United Nations Educational, Scientific and Cultural Organization

UNESCO INSTITUTE FOR STATISTICS

SUSTAINABLE DEVELOPMENT GOALS

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Global Investments 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.

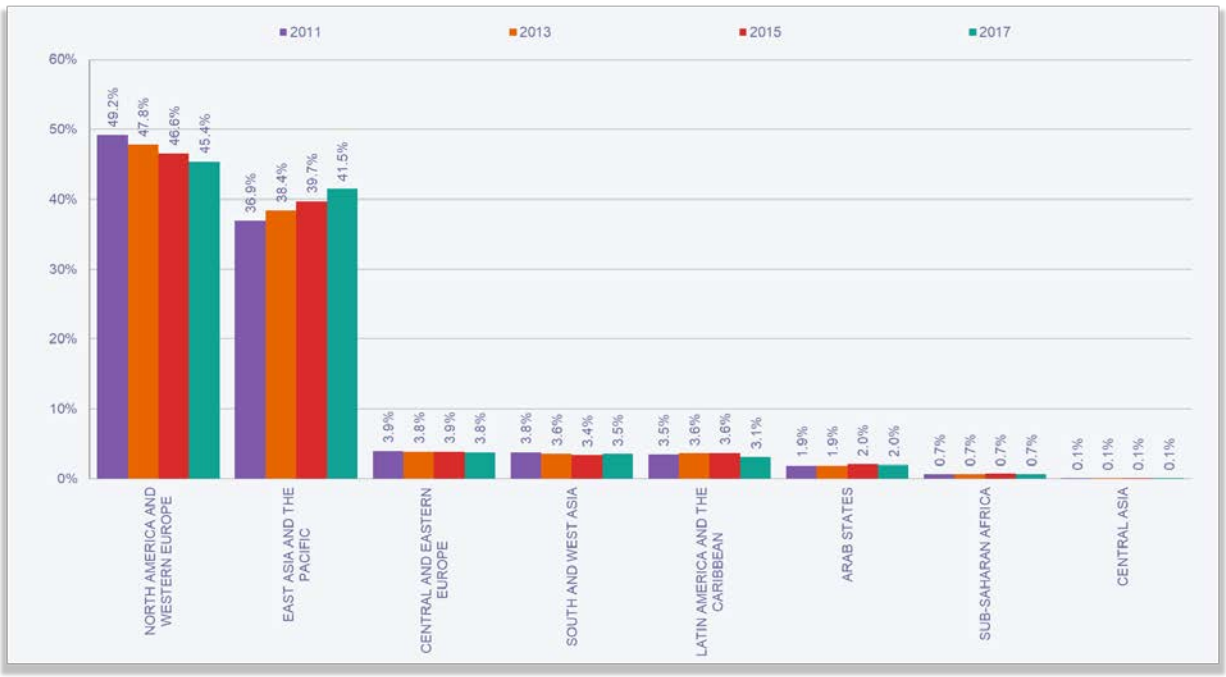
A snapshot of R&D expenditure

This fact sheet illustrates global and regional trends in the allocation of resources to research and experimental development (R&D). The UIS releases data on resources devoted to R&D once every year – in June.

The most commonly-used indicators to monitor resources devoted to R&D worldwide are gross domestic expenditure on R&D (GERD) expressed in purchasing power parity (PPP$) and R&D intensity (percentage of gross domestic product (GDP) devoted to R&D activities). **Figure 1** presents the distribution of R&D expenditure by region.

