

## 1. BASIC INFORMATION ON GBARD STATISTICS

Area of statistics:	<b>Government budget allocations for R&amp;D (GBARD)</b>
Method of collecting data:	Identifying all public budget items for research and development (administrative data)
Periodicity:	Annual
Data source:	The R&D Information System, the e-state treasury register, information from providers of public support for research and development
Statistical unit:	All public administrations (budget items concerning research and development)
Objective of statistics:	Government budget allocations for R&D (GBARD) provided from the state budget to research and development performers within the Czech Republic and abroad
Fundamental indicators:	<p>Following main indicators are measured:</p> <ul style="list-style-type: none"> <li>– number of beneficiaries with research and development support</li> <li>– sum of budget allocations for research and development</li> </ul>
Required breakdowns:	<p>The following breakdown of GBARD data is available:</p> <ul style="list-style-type: none"> <li>–by a form of research and development support</li> <li>– by providers of research and development support</li> <li>– by socio-economic objectives (SEOs) in accordance to the Nomenclature for the analysis and comparison of scientific programmes and budgets (NABS 2007)</li> <li>– by ownership of enterprises (public, private national, foreign affiliations)</li> <li>– by size-class of enterprises (micro, small, medium, large)</li> <li>– by the Statistical classification of economic activities in the European Community (NACE)</li> <li>– by the Nomenclature of territorial units for statistics (regions NUTS 3)</li> </ul>
Time series:	<p>Years 2000 to 2019 – totals by NABS 1992, the form of support and providers</p> <p>Years 2010 to 2020 – detailed data linked with Business register, by nabs 1992 and NABS 2007, the form of support and providers</p>
International comparison:	GBARD data is built up using the guidelines laid out in the Proposed standard practice for surveys of research and experimental development - Frascati Manual, OECD 2015 (chapter 12).

## 2. METHODOLOGY

### 2.1 The legislative definition of state budget appropriations on research and development in the Czech Republic

**Direct public support for research and development (R&D)** is currently the primary tool of the Czech Republic to support the performing of R&D. Research and development is supported by both the targeted (grant projects, operational programs) and institutional form of support (funding of long-term conceptual research institution development and specific university research).

In monitoring of direct public support for R&D is engaged internationally comparable statistics **GBARD (Government Budget Appropriations for R&D by Socio-economic Objectives)**. The aim of this statistics is to ensure data on government support of R&D funding from public budgets broken down by socio-economic objectives. Data from the statistics is used in EU member countries as support for decision-making into which areas of research and development should be invested in the coming years.

GBARD statistics is within the European Union organized on the obligatory basis based on the legislative act **Regulation (EU) 2019/2152** of the European Parliament and of the Council on European business statistics repealing. GBARD data collecting is mandatory for the Czech Republic. For ensuring this statistics is important the national legal Act no. 130/2002 Coll.

The valid methodology related to this statistics is defined in the international manual focused on the collection and reporting of data on research and experimental development known as **Frascati Manual** (revised 2015)<sup>9</sup>, which was created by the OECD initiative. Codes of socio-economic objectives can be found in the classification **NABS – Nomenclature for the analysis and comparison of scientific programs and budgets** (Eurostat 2007).

### 2.2 The concept of GBARD statistics

The definitions of basic R&D categories are consistent with the widely used international recommendations derived from the Frascati Manual. Detailed definition of R&D, as used in the annual Czech survey on research and development is presented in the publication "Research and Development Indicators" or on the CSO website.

#### The definition of research and development

The basic definition of R&D is based on § 2 paragraph no. 1 of the Act on public support for research and development (no. 130/2002 Coll.), where R&D is generally defined as systematic creative work carried out to acquire new knowledge and its use. The basic criterion for distinguishing R&D from other (related) activities is the presence of **a valuable element of novelty** and clarification of the research and technical uncertainties. R&D is further distinguished into the following categories:

- **Research** – systematic creative work extending knowledge, including knowledge of man, culture and society, using methods which allow confirmation, supplementation or refutation of acquired knowledge done as:
  - c) **Basic research** – experimental or theoretical work undertaken to acquire knowledge about the basics of observed phenomena to explain their causes and possible impacts when using lessons learned;
  - d) **Applied research** – experimental or theoretical work undertaken to acquire new knowledge focusing on future practical application;

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<sup>9</sup> Frascati Manual is the basic methodological document used in R&D statistics. For more information see: <http://www.oecd.org/sti/frascati-manual-2015-9789264239012-en.htm>



- **Industrial research** – a part of applied research, the results of which are utilized through development of new products, technologies and services that are designed for business under a special legislation.
- **Experimental development** – systematic creative application of research findings or other ideas to produce new or improved materials, products or equipment, or to introduce new or improved technologies, systems and services, including acquisition and testing of prototypes and pilot or demonstration facilities.

