

19. SCIENCE AND RESEARCH

The terms **research and development (R&D)** in the Czech Republic are defined in the Act on the Support of Research and Development from Public Funds. **R&D** is defined as systematic creative work conducted for the purpose of broadening of existing knowledge (including knowledge of humans, culture, and society), obtaining new pieces of knowledge or application of pieces of knowledge in practice using methods allowing their confirmation, addition, or refutation.

Reporting units in the R&D statistical survey are all legal and natural persons conducting R&D on the territory of the Czech Republic as their principal activity (CZ-NACE 72) or a secondary economic activity, irrespective of the number of their personnel, sector, or CZ-NACE activity they are active in. The **breakdown of data by region** has been available since 2001 and is processed by the location of R&D workplaces of respective reporting units. In the case of the higher education sector it applies mainly to respective faculties of public universities. Data for districts were made according to addresses of R&D workplaces.

R&D personnel by occupation are:

- **researchers**: professionals engaged in or managing projects that include the concept or generation of new pieces of knowledge, products, processes, methods, and systems;
- **technicians and associate professionals** (hereinafter referred to as technicians) who participate in R&D activities by performing scientific and technical tasks, applying concepts and operating methods (usually under the supervision of researchers);
- **other supporting staff** participating or involved in R&D activities (e.g. craftsmen, secretaries, and clerks).

The **average registered number of employees converted to full-time equivalent (FTE) devoted to research and development activities** brings information about real time devoted to research and development activities. One FTE is equal to one year of full-time work of an employee fully dedicated to R&D activities. This indicator is important especially at R&D personnel whose job content consists also of other activities than R&D (e.g. academics), because it counts only that part of their hours worked, which is devoted to R&D.

R&D expenditure represents total expenditure (current and capital expenditure) designated to own research and development carried out within the reporting unit or the economic sector irrespective of the source of funds. Expenditure incurred outside the reporting unit (external expenditure on R&D) is included in the total R&D expenditure only on condition that it directly serves to support own R&D (e.g. purchase of supplies for R&D).

Data on the **direct government support of R&D** result from information contained in the R&D Information System (Office of the Government of the CR) and from the State Final Account of the CR for the area of the science, research, and innovations (Ministry of Finance).

Data on the **indirect government support of R&D** (tax relief) result from data stated in tax returns of legal persons.

Patent data were processed on the basis of data sources of the Industrial Property Office of the Czech Republic (IPO CR), which is responsible for the patent protection on the territory of the Czech Republic. Tables contain only data on patent activity of entities doing their business on the territory of the Czech Republic. Patent data are classified using the so-called fractional method.

The Labour Force Sample Survey (LFSS), in which individuals and households are basic reporting units, is the data source for the **numbers of professionals and technicians and associate professionals**. Data in tables are annual averages. If the figure is smaller than 3 000 persons, data are considered to be of low reliability. Since 2011, professionals and technicians and associate professionals are defined based on the CZ-ISCO-08 classification (CZ-ISCO major groups 2 and 3). Under the major group of professionals, there is a more detailed group of science and engineering professionals (CZ-ISCO 21); under the major group of technicians and associate professionals there is a group of science and engineering associate professionals (CZ-ISCO 31).

Data on **wages of professionals** are from results of the structural statistics on wages of employees published by the Czech Statistical Office in cooperation with the Ministry of Labour and Social Affairs.

Data on **students in universities** refer to students of bachelor, master, follow-up master, and doctoral study programmes in public and private universities (they do not include students of two state universities, which make different reporting). Master study programmes denote a group of master and follow-up master study programmes. Tables show students of two fields of education (according to the International Standard Classification of Education: Fields of Education and Training 2013 (ISCED-F 2013)). Science fields of education correspond to the broad field 05 (natural sciences, mathematics and statistics), engineering fields of education correspond to the broad field 07 (engineering, manufacturing and construction). Data are taken from the SIMS database (i.e. Union Information from Students' Registers) and refer to the database status as at 20 January 2018. Since a field of education with the same code may have various contents at different universities and thus it is problematic to classify students to relevant groups of fields of education according to the ISCED-F 2013, expert estimates are given for the breakdown by field of education, which were made for the Czech Statistical Office by experts of the Ministry of Education, Youth, and Sports.

Data on the number of students have been newly processed according to study programmes instead of previously used fields of education and also revised back as for the previous years. Data breakdown by territory is made based on the permanent residence of students.

*The population size and numbers of females **with tertiary education** are calculated from data collected by the Labour Force Sample Survey. Data are allocated to regions according to the place of residence of respondents at the time of data collection.*