 = 2003, -15 = 2012, -20 = 1997.

* = based on HC data.

Source: UNESCO Institute for Statistics, June 2019.

Please consult the UIS website <http://uis.unesco.org> to access the UIS database and subscribe to eAlerts on the Institute's latest publications, data visualisations and data releases.

Consult also the fact sheet on "Women in Science", which presents global and regional profiles, pinpointing where women thrive in this sector and where they are under-represented.

For more information on R&D data, please consult the [UNESCO eAtlas of Research and Experimental Development](http://on.unesco.org/RD-map) at <http://on.unesco.org/RD-map>