Unlike other statistical surveys carried out in the area of research and development GBARD data are based on the analysis and identification of all amounts spent on research and development from public budgets assorted by codes socio-economic objectives. It is therefore an approach in terms of provider of funds, which in this case is represented by the state administration and not about the approach in terms of R&D performing units, which are surveyed by the annual statistical survey on research and development.

GBARD data include any funds provided from public budgets for R&D support, including funds spent on R&D abroad. Based on the methodology of the statistics, pre-financing of projects financed from European Structural and Investment Funds (ESIF) is excluded from GBARD data. The support of innovations is also not included in GBARD data.

GBARD data is based on spending authorized in the law on the state budget for the given year (preliminary data) and expenditures of the state final account for R&D (final data). Public budgets cover the central government budget and provincial budgets. The state budget is always included and provincial governments only if their contribution is significant<sup>10</sup>. Budgets at the local government level, i.e. cities and towns are excluded.

GBARD data include both current and capital expenditures. All support provided by repayable loans is excluded strictly.

GBARD data also covers general university funds (SEO 12: General advancement of knowledge: R&D financed from General University Funds) that are defined in accordance with the definition of the Frascati Manual as any institutional funding provided to universities to support their research. In order to prevent this category from becoming a large, uninformative item, a supplementary breakdown by top level fields of research and development (FORD) is applied.

The codes of socio-economic objectives are allocated for targeted funds by the purpose and content of the R&D program (projects) and for institutional funds then by the focus of research performed by a recipient.

## The terminology

The forms of public support of research and development (according to the OECD methodology, which differs from the breakdown defined in the amended law no. 130/2002 Coll., on public support for research, development and innovation) are following:

- **Targeted support** – includes projects within programs announced by the ministries and R&D agencies (GA CR and TA CR), also projects financed from operational programs (EU structural funds) and projects under the eighth Framework Programme for Research and Innovation – Horizon 2020.
- **Institutional support** – includes the long-term conceptual research organization development, specific university research, the international support for R&D and before and research intentions.

**The long-term conceptual research organization development** – includes institutional support for long-term strategic development research organization on the basis of the results evaluation. Since 2010, this type of support gradually replacing the institutional support provided in the form of research intentions.

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<sup>10</sup> In the case of the Czech Republic only the central state budget is taken into account. Provincial governments (at the NUTS 3 level) are excluded.

**Specific university research** – covers research performed by students in accredited doctoral or master's degree programs, which is directly connected with their education.

**International cooperation in research and development** – includes fees for the Czech Republic's participation in international research and development programs, fees for membership in international organizations for research and development or financial interest by the Czech Republic to support international cooperation projects in research and development if the financial interest can be paid from public funds, and if the projects are supported by the budget of other States or from the European Union or by international organizations.

**The socio-economic objective** – a pre-defined research and development area into which the state budget expenditure are allocated by priorities stated in the national R&D policy. The list of socio-economic objectives is given in the above mentioned NABS (Eurostat, 2007).

Code	SEO-EN
SEO01	Exploration and exploitation of the Earth
SEO02	Environment
SEO03	Exploration and exploitation of space
SEO04	Transport, telecommunication and other infrastructures
SEO05	Energy
SEO06	Industrial production and technology
SEO07	Health
SEO08	Agriculture
SEO09	Education
SEO10	Culture, recreation, religion and mass media
SEO11	Political and social systems, structures and processes
SEO12	General advancement of knowledge: R&D financed from General University Funds (GUF)
SEO121	R&D related to Natural Sciences - financed from GUF
SEO122	R&D related to Engineering Sciences - financed from GUF
SEO123	R&D related to Medical Sciences - financed from GUF
SEO124	R&D related to Agricultural Sciences - financed from GUF
SEO125	R&D related to Social Sciences - financed from GUF
SEO126	R&D related to Humanities - financed from GUF
SEO13	General advancement of knowledge: R&D financed from other sources
SEO131	R&D related to Natural Sciences - financed from other sources
SEO132	R&D related to Engineering Sciences - financed from other sources
SEO133	R&D related to Medical Sciences - financed from other sources
SEO134	R&D related to Agricultural Sciences - financed from other sources
SEO135	R&D related to Social Sciences - financed from other sources
SEO136	R&D related to Humanities - financed from other sources
SEO14	Defence

**Providers of public support on R&D** – are all budgetary chapters, which according to the law on state budget of the Czech Republic may allocate funding to support R&D in the form of direct support. These are selected ministries, most important of which is the Ministry of Education, Youth and Sports, grant agencies (Grant agency, Technology Agency) and the Academy of Sciences, which institutionally funded "its R&D institutions" (public research institutions).