Figure 1. Regional R&D investments

Shares of world R&D expenditure (GERD) by region, 2011, 2013, 2015 and 2017

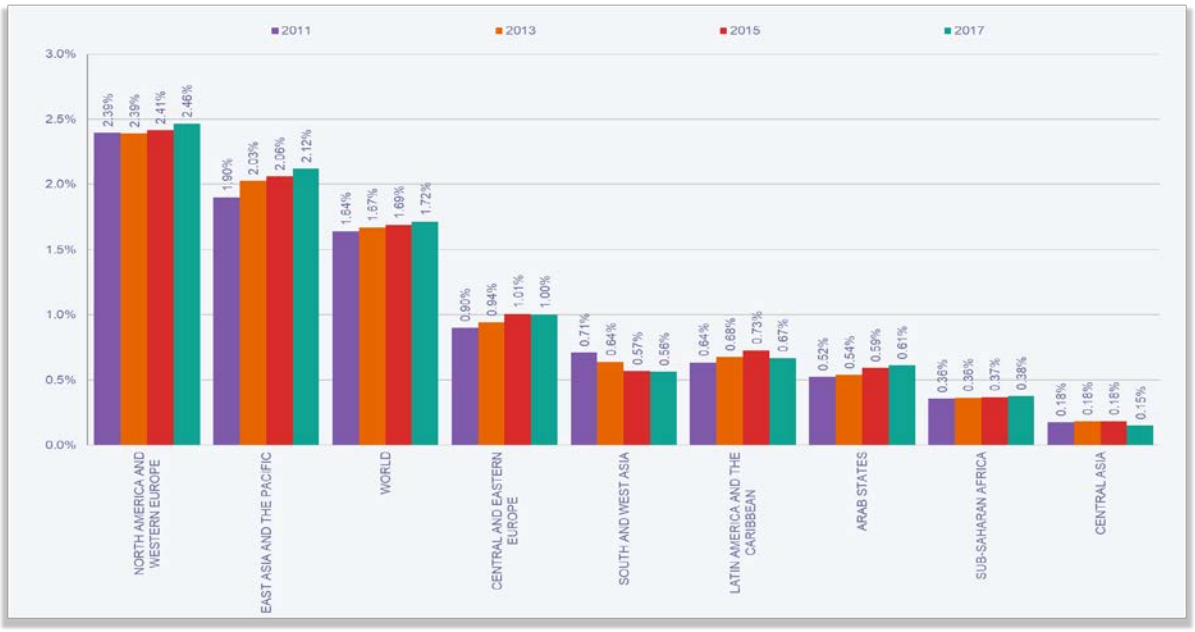


Source: UNESCO Institute for Statistics estimates, February 2020.

Figures 2 and **3** illustrate the distribution of R&D intensity by region. This indicator presents R&D expenditure relative to the size of the regional or national economy.

Figure 2. R&D intensity by region

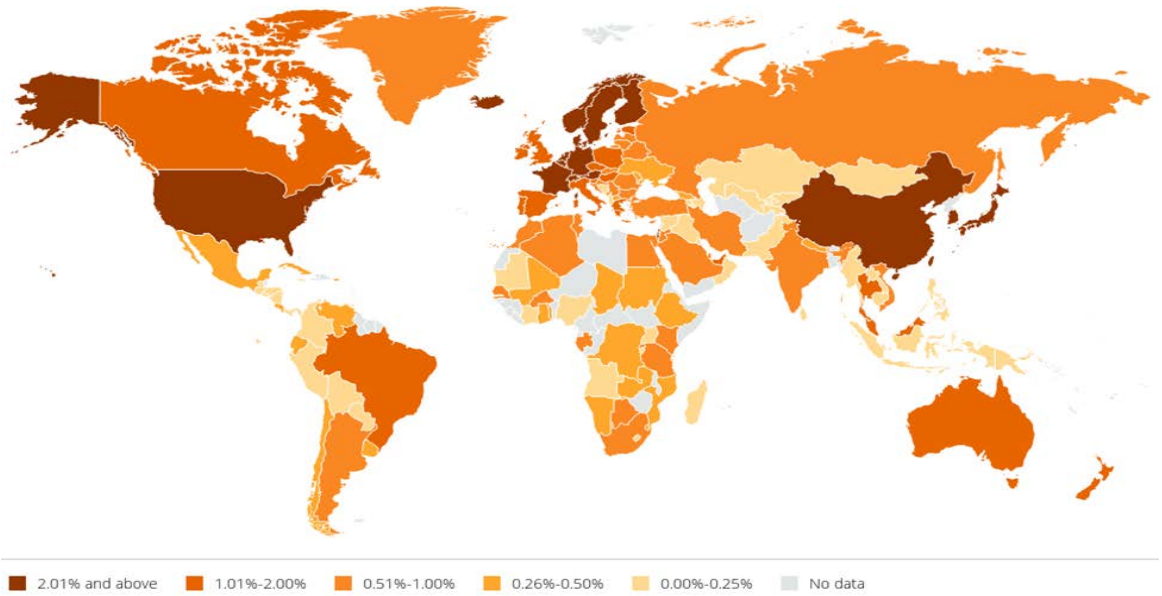
Gross domestic expenditure on R&D as a percentage of GDP by region, 2011, 2013, 2015 and 2017



Source: UNESCO Institute for Statistics estimates, February 2020.

Figure 3. Snapshot of R&D intensity

Gross domestic expenditure on R&D as a percentage of GDP, 2018 or latest year available



Source: UNESCO Institute for Statistics, June 2020.

