

## RESEARCHERS

On average, in OECD countries, labour costs account for half of the R&D expenditure. Researchers represent around 60% of total R&D personnel on average in the OECD.

### Definition

Researchers are professionals engaged in the conception and creation of new knowledge, products, processes, methods and systems, as well as those who are directly involved in the management of projects for such purposes. They include researchers working in both civil and military research in government, universities and research institutes as well as in the business sector.

Researchers are part of human resources devoted to R&D. Other categories of R&D personnel are technicians (and equivalent staff) who participate in R&D by performing scientific and technical tasks, and other supporting staff (skilled and unskilled craftsmen, secretarial and clerical staff participating in R&D projects).

The number of researchers is measured in full-time equivalents (i.e. a person working half-time on R&D is counted as 0.5 person-year) and expressed per thousand people employed in each country. The number of researchers includes staff engaged in R&D during the course of one year.

### Overview

In the OECD area, around 4.4 million persons were employed as researchers in 2013. There were about 7.8 researchers per thousand of employed persons, compared with 5.4 per thousand employed in 1995, and this has steadily increased over the last two decades.

The Nordic countries as well as Korea and Israel top the table for the numbers of researchers per thousand persons employed, with Israel the highest in the OECD, recording 17.4 researchers per thousand persons employed in 2012. Conversely, researchers per thousand of employed people are low in Chile and Mexico. Other countries with low rates, below 5.0 researchers per thousand of employed people, include Italy, Poland and Turkey.

In 2012, in the OECD, about 2.6 million researchers were engaged in the business sector. This represents approximately 60% of the total although there are differences across countries: two out of three researchers work in the business sector in the United States, about three out of four in Japan and Korea, but less than one out of two in the EU. Chile, Mexico, and South Africa have a low intensity of business researchers (less than one per 1 000 employees in industry). In these countries, the business sector plays a much smaller role in the national R&D system than the higher education and government sectors.

### Comparability

The data on researchers have been compiled according to the 2002 guidelines of the *Frascati Manual* which have now been superseded by the 2015 edition. The revised definitions are in the course of being implemented and are not expected to revise significantly the major indicators. Comparability over time is affected to some extent by improvements in the coverage of national R&D surveys and by the efforts of countries to improve the international comparability of their data.

For the United States, the total numbers of researchers are OECD estimates and exclude military personnel in the government sector. For China, from 2009 researcher data are collected according to the *Frascati Manual* definition of researcher.

### Sources

- OECD (2015), *Main Science and Technology Indicators*, OECD Publishing.

### Further information

#### Analytical publications

- OECD (2015), *OECD Science, Technology and Industry Scoreboard*, OECD Publishing.
- OECD (2014), *OECD Science, Technology and Industry Outlook*, OECD Publishing.

#### Methodological publications

- OECD (2015), *Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development*, OECD Publishing.

#### Online databases

- OECD Science, Technology and R&D Statistics.

#### Websites

- Main Science and Technology Indicators (supplementary material), [www.oecd.org/sti/msti](http://www.oecd.org/sti/msti).
- Research and Development Statistics, [www.oecd.org/sti/rds](http://www.oecd.org/sti/rds).