## Sectors of R&D performance according to recipients of government budget appropriations on R&D<sup>11</sup>:

- Business (public and private enterprises, entrepreneurs and employers)
- Government (public research institutions, Academy of Sciences (headquarters), departmental research sites, libraries, archives, museums and other public recipients)
- High-education (universities, private high schools, faculty hospitals)
- Private non-profit (non-profit institutions)
- Abroad (units performing/coordinating R&D outside of the Czech republic)

## 2.3 Government budget allocations for R&D

The concept of ensuring GBARD statistics reflects the conditions for the provision of public R&D support as stated in the amended **law no. 130/2002 Coll. on support for research, development and innovation**, and the applicable regulations of the government, especially no. 397/2009 Coll. of Information system of Research, Development and Innovation.

In the Czech Republic, GBARD statistics is realized by Czech Statistical office in cooperation with the Council for Research, Development and Innovation and the Ministry of Education, Youth and Sports through the Information System of Research, Development and Innovation (IS RDI) and its databases. For ensuring GBARD statistics are used following databases of IS RDI:

- CEP (Central register of R&D projects)
- CEA (Central register of activities).

Supplementary data is obtained from the Department for R&D budget preparation at the Office of the Government of the Czech Republic. Databases CEP and CEA do not include all government budget appropriations for R&D by the necessary breakdown, and therefore some more detailed data must be obtained in cooperation with the Ministry of Education, Youth and Sports. Data on the socioeconomic objective SEO 12, i.e. specific university research and support long-term conceptual research university development by fields of science (FOS), are collected directly from universities.

The processing and distribution of codes of socio-economic objectives (NABS SEO) is carried out directly by the Czech Statistical Office. The data retrieved from databases CEP and CEA and additional data from the Ministry of Education, Youth and Sports must be processed according to the methodology of the Frascati Manual, i.e. amounts not considered as a part GBARD must be excluded. It concerns the support of R&D, which is financed in the form of repayable loans (only projects realized before validation Act no. 130/2002 Coll.), pre-financing of programs funded from Structural and Investment Funds and some administrative costs and also promoting innovation. Adjusted data is classified by NABS 2007.

GBARD data is linked with the Business Register (was implemented from the reference year 2010). The linkage enables to get other breakdowns of GBARD data:

- Size-class of beneficiary by the number of employees (micro, small, medium and large enterprises),
- Type of beneficiary by the form (public research institutions, public and state universities, enterprises, university hospitals),
- Ownership by the SNA institutional sectors (private national enterprises, foreign affiliations, public enterprises),
- R&D performing sectors (higher education, government, business, private non-profit),
- Regional breakdown by regions (NUTS2, NUTS3 and NUTS4).

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<sup>11</sup> For more information about R&D performing sectors see the methodology for R&D survey (VTR 5-01) – only Czech language: [https://www.czso.cz/csu/czso/statistika\\_vyzkumu\\_a\\_vyvoje](https://www.czso.cz/csu/czso/statistika_vyzkumu_a_vyvoje)  
The 'Abroad sector' like the R&D performing sector is not defined in the R&D statistical survey (VTR 5-01), because only units performing R&D within the geographical area of the Czech Republic are surveyed.

## National public funding to transnationally coordinated research

Since the reference year 2012 under previous Commission regulation (EC) No 995/2012 GBARD statistics have been extended with an indicator measuring national public funding to transnationally coordinated R&D (GBARD-ERA1). Eurostat kicked-off work on GBARD-ERA1 in 2007.

Data is a subcategory of GBARD and focuses on national public funding to transnationally coordinated R&D in European research area. National public funding to transnationally coordinated R&D statistics is broken down into:

- National contributions to transnational public R&D performers,
- National contributions to Europe-wide transnational public R&D programmes,
- National contributions to bilateral or multilateral public R&D programmes established between Member State governments (and with candidate countries and EFTA countries).

Each category is clearly defined by the list of international research programmes and institutions. The condition is the participation of EU Member States.