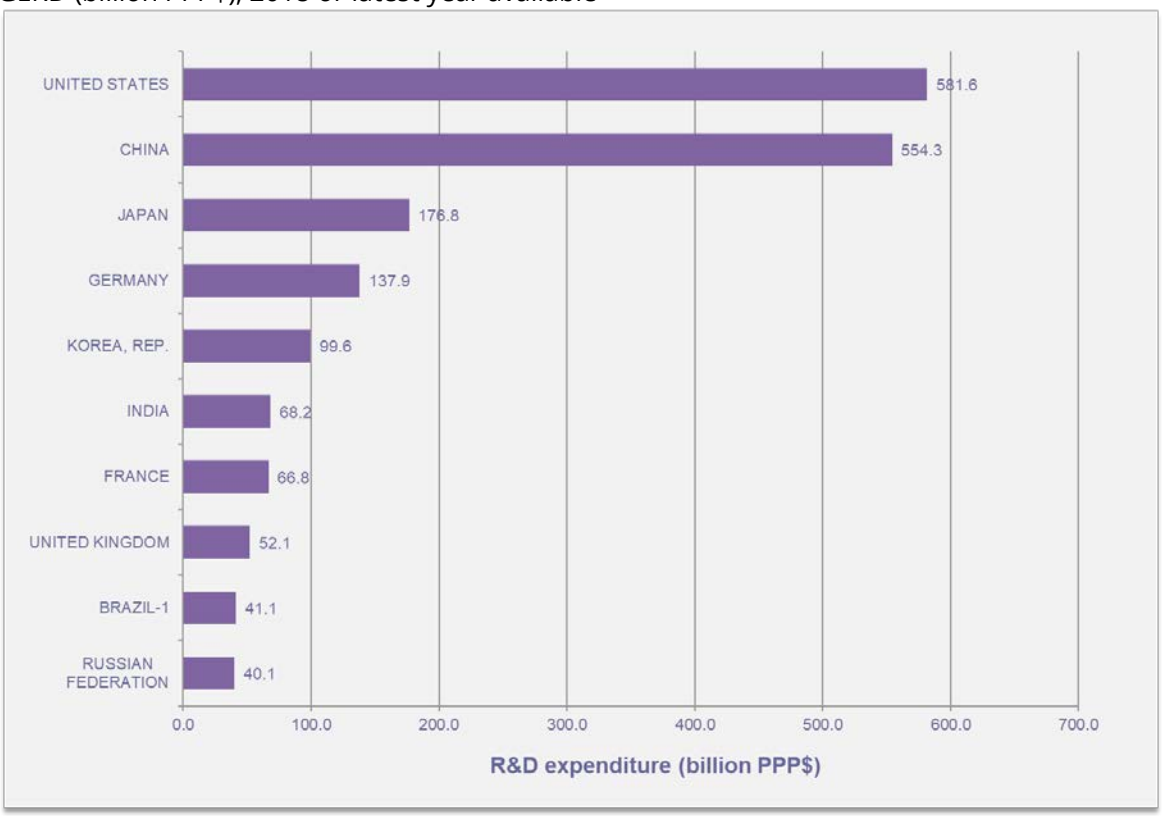
The 2017 regional averages for the share of GDP devoted to R&D activities are:

- 2.5% for North America and Western Europe
- 2.1% for East Asia and the Pacific
- **1.7% for World**
- 1.0% for Central and Eastern Europe
- 0.7% for Latin America and the Caribbean
- 0.6% for Arab States
- 0.6% for South and West Asia
- 0.4% for sub-Saharan Africa
- 0.2% for Central Asia

Figure 4 illustrates the world's top leaders in R&D expenditure, measured in PPP$ for the latest year available. PPP$ better reflects the real value of investments and allows for more comparability by eliminating differences in price levels among countries. Essentially, this means that a sum of money converted into US dollars at PPP rates will buy the same basket of goods and services in all countries.

Figure 4. World's top 10 leaders in R&D investment

GERD (billion PPP$), 2018 or latest year available



Notes: -1 = 2017.