**Researchers**

Per thousand employed, full-time equivalent

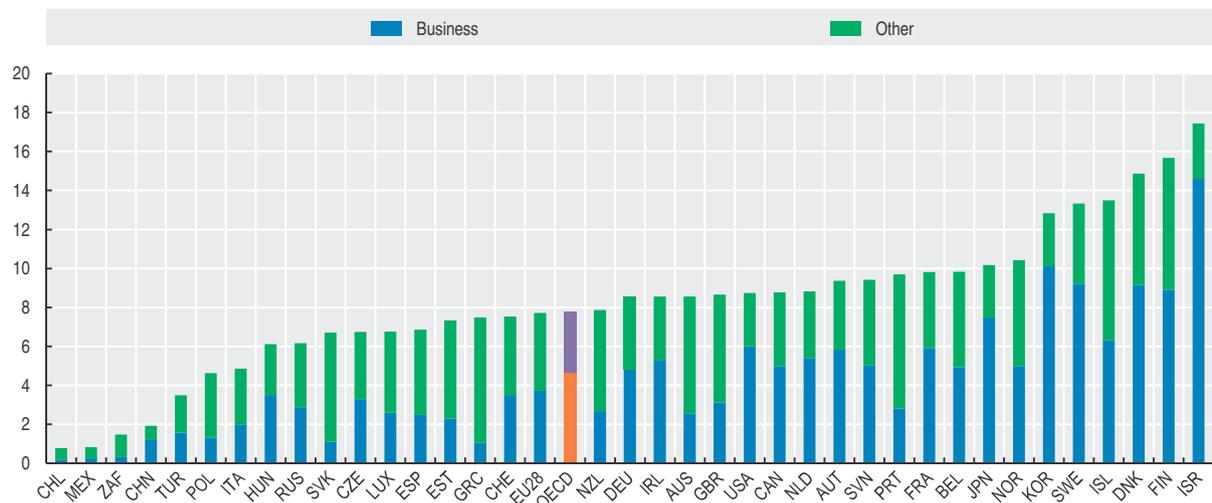
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Australia	..	7.8	..	8.3	..	8.5	..	8.6	..	..	..	..	..
Austria	..	6.4	..	6.8	7.3	7.4	7.9	8.4	8.5	8.9	8.9	9.3	9.4
Belgium	7.7	7.4	7.4	7.7	7.8	8.1	8.3	8.2	8.6	9.1	9.4	9.6	9.8
Canada	7.5	7.4	7.7	8.0	8.3	8.4	8.9	9.0	8.8	9.1	9.2	8.8	..
Chile	..	..	..	..	..	..	0.9	0.9	0.7	0.8	0.8	0.9	0.8
Czech Republic	3.1	3.1	3.3	3.4	4.9	5.3	5.5	5.7	5.6	5.8	6.1	6.6	6.7
Denmark	7.1	9.3	9.1	9.6	10.2	10.3	10.5	12.3	13.0	13.6	14.2	14.9	14.9
Estonia	4.5	5.2	5.0	5.6	5.4	5.5	5.7	6.2	7.5	7.4	7.7	7.7	7.3
Finland	15.8	16.4	17.7	17.3	16.4	16.5	15.6	16.0	16.3	16.7	15.9	15.9	15.7
France	6.8	7.1	7.4	7.7	7.7	7.9	8.2	8.4	8.7	9.1	9.2	9.6	9.8
Germany	6.6	6.7	6.9	6.9	6.9	7.1	7.2	7.4	7.8	8.0	8.1	8.4	8.5
Greece	3.3	..	3.5	..	4.2	4.2	4.4	..	..	..	5.6	6.2	7.5
Hungary	3.5	3.5	3.6	3.6	3.8	4.2	4.1	4.5	5.0	5.3	5.7	5.9	6.1
Iceland	11.7	..	12.2	..	13.4	14.2	12.5	12.9	14.9	..	13.5	..	..
Ireland	5.1	5.3	5.5	5.9	5.9	5.9	5.9	6.8	7.2	7.5	8.2	8.6	..
Israel	..	..	..	..	..	..	..	..	..	..	15.7	17.4	..
Italy	2.8	3.0	2.9	3.0	3.4	3.5	3.7	3.8	4.1	4.2	4.3	4.5	4.9
Japan	10.0	9.7	10.1	10.0	10.4	10.4	10.4	10.0	10.1	10.2	10.2	10.0	10.2
Korea	6.3	6.4	6.8	6.9	7.9	8.6	9.5	10.0	10.4	11.1	11.9	12.8	12.8
Luxembourg	..	..	6.7	6.8	7.2	6.4	6.6	6.5	6.8	7.3	8.2	6.6	6.8
Mexico	0.6	0.8	0.9	1.0	1.1	0.9	0.9	0.9	1.0	0.8	0.8	..	..
Netherlands	5.4	5.2	5.2	5.8	5.7	6.2	5.8	5.7	5.3	6.1	6.9	8.3	8.8
New Zealand	5.7	..	6.5	..	6.3	..	6.9	..	7.5	..	7.4	..	7.9
Norway	8.5	..	8.9	8.9	9.0	9.3	9.6	9.8	10.1	10.2	10.4	10.4	10.4
Poland	4.0	4.1	4.3	4.4	4.4	4.1	4.1	3.9	3.9	4.2	4.1	4.3	4.6
Portugal	3.5	3.7	4.0	4.1	4.2	4.9	5.6	8.0	8.1	8.5	9.2	9.3	9.7
Slovak Republic	4.7	4.5	4.7	5.2	5.2	5.5	5.7	5.6	6.0	7.0	6.9	6.9	6.7
Slovenia	4.9	5.0	4.1	4.3	5.7	6.2	6.4	7.0	7.6	8.0	9.3	9.5	9.4
Spain	4.6	4.7	5.1	5.3	5.5	5.6	5.8	6.1	6.7	6.9	6.8	6.9	6.9
Sweden	10.5	..	11.0	11.2	12.7	12.6	10.1	11.0	10.6	11.0	10.6	10.7	13.3
Switzerland	..	..	..	6.0	..	..	..	5.5	..	..	..	7.5	..
Turkey	1.2	1.2	1.7	1.7	2.0	2.1	2.4	2.5	2.7	2.8	3.0	3.3	3.5
United Kingdom	6.5	7.1	7.7	8.0	8.6	8.7	8.6	8.5	8.8	8.8	8.6	8.7	8.7
United States	7.3	7.5	8.0	7.8	7.6	7.7	7.6	8.1	8.8	8.5	8.8	8.7	..
EU 28	5.4	5.6	5.8	6.0	6.2	6.3	6.4	6.6	6.8	7.1	7.2	7.5	7.7
OECD	6.3	6.4	6.7	6.7	6.9	7.0	7.0	7.2	7.5	7.5	7.7	7.8	..
Brazil	..	..	..	..	..	..	..	..	..	..	..	..	..
China	1.0	1.1	1.2	1.2	1.5	1.6	1.9	2.1	1.5	1.6	1.7	1.8	1.9
India	..	..	..	..	..	..	..	..	..	..	..	..	..
Indonesia	..	..	..	..	..	..	..	..	..	..	..	..	..
Russian Federation	7.8	7.4	7.3	7.1	6.8	6.7	6.6	6.4	6.4	6.3	6.3	6.2	6.2
South Africa	1.2	..	1.2	1.5	1.4	1.4	1.4	1.3	1.4	1.4	1.4	1.5	..

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**Researchers**

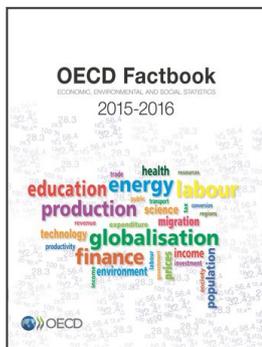
Per thousand employed, full-time equivalent, 2013 or latest available year



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