

### B.7. R&D PERSONNEL

■ The number of personnel engaged in R&D in OECD economies is directly linked to their R&D effort. In Finland, Sweden and Denmark, over 15 R&D personnel per 1 000 employees contribute to R&D activities, well above the EU average of 10 per 1 000. Japan, Luxembourg, France and New Zealand also employ a higher than average ratio of R&D personnel (over 14 per 1 000).

■ In the vast majority of OECD countries, the number of researchers rises at a faster rate than the number of total R&D personnel. This is partly due to the increased number of postgraduate students who perform R&D and are counted as researchers in the higher education sector. Greater use of new information technologies in R&D activities may also explain the need for fewer technicians and support staff per full-time equivalent researcher. Nevertheless, some laboratories lack technicians or support staff.

■ The number of researchers has increased the most in China (albeit from a small base), Finland and New Zealand, with average annual growth rates of close to 9%, more than double the OECD average of 3.2%. In New Zealand, Turkey, Mexico, South Africa, Greece and Italy, as well as in the Netherlands and the Russian Federation, however, the number of researchers has grown more slowly than that of total R&D personnel.

■ The under-representation of women in R&D activities has gained the attention of policy makers. In most countries for which data are available, women represent between 25% and 35% of total researchers. While women represent over 40% of researchers in Portugal, the Russian Federation and the Slovak Republic, they represent under 13% in Japan and Korea.

■ The low share of women researchers is partly a reflection of the uneven distribution of women among sectors of R&D performance. With the exception of Denmark, Korea, Luxembourg and the Russian Federation, women researchers are principally in the higher education sector; their participation is particularly low in the business sector, which attracts the largest number of researchers in most countries (see B.8).

#### Source

- OECD, Main Science and Technology Indicators database, May 2007.

#### For further reading

- OECD (2002), *Frascati Manual: Proposed Standard Practice for Surveys on Research and Development*. OECD, Paris, available at: [www.oecd.org/sti/frascaticmanual](http://www.oecd.org/sti/frascaticmanual).

#### Measuring R&D personnel

Research and development personnel includes all persons employed directly in R&D activities and therefore covers technicians and support staff in addition to researchers.

R&D personnel can be expressed both in full-time equivalents (FTE) on R&D and in headcounts.

A person working half-time on R&D is counted as 0.5 person-year in FTE. FTE includes staff engaged in R&D during the course of a particular year. FTE data are a true measure of the volume of personnel and give an indication of countries' research effort.

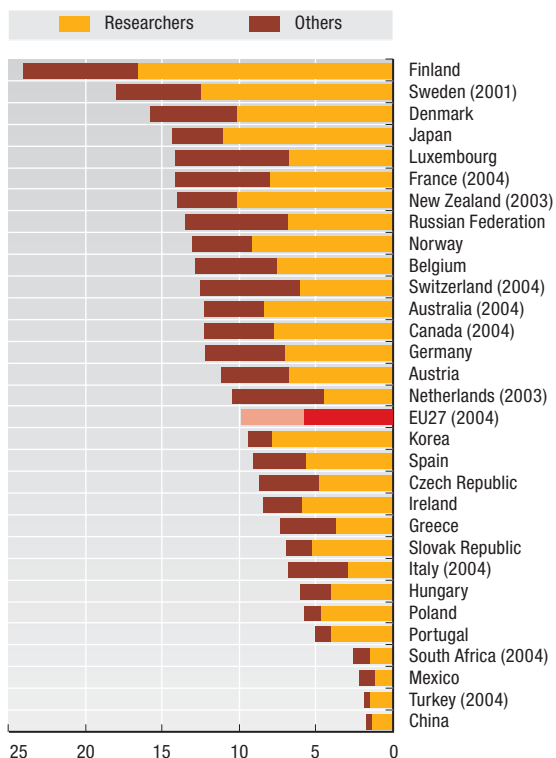
Headcount data are a measure of the stock of researchers and other R&D personnel employed at a certain date in the year, and are the most appropriate measure for collecting additional information about R&D personnel, such as age, gender or national origin.