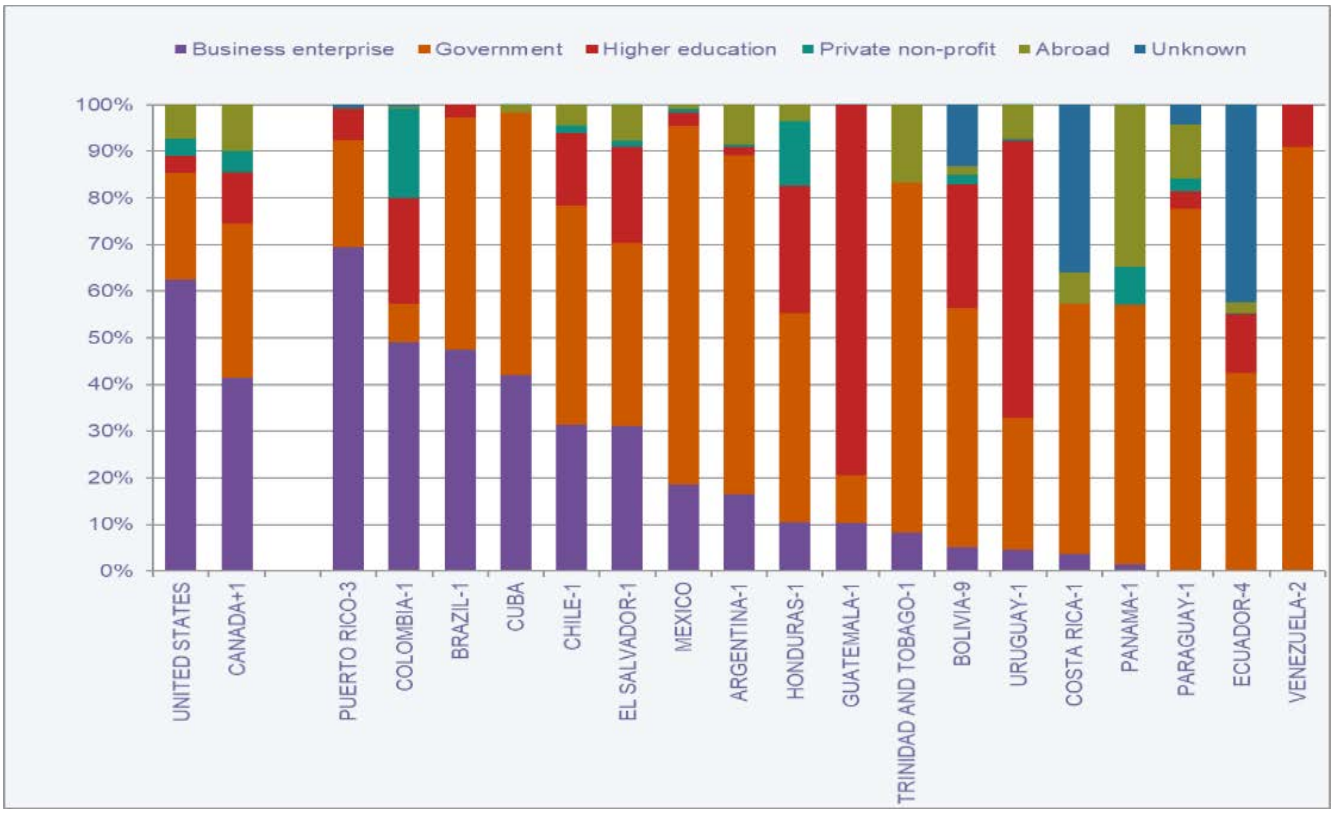
Source: UNESCO Institute for Statistics, June 2020.

Which sectors invest the most in R&D?

Figures 5, 6 and **7** illustrate R&D expenditure broken down by source of funds. This refers to total gross intramural expenditure on R&D during a given period, financed by different sectors of the economy (business enterprise, government, higher education or private non-profit organizations) or from abroad (rest of the world), and expressed as a percentage.

Figure 5. Funding in the Americas

GERD by source of funds, 2018 or latest year available

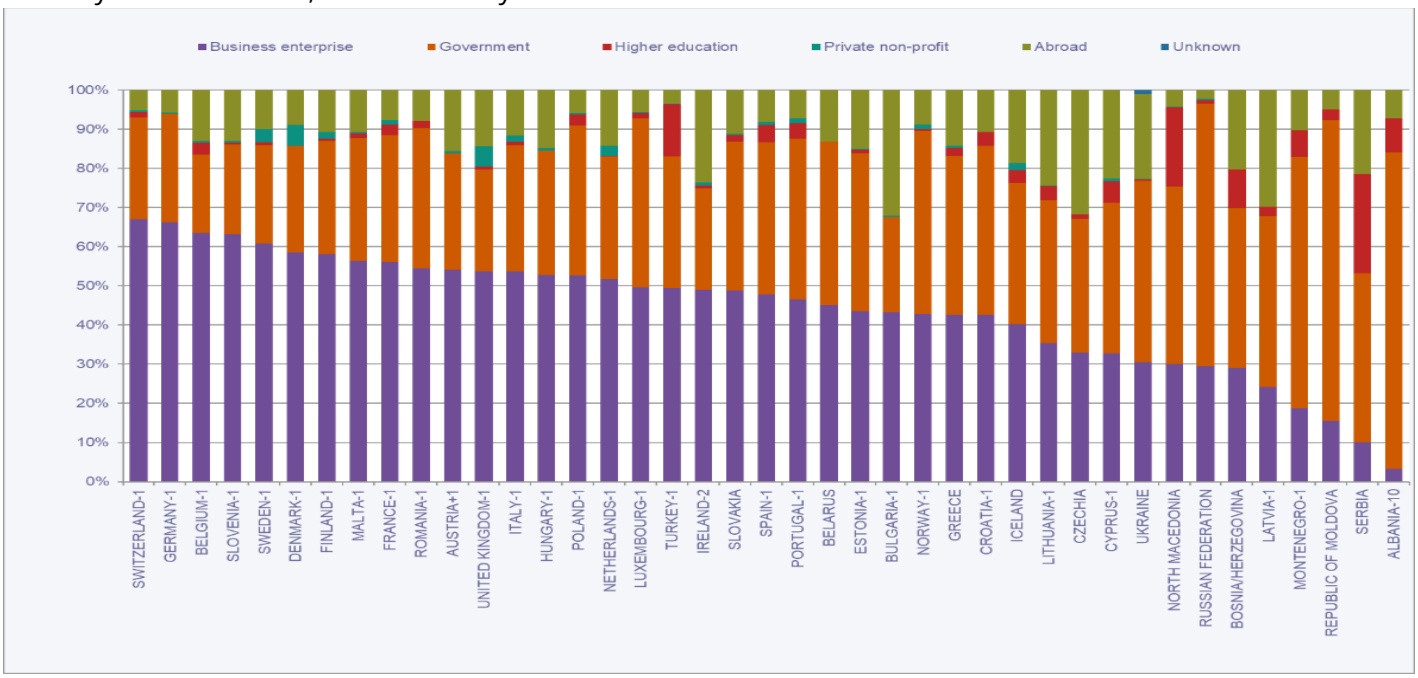


Notes: +1 = 2019, -1 = 2017, -2 = 2016, -3 = 2015, -4 = 2014, -9 = 2009.

Source: UNESCO Institute for Statistics, June 2020.