National public funding to transnationally coordinated research is defined as the total budget funded by the government (state, federal, provincial), as measured by GBARD directed to transnational public R&D performers and transnational public R&D programmes. This indicator comprises three categories: national contributions to transnational public R&D performers; national contributions to Europe-wide transnational public R&D programmes and national contributions to bilateral or multilateral public R&D programmes established between MS's governments.

**1/ Transnational public R&D performers** are inter-governmental or European Commission bodies that carry out R&D activity with own dedicated research facilities. They have as regular members EU Member States, although other European countries (as Switzerland and Norway in CERN) or non-European countries (as Israel in EMBL) might also be their members. Those international institutions can be located inside or outside EU geographical boundaries (like CERN in Switzerland).

*This category includes national contributions only to the six largest European R&D institutions defined as the most relevant to ERA development: European Organization for Nuclear Research (CERN); Institute Laue-Langevin (ILL); European Synchrotron Radiation Facility (ESRF); European Molecular Biology Laboratory (EMBL); European Southern Observatory (ESO) and Joint Research Centre of the European Commission (JRC).*

**2/ Europe-wide transnational public R&D programmes**, with and without cross-border flows of funds

2.1/ Transnationally co-funded public R&D programmes/schemes with cross-border flows of funds involve cross-border flows of funding by member countries usually into a common central budget. Such programmes disburse funding to research activities conducted at national level using national R&D facilities. However, they typically involve some form of trans-national coordination (common objectives/research agenda, trans-national project consortia, etc.).

2.2/ Transnationally coordinated public R&D programmes/schemes with no cross-border flows of funds involve the cross-border coordination of research agendas, objectives, and so on, but do not involve cross-border flows of funding. National authorities coordinate activities with other participating countries, but disburse funds from their own budgets to R&D performers on their own territory (i.e. each country funds its own research teams). "

*Examples: ERA-NETs; ERA-NET+; European Fusion Development Agreement (EFDA); EUREKA; COST; EUROCORES; European Space Agency (ESA); European Molecular Biology Organisation (EMBO); European Molecular Biology Conference (EMBC); Article 185 initiatives: (Europe-Developing Countries Clinical Trials Platform, Eurostars and Ambient assisted living for the elderly); Joint Technology Initiatives (public funding part: ENIAC (Embedded Computing Systems) and ARTEMIS (Nanoelectronics)).*

**3/ Bilateral or multilateral public R&D programmes** established between MSs' governments (and with candidate countries and EFTA countries) include non-EC funded public R&D programmes jointly undertaken



by at least two MSs' governments, although other non-EU countries could also participate in them. They may or may not involve cross-border flows of funds.

The methodology of the GBARD – ERA1 indicator and data can be found on the Eurostat website:

[http://ec.europa.eu/eurostat/web/products-datasets/-/gba\\_tncoor](http://ec.europa.eu/eurostat/web/products-datasets/-/gba_tncoor)

**The availability of data: years 2007–2020** (in 2014 was carried out a partial revision of data for years 2011, 2012, 2013)

### Indirect support of research and development (R&D tax incentive support)

In addition to direct public support of R&D, which represents GBARD – Government Budget Appropriations or Outlays on Research and Development (by socio-economic objectives), the tax deductibility of eligible costs for research and development is also possible since 2005. This instrument is called indirect support for research and development and it measured by **government tax incentives for R&D expenditure (GTARD)**. Czech Statistical Office obtains information/data on this form of support from administrative sources and publishes it on its website. Data is available for the business sector since 2007. Only Czech version of the website is currently available.

The methodology and data (also for the Czech Republic) can be found on the OECD website:

<http://www.oecd.org/sti/rd-tax-stats.htm>

**The availability of data: years 2007–2019**

### EXPLANATION OF SYMBOLS USED IN THE TABLES

- No cases registered
- .
- x Not applicable
- 0 Figure less than half the unit used

Calculations in the tables are based on non-rounded figures (including totals).

### DEFINITION OF SELECTED INDICATORS USED IN TABLES

**PPPs** are the rates of currency conversion that equalize the purchasing power of different currencies by eliminating the differences in price levels between countries. In their simplest form, PPPs are simply price relatives that show the ratio of the prices in national currencies of the same good or service in different countries. PPPs are also calculated for product groups and for each of the various levels of aggregation up to and including GDP. For more information see: <http://www.oecd.org/std/prices-ppp>

**Gross domestic expenditure on R&D (GERD)** is total intramural expenditure on R&D performed in the national territory during a specific reference period.