Both the FTE on R&D and headcounts data presented here comply with the methodology laid down in the *Frascati Manual*. Data for R&D personnel and researchers in China may be overestimated (see Box B.10).

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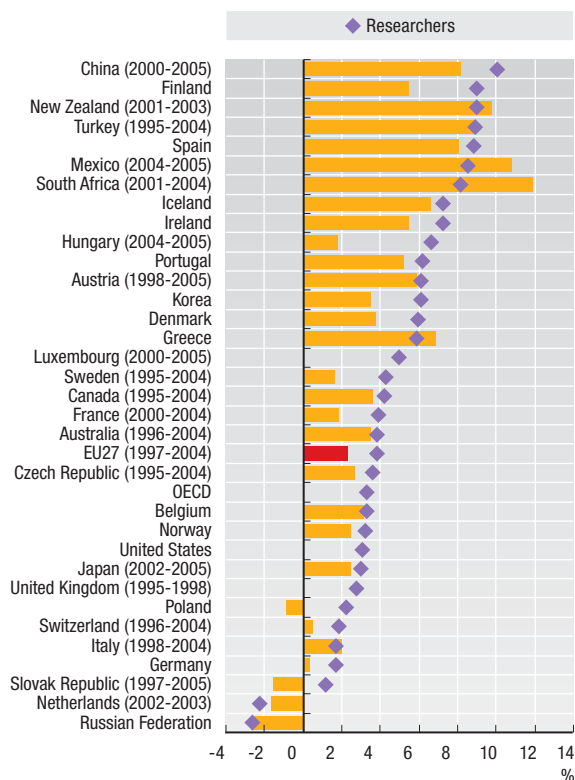
**R&D personnel, 2005**

Per thousand employment



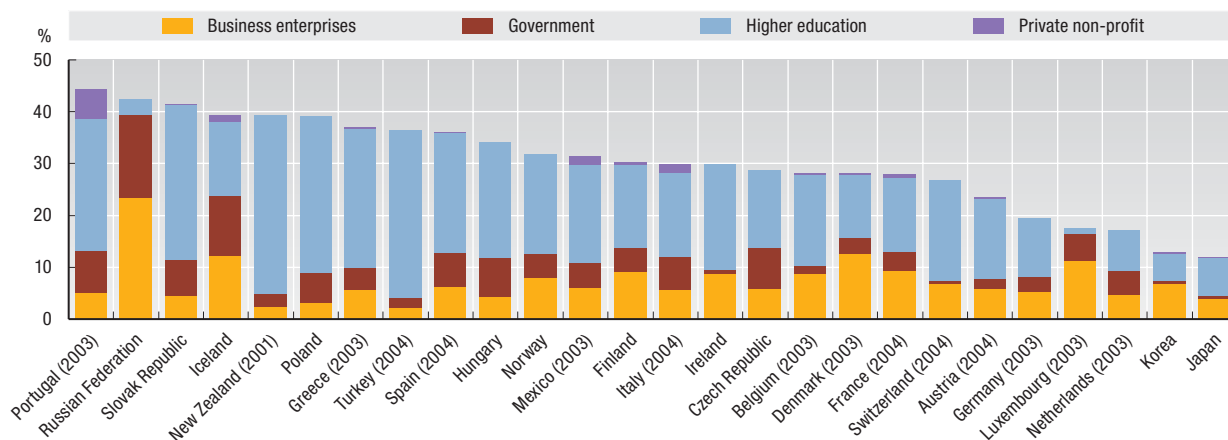
**Growth of R&D personnel, 1995-2005**

Average annual growth rate



**Women researchers by sector of employment, 2005**

As a percentage of total researchers



1 2 <http://dx.doi.org/10.1787/117344435282>