Figure 6. Funding in Europe

GERD by source of funds, 2018 or latest year available

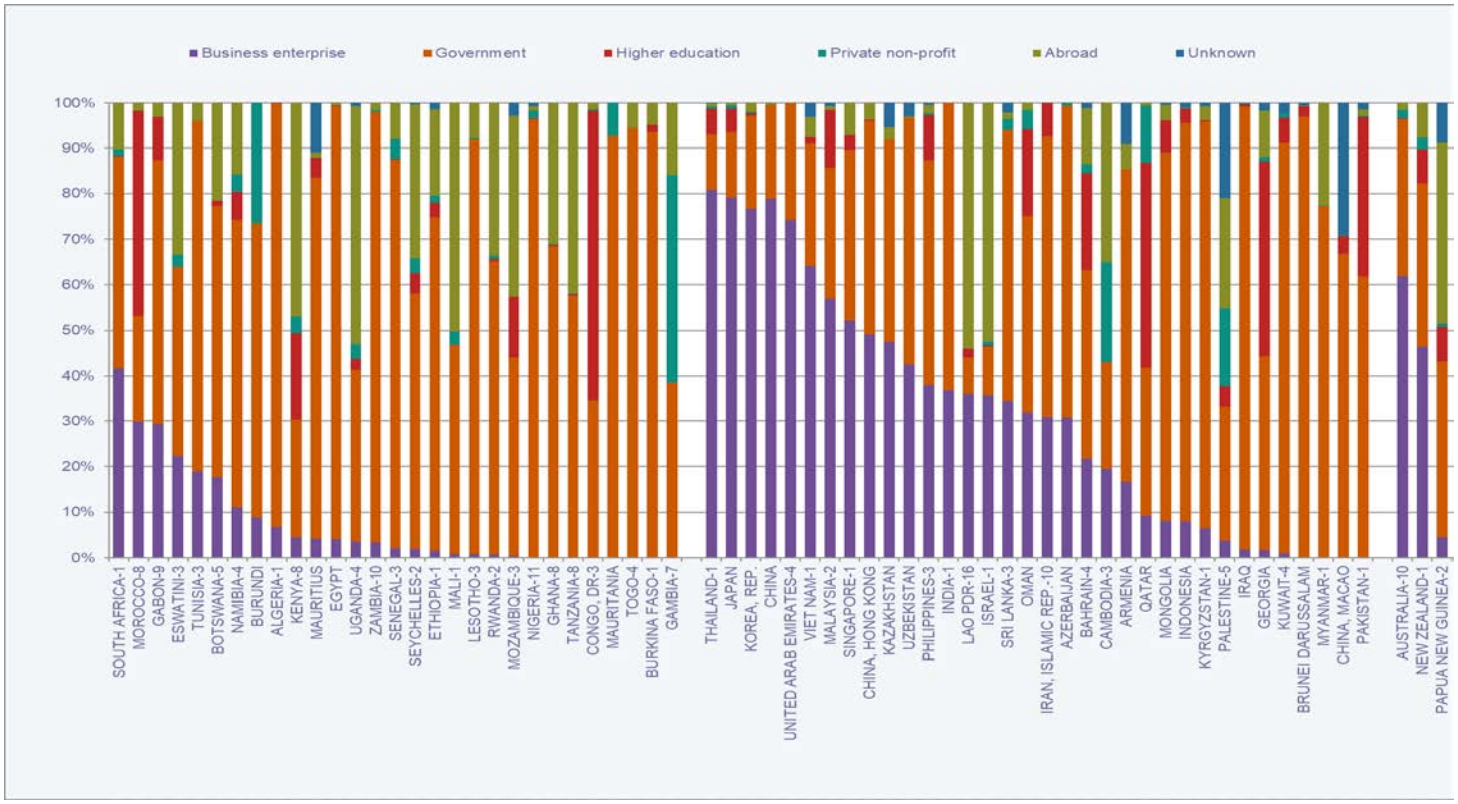


Notes: +1 = 2019, -1 = 2017, -2 = 2016, -10 = 2008.

Source: UNESCO Institute for Statistics, June 2020.

Figure 7. Funding in Africa, Asia and the Pacific

GERD by source of funds, 2018 or latest year available



Notes: -1 = 2017, -2 = 2016, -3 = 2015, -4 = 2014, -7 = 2011, -8 = 2010, -9 = 2009, -10 = 2008, -11 = 2007, -13 = 2005, -16 = 2002.

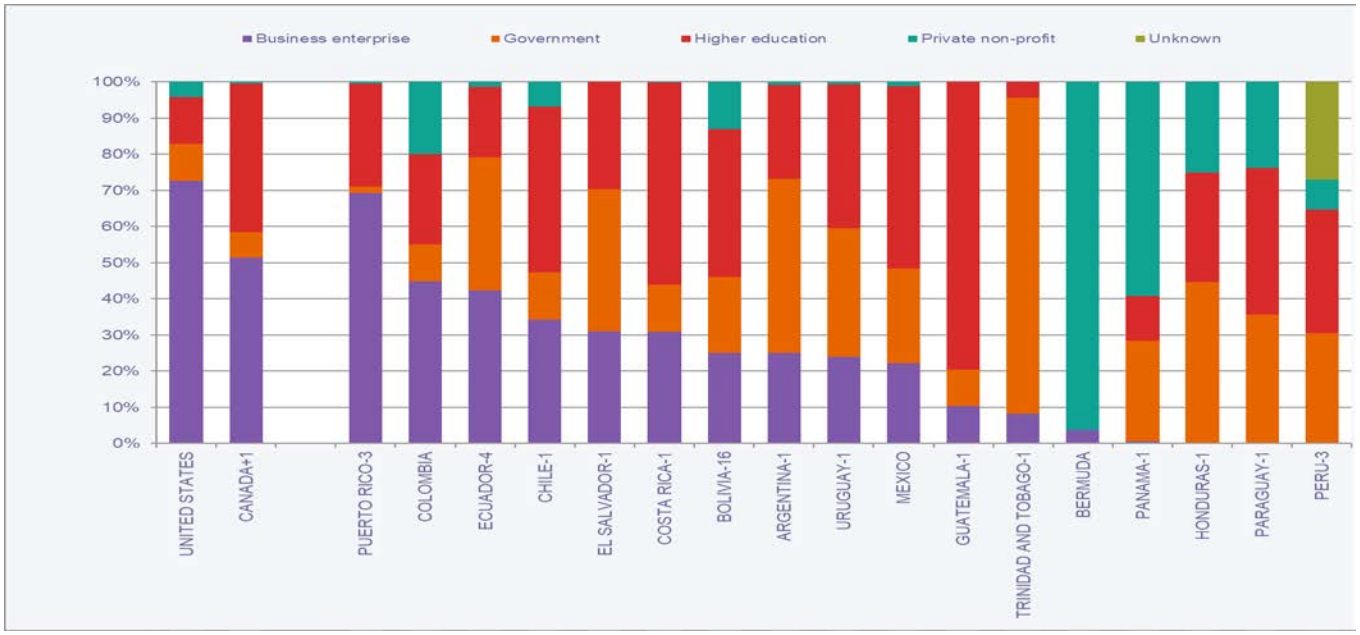
Source: UNESCO Institute for Statistics, June 2020.

