

GOVERNMENT BUDGET APPROPRIATIONS OR OUTLAYS FOR R&D BY SOCIO-ECONOMIC OBJECTIVES (GBAORD) – METHODOLOGICAL INTRODUCTION

A. METHODOLOGY

Among main duties of the government in the science and technology area, respective in research and development area, belongs also the role of policy maker, who establishes the strategy of the research and development policy in medium-term period. In the Czech Republic, the national research and development policy is declared in the document *“National research and development (and innovation since 2009) policy of the Czech Republic”*¹. Appropriate indicators of the status and development of investment and human resources in research and development are necessary for the preparation of a draft national policy of research and development and the subsequent allocation of financial support for research, development and innovation. This data is provided by the Czech Statistical Office. GBAORD indicators fall into the group of input indicators (the investment in R&D is monitored), while for example innovations fall into the category of so-called output indicators (specific use of research and development).

The aim of GBAORD (Government Budget Appropriations or Outlays for R&D by Socio-economic Objectives) **is to provide data on the government support of R&D funding from public budgets broken down by socio-economic objectives**. The GBAORD data helps the member EU countries to decide which R&D fields need to strengthen funding in the forthcoming years.

A.1 Legislative background

Within the European Community, the GBAORD project is organized on the obligatory base under **Commission regulation (EC) No 995/2012** (26 October 2012) implementing Decision No 1608/2003/EC of the European Parliament and of the Council regarding statistics on science and technology. The collecting of GBAORD data is obligatory for the Czech Republic. The principal national regulation on research and development is **ACT No. 130/2002 Coll.**

A.2 Methodological sources

Methodological information about the GBAORD project can be found in the international manual *“Proposed standard practice for survey on research and experimental development”* known as **“Frascati manual”** (revised version 2002), which was initiated by the OECD. GBAORD data are broken down by socio-economic objectives on the basis of **NABS: Nomenclature for the analysis and comparison of scientific programmes and budgets** (rev. 1992, Eurostat 1994 and rev. 2007, Eurostat 2007).

A.3 Conception of GBAORD

Unlike other statistical surveys carried out in the field of research and development, GBAORD data are based on the analysis and identification of all appropriations spent on research and development (R&D) from public budgets. These government R&D appropriations are broken down by socio-economic objectives. This means that the approach is based on the funder of research and development activities (here the state represented by administration), unlike performance-based approach, which is adopted for example in the R&D survey (VTR5-01).

GBAORD covers all appropriations or outlays allocated to R&D from public budgets to support research and development, including all contributions to international R&D programmes or institutions abroad. Under definitions provided in the Frascati manual, **pre-financing of projects financed by EU structural funds is excluded from GBAORD. The same approach is used for supporting innovation activities**. The data are based on final budget appropriations (figures as voted by parliament for the coming year – provisional data) and actual outlays (money paid out during the year – final data). Public budgets cover the central government budget and provincial budgets. The central government is always included and provincial government is included when its contribution is significant. Local government funds are excluded.

GBAORD includes both current costs and capital expenditure. All support provided by repayable loans is excluded from GBAORD.

GBAORD also covers general university funds (SEO 10: General research financed by Ministry of Education, Youth and Sports – MEYS), which have been defined by the definition in line with the Frascati manual as a sum of all institutional funds given to universities in support of their overall research activities.² This is the definition by the

¹ The document *„National Research and Development Policy of the Czech Republic for 2009–2015“*, which takes into account the promotion of innovation in accordance with an amendment to the law on supporting research and development from public funds, is available on the following website: <http://www.vyzkum.cz/FrontClanek.aspx?idsekce=631>.

² In the case of the Czech Republic, the general university funds are not defined. For this reason, SEO 10 in line with the guideline of the Frascati manual cover all institutional funds provided to universities in support of their R&D activities.

methodological revision carried out in 2013. Before the revision the definition covered all funds provided by Ministry of Education, Youth and Sports to universities for their R&D activities.

Codes of socio-economic objectives are distributed according to the purpose or general content of the R&D programme or project, or according to the research objective.

A.4 GBAORD in line with the system of the public support of research and development in the Czech Republic covers the following budget items

- Project funding (included in R&D&I Information System)
- Institutional funding – research intentions (included in R&D&I Information System)
- Specific research at universities (included in R&D&I Information System)
- Funding to international research programmes and institutions (included in R&D&I Information System)
- Institutional funding of research organisations and other items – (not included in R&D&I Information System)

A.5 Short definition of terms

- **Project funding** – covers R&D projects.
- **Institutional funding** – covers research intentions.
- **Specific research at universities** – covers research performed by students in activities connected with accredited doctoral or master's programmes which is directly linked with the students' education.
- **Funding to international research and development programmes and institutions** – covers fees for participation of the Czech Republic in international programmes of research and development, fees for partnership in international R&D institutions or payments for the cooperation of the Czech Republic in R&D projects if they can be funded from public sources and if they are co-financed by EU or other international institutions.
- **Other items** – covers institutional funding of research organisations, R&D infrastructure (Academy of Science of the Czech Republic), specific research at universities (funded by Ministry of Defence) and other items connected with the administration and honours.

A.6 Transmission of GBAORD data

GBAORD data is to be send to Eurostat (on obligatory base) and OECD (on voluntary base of membership) twice a year as:

- Provisional data
- Final data

On the above mentioned legal act, Eurostat is provided with provisional GBAORD data (government R&D appropriations in the provisional budget – as approved by the Parliament at the beginning of the budget year) within 6 months of the end of the calendar year, and with final data (government R&D appropriations in the final budget) within 12 months of the end of the calendar year.

A.7 The Chapters (main socio-economic objectives) of the 1992 version of the NABS

Code	Main socio-economic objectives (SEO1)	Number of sub-objectives SEO2	Number of sub-objectives SEO3
SEO01	Exploration and exploitation of the Earth	8	0
SEO02	Infrastructure and general planning of land-use	8	0
SEO03	Control and care of the environment	11	0
SEO04	Protection and improvement of human health	10	0
SEO05	Production, distribution and rational utilization of energy	8	4
SEO06	Agricultural production and technology	8	0
SEO07	Industrial production and technology	14	10
SEO08	Social structures and relationships	9	0
SEO09	Exploration and exploitation of space	6	0
SEO10	Research financed from General University Funds (GUF)	10	0
SEO11	Non-oriented research	10	0
SEO12	Other civil research	0	0
SEO13	Defence	0	0

NOTE: The complete list of all socioeconomic objectives can be found in the methodology annex. The classification NABS 1992 with detailed description of objectives is available in PDF format on the website of the Czech Statistical Office at http://ec.europa.eu/eurostat/ramon/nomenclatures/index.cfm?TargetUrl=LST_NOM_DTL&StrNom=NABS_1992&StrLanguageCode=EN&IntPcