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SUSTAINABLE DEVELOPMENT GOALS

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Human Resources in R&D

The UNESCO Institute for Statistics (UIS) is the statistical office of UNESCO and is the UN depository for global statistics in the fields of education, science and technology, culture and communication.

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This fact sheet presents the latest UIS data on research and experimental development (R&D) available as of June 2020.

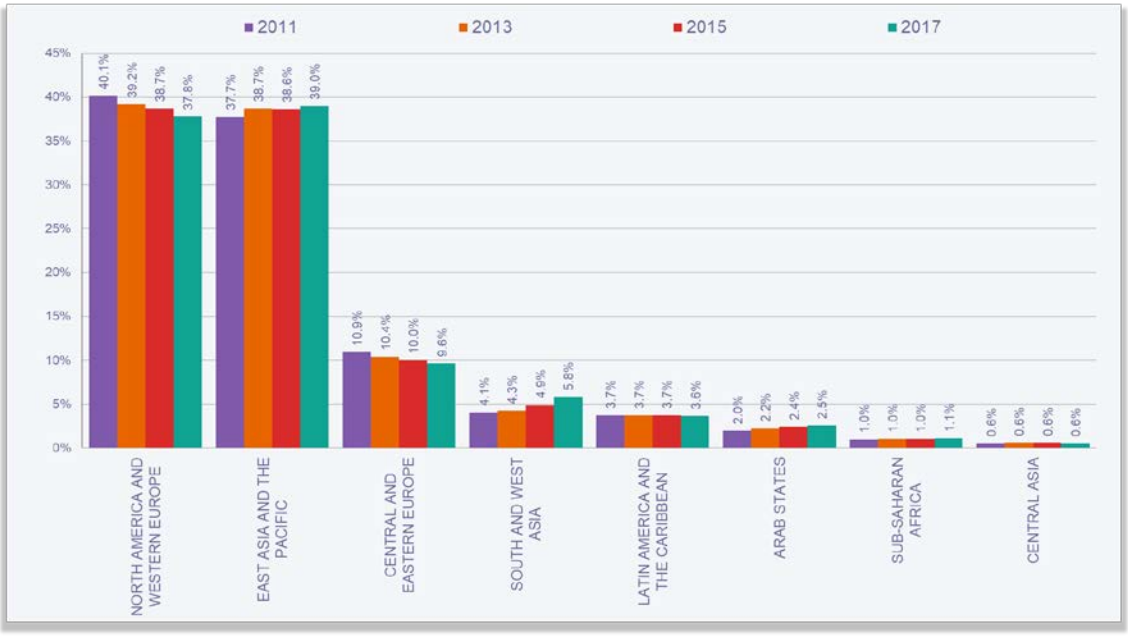
Regional density of researchers and their sector of employment

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 2011, 2013, 2015 and 2017.

Figure 1. Where researchers are located

Shares of world researchers by principal regions, 2011, 2013, 2015 and 2017

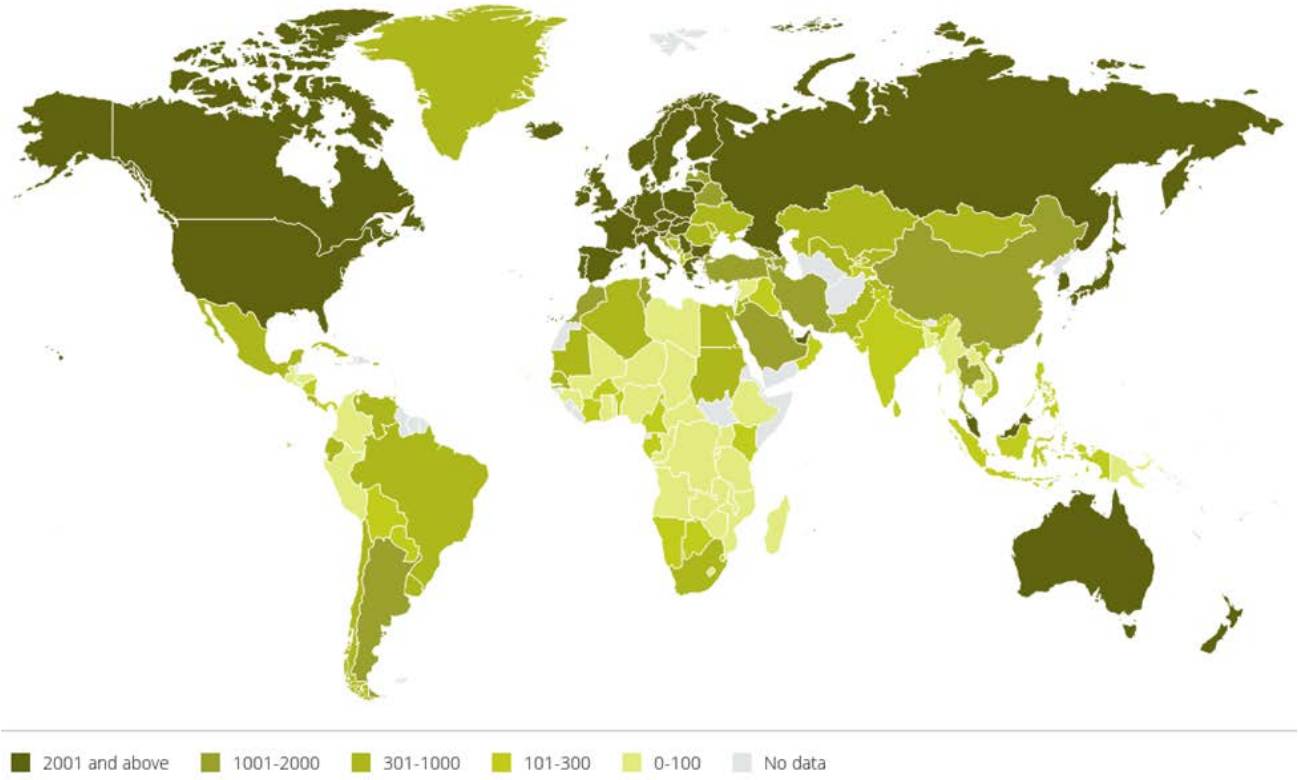


Source: UNESCO Institute for Statistics estimates, February 2020.

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. Distribution of researchers

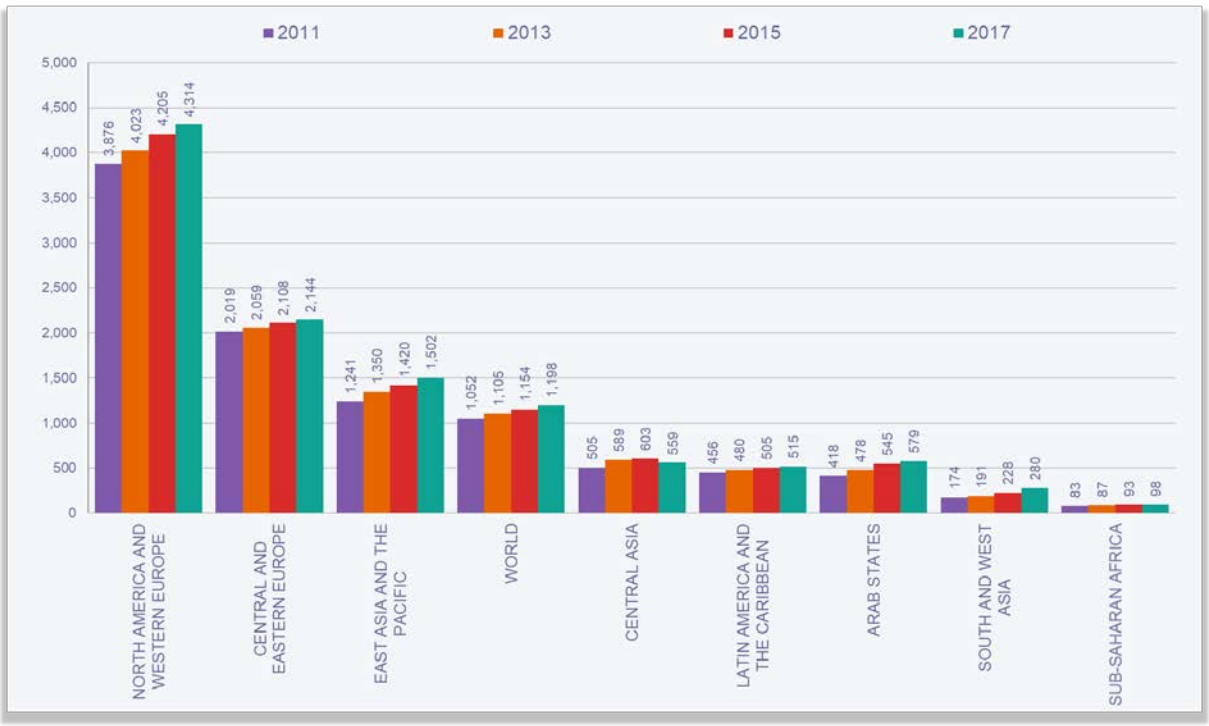
Researchers per million inhabitants, 2018 or latest year available



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, Brunei Darussalam, Burkina Faso, Cameroon, Central African Republic, Côte d'Ivoire, Cuba, Gabon, Guinea, Kyrgyzstan, Libya, Mauritania, Mongolia, Nauru, Nepal, Nicaragua, Panama, Peru, Saint Lucia, Saint Vincent and the Grenadines, Saudi Arabia, Seychelles, Sudan, Tajikistan and US Virgin Islands. This should be taken into consideration when interpreting the data.
Source: UNESCO Institute for Statistics, June 2020.

Figure 3. Distribution of researchers

Researchers per 1 million inhabitants by region, 2011, 2013, 2015 and 2017

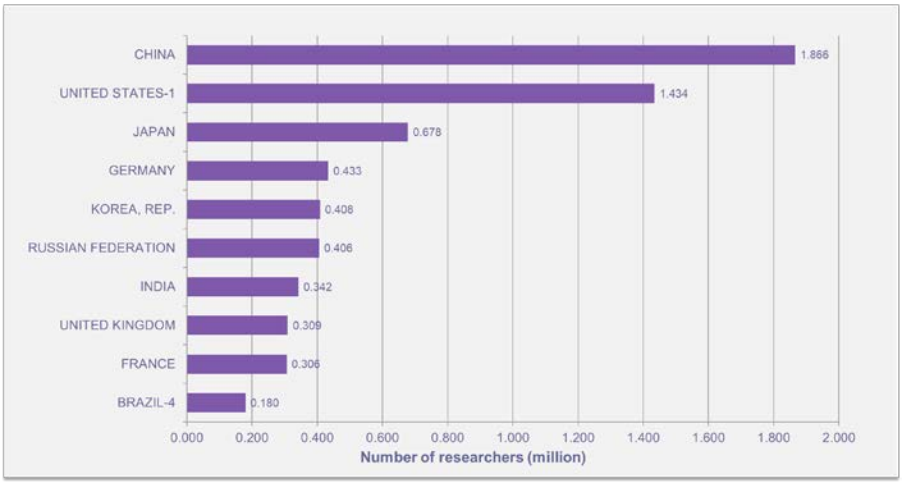


Source: UNESCO Institute for Statistics estimates, February 2020.

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

Figure 4. Countries hosting the greatest number of researchers

Number of researchers, 2018 or latest year available

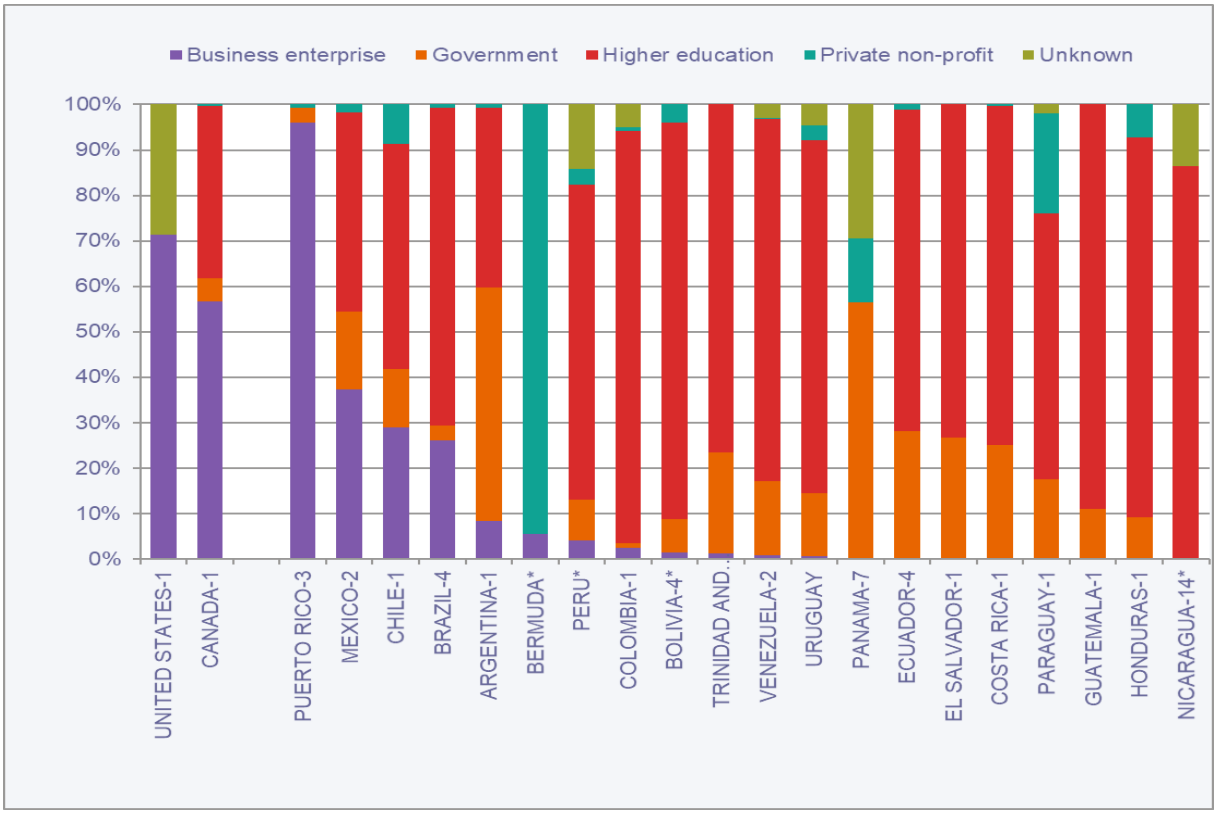


Notes: -1 = 2017, -4 = 2014. Data are based on FTE.
Source: UNESCO Institute for Statistics, June 2020.

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 (e.g. 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. Breakdown of researchers in the Americas

Percentage of researchers by sector of employment (FTE), 2018 or latest year available



Notes: -1 = 2017, -2= 2016, -3 = 2015, -4 = 2014, -7= 2011, -14 = 2004.
* = based on HC data.
Source: UNESCO Institute for Statistics, June 2020.

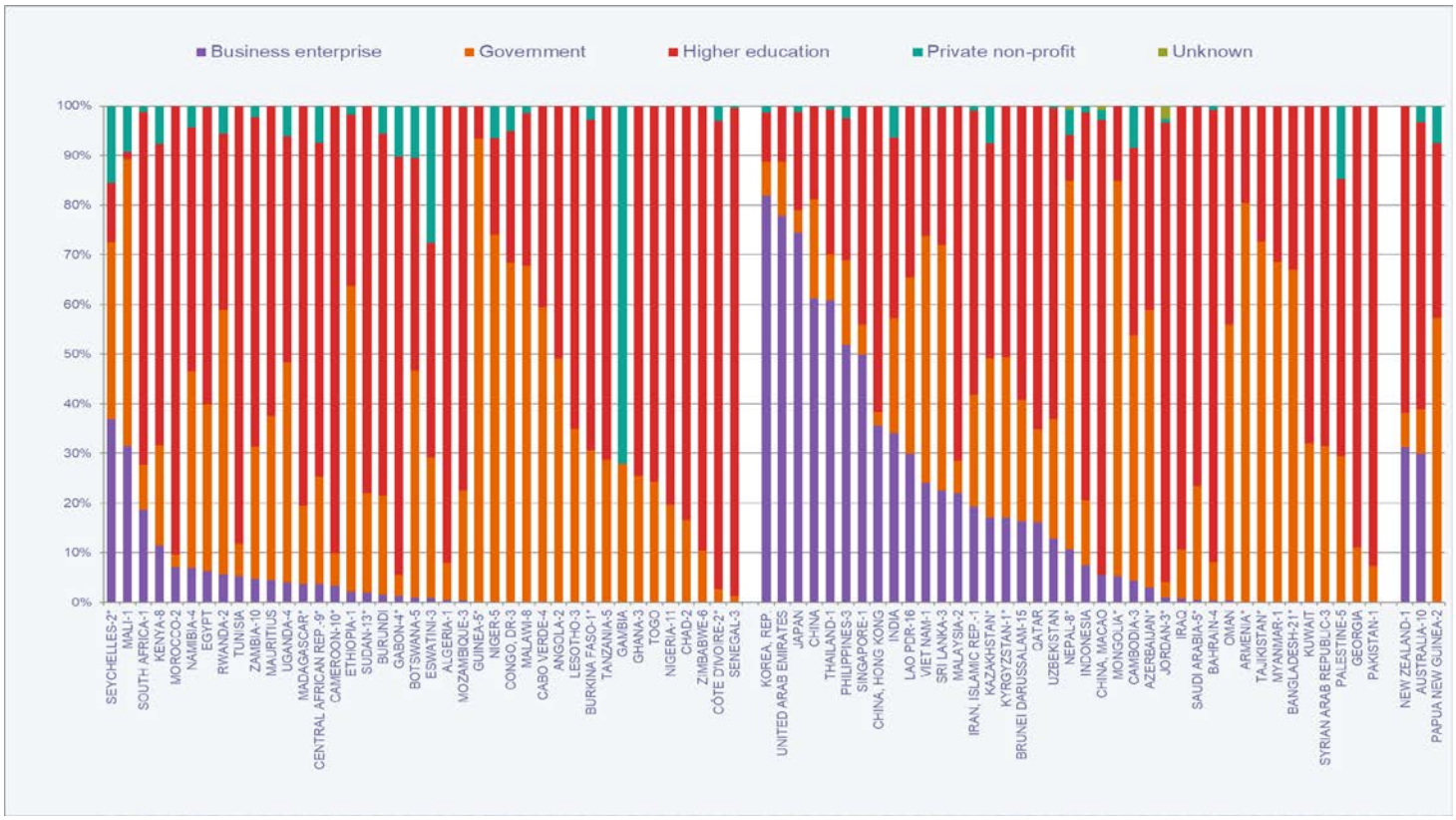
Figure 6. Breakdown of researchers in Europe

Percentage of researchers by sector of employment (FTE), 2018 or latest year available

Notes: -1 = 2017, -10 = 2008.
* = based on HC data.
Source: UNESCO Institute for Statistics, June 2020.

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

Percentage of researchers by sector of employment (FTE), 2018 or latest year available



Notes: -1= 2017, -2= 2016, -3 = 2015, -4 = 2014, -5 = 2013, -6 = 2012, -8 = 2010, -9 = 2009, -9= 2009, -10 = 2008, -11 = 2007, -13 = 2005, -15 = 2003, -16 = 2012, -21 = 1997.
* = based on HC data.
Source: UNESCO Institute for Statistics, June 2020.

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 at http://on.unesco.org/RD-map

The regional totals/averages presented in this fact sheet are based on UIS regions. Please consult the UIS Data Centre (UIS.Stat) for other groupings.