Which sectors receive the most investment?

Figures 8, 9 and **10** depict R&D expenditure by sector of performance. This refers to total gross intramural expenditure on R&D during a given period by institutions corresponding to each sector (business enterprise, government, higher education and private non-profit organizations), independent of the source of funds and expressed as a percentage.

Figure 8. A breakdown of R&D investment in the Americas

GERD by sector of performance, 2018 or latest year available

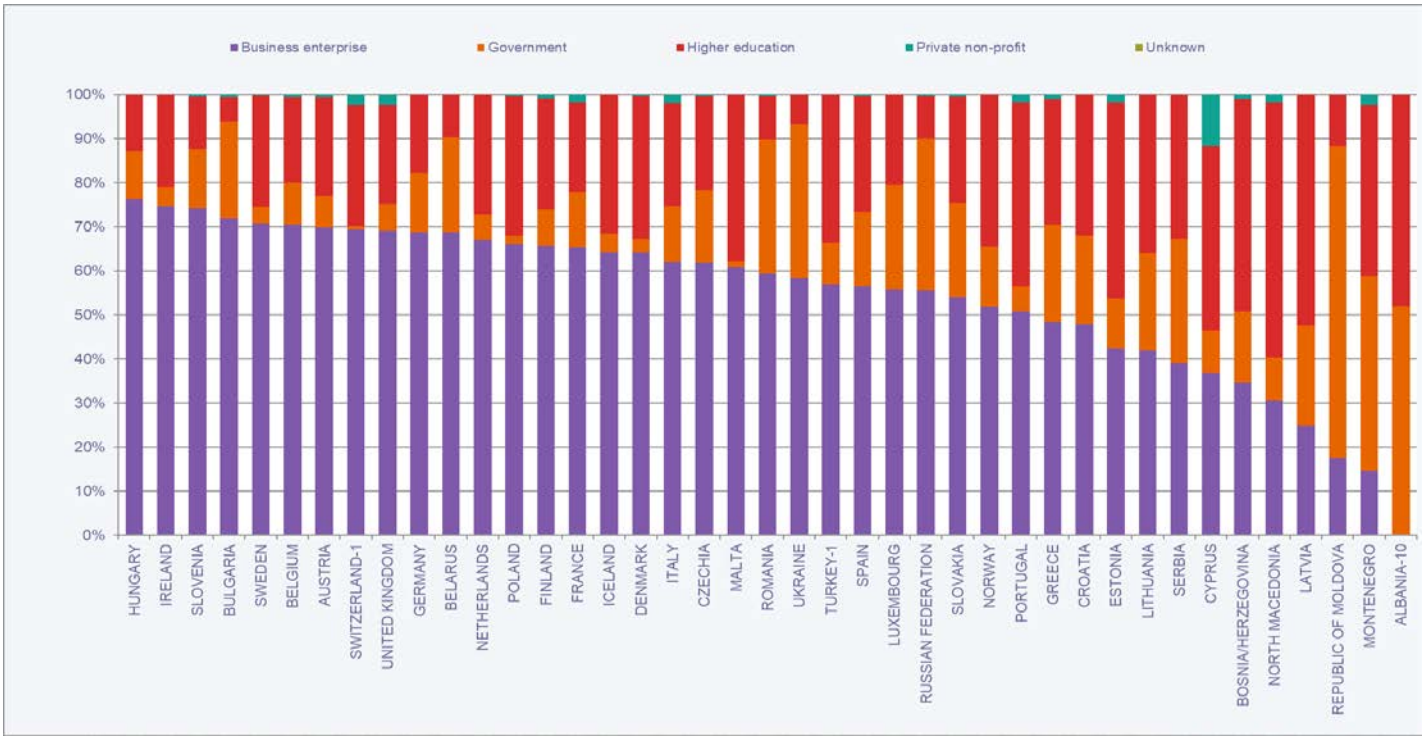


Notes: +1 = 2019, -1 = 2017, -3 = 2015, -4 = 2014, -16 = 2002.

