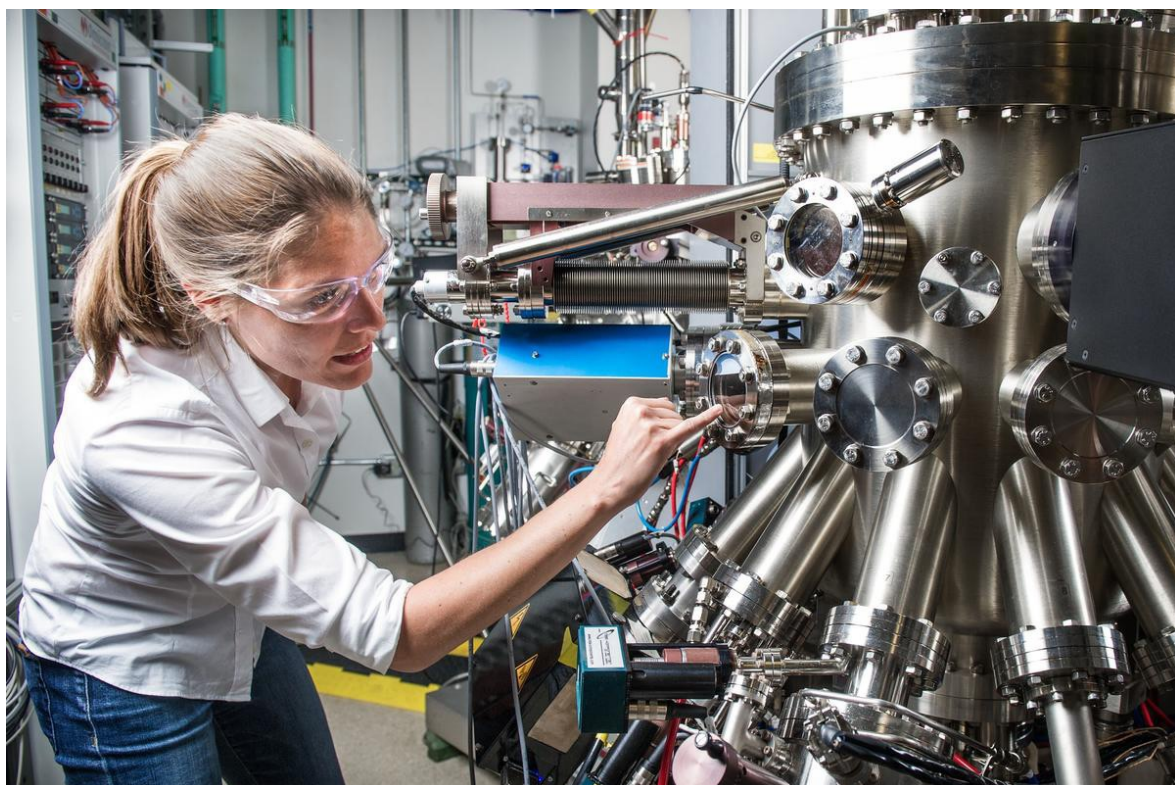


Female researchers active in research and development (R&D)



Key points

- Globally, women researchers constituted only 30% of all researchers.
- The share of women among researchers varies widely across regions, with the highest share of female researchers in countries the Latin America and the Caribbean region. Only three regions, Latin America and the Caribbean, Northern Africa, and Central Asia, have achieved or almost attained gender parity, that is, a share of between 45% and 55% for either sex.
- Gender parity has been achieved only in about one in four countries (of the 148 countries with available data).
- Female researchers tend to work in the academic and government sectors, while male researchers work mainly in the private sector. In general, women researchers are less likely than men to be engaged in fields of research pertaining to engineering and technologies.

Background

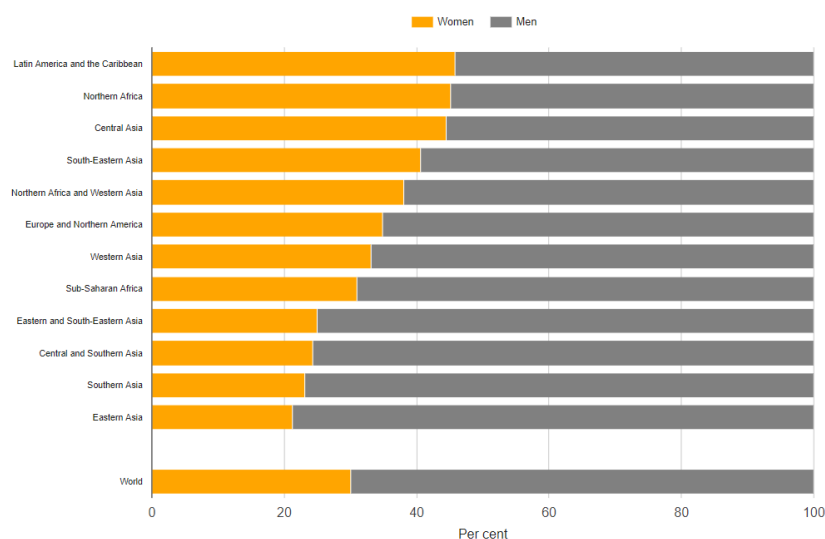
Outcomes from R&D play a pivotal role in transforming societies, economies and the natural environment. In the 2030 Agenda for Sustainable Development,¹ countries pledged to "build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation" (Sustainable Development Goal (SDG) 9). Target 9.5 of SDG 9 called upon countries to enhance scientific research, upgrade technological capabilities, encourage innovation and substantially increase the number of researchers, as well as public and private spending on R&D. Achieving this target will not be possible without harnessing all talents and addressing gender imbalances in the research workforce.