Source: UNESCO Institute for Statistics, June 2020.

Figure 9. A breakdown of R&D investment in Europe

GERD by sector of performance, 2018 or latest year available

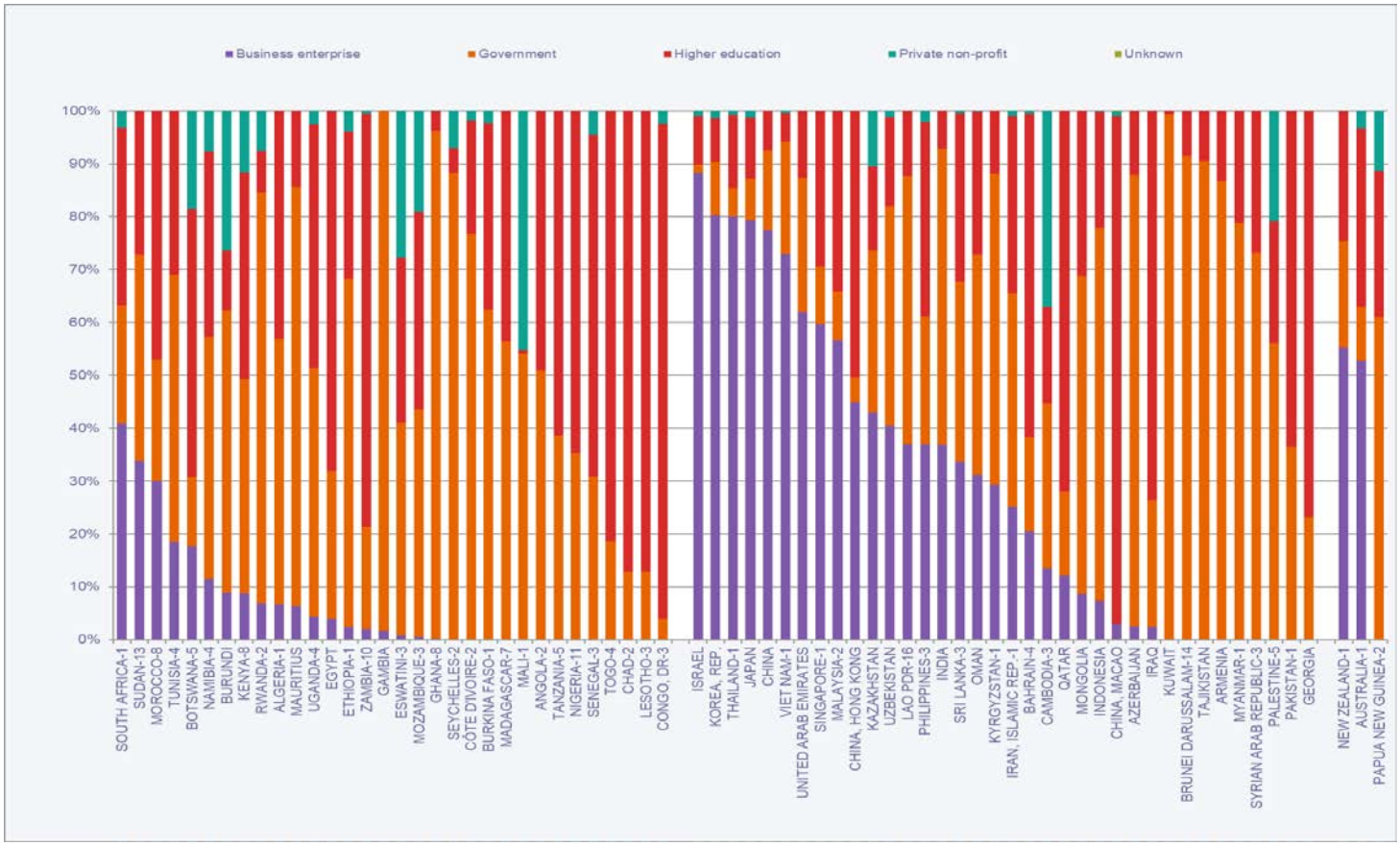


Notes: -1 = 2017, -10 = 2008.

Source: UNESCO Institute for Statistics, June 2020.

Figure 10. A breakdown of R&D investment in Africa, Asia and the Pacific

GERD by sector of performance, 2018 or latest year available



Notes: -1 = 2017, -2 = 2016, -3 = 2015, -4 = 2014, -5 = 2013, -7 = 2011, -8 = 2010, -10 = 2008, -11 = 2007, -13 = 2005, -14 = 2004, -16 = 2002.

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.

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.