Women constituted only 30% of all researchers worldwide, with wide disparities among regions

Globally, women accounted for only 30% of total researchers in 2017 (see figure I).

The share of women among researchers displayed wide variation across regions, with countries Latin America and the Caribbean having the highest share of women researchers (46% in 2017). The proportion of women researchers was also relatively high in Northern Africa (45%), Central Asia (45%) and South-Eastern Asia (41%). Around one in three researchers was female in Europe and Northern America (35%), Western Asia (33%) and sub-Saharan Africa (31%), exceeding the world average. In contrast, the share of women researchers was the lowest in Southern Asia (23%) and Eastern Asia (21%).

In the achievement of gender parity, which is defined as a share of between 45% and 55% for either sex, only three regions, Latin America and the Caribbean; Northern Africa; and Central Asia, have thus far reached this goal.

Figure I: Women researchers as a proportion of total researchers by region: 2017 (Percentage)

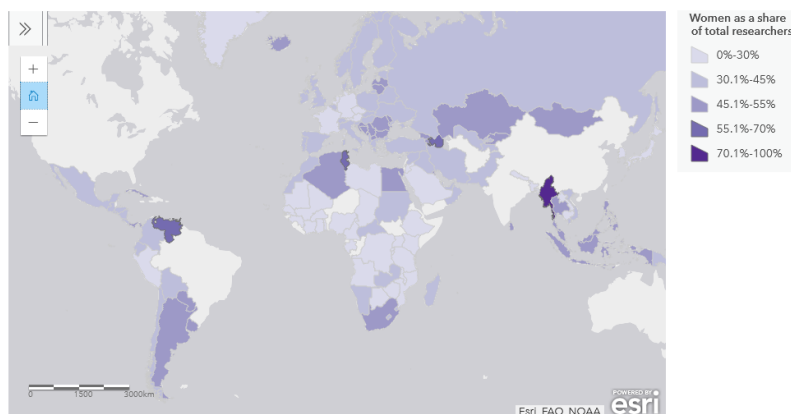
Source: United Nations Educational, Scientific and Cultural Organization (UNESCO), UNESCO Institute for Statistics database (<http://uis.unesco.org/>) (accessed February 2020).

Note: Regional averages are based on data for 2017 or the latest available data for the period 2000–2017. The share of women researchers is based on headcounts, that is, the total number of researchers who are mainly or partially engaged in R&D. It is important to note that headcount measures do not take into account part-time employment in the research workforce. As a result, headcount data may mask variations in working hours among researchers. There is insufficient data coverage on the number of researchers broken down by sex for Oceania, Australia and New Zealand, and Northern America to calculate a regional aggregate.

Women researchers remained underrepresented in many countries around the world

To find the degree of progress in the employment of women in R&D, it is necessary to examine the situation at the individual country level. Figure II displays the proportion of women among the total number of researchers by country for 148 countries with available data for the period 1996–2018. Data show the underrepresentation of women researchers in the vast majority of countries.

In 129 of 148 countries, women made up less than a half of researchers. In 47 countries, women's share was less than a third. Nevertheless, significant progress by women researchers was registered in some countries. Women outnumbered men among researchers in the following countries: Argentina, Azerbaijan, Georgia, Kazakhstan, Kuwait, Latvia, Lithuania, Myanmar, New Zealand, North Macedonia, Panama, the Philippines, Serbia, Trinidad and Tobago, Tunisia and Venezuela (Bolivarian Republic of). Gender parity, that is, a share of between 45% and 55% for either sex, has been achieved in only about one in four countries (of the 148 countries with available data).

Figure II: Women as a share of total researchers by country: 2018 or latest year available

Source: UNESCO Institute for Statistics database (<http://uis.unesco.org/>) (accessed February 2020).

Note: Data in the map are based on headcounts, except for the Congo, India and Israel, which are based on full-time equivalents. Data for China are based on the total number of personnel working in the area of R&D rather than the number of researchers. Data for Brazil are based on estimations. Data are for 2018 or the latest year available for the period 1996–2018.

The boundaries and names shown and the designations used on this and other maps throughout this publication do not imply official endorsement or acceptance by the United Nations.

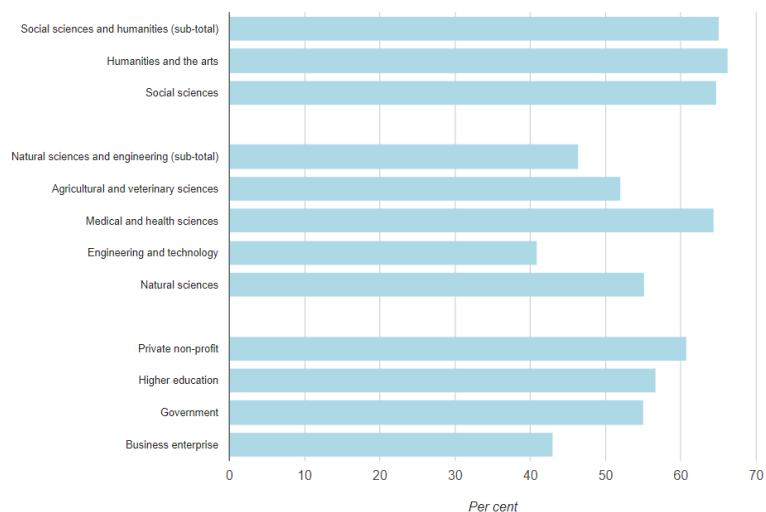
To better understand the underlying trends in women's representation in research, it is useful, *inter alia*, to look into the career paths of researchers, as well as the sectors of the economy and the fields of research in which they work. Data show that, although there has been an increase in the gender balance **among university graduates** and a rising level in women's educational qualifications, female researchers are still underrepresented in countries around the world.

This has been characterized as a "leaky pipeline" phenomenon, whereby an increase in the number of women graduates does not lead to an increase in the proportion of women researchers.² Data also show that worldwide, female researchers work chiefly in the academic and government sectors, while male researchers work mainly in the private sector. This is the case even in countries with high shares of women researchers (see the case of the Philippines, described below). Women are underrepresented across all areas of research, including natural sciences, engineering and technology, medical sciences, agricultural sciences, social sciences and humanities, and their underrepresentation is the most pronounced in the fields of engineering and technology.³

Country in focus: the Philippines

Even in countries with high shares of women researchers, such as the Philippines, more women work in the academic and government sectors than in the private sector, where men dominate. The proportion of women working in R&D pertaining to the natural sciences and engineering is significantly smaller in comparison to their representation in research in the field of social sciences and humanities (see figure III).

Figure III: Share of women researchers in the Philippines by sector and field of research: 2013 (Percentage)



Source: UNESCO Institute for Statistics database (<http://uis.unesco.org/>) (accessed February 2020).

Note: Figure III displays research activities classified into six broad fields of R&D and four major economic sectors. The first four research fields are grouped as natural sciences and engineering and include: natural sciences; engineering and technology; medical and health sciences; and agricultural sciences. The other two are categorized as social sciences and humanities. Data are based on headcounts.

Sources

- Organization for Economic Cooperation and Development (OECD), *Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development*, Paris, 2015
- Jensen, K. S. H., *Women Working in Science, Engineering and Technology, Higher Education and Industry (A Literature Review)*, IRIS (Informatics Research Institute), Salford University, Manchester, 2005.

About the data

Definitions

- **Research and development (R&D):** comprises creative and systematic work undertaken in order to increase the stock of knowledge and devise new applications of available knowledge;⁴ it is aimed at new findings based on original concepts (and their interpretation) or hypotheses.
- **Researchers who work in the area of R&D:** Researchers are 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.⁵
- **Proportion of female researchers:** Number of female researchers expressed as a percentage of the total number of researchers (male and female).

Coverage

Researchers in countries worldwide based on headcounts, that is, the total number of researchers who are mainly or partially engaged in R&D.

Availability

Regional averages are available for all regional groupings under the Sustainable Development Goals (SDGs)⁶ except Oceania, Australia and New Zealand and Northern America and for 148 countries (latest available for the period 1996–2018).⁷

Footnotes

1. United Nations, Transforming our World: 2030 Agenda for Sustainable Development, (General Assembly resolution 70/1), adopted in October 2015.
2. Jensen, K. S. H., Women Working in Science, Engineering and Technology, Higher Education and Industry (A Literature Review), IRIS (Informatics Research Institute), Salford University, Manchester, 2005.
3. European Union, She Figures 2015 - Gender in Research and Innovation, Luxembourg, 2016.
4. Organization for Economic Cooperation and Development (OECD), Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development, Paris, 2015.
5. Ibid.
6. Regional groupings under the Sustainable Development Goals (SDGs).
7. United Nations Educational, Scientific and Cultural Organization (UNESCO), UNESCO Institute for Statistics database. (accessed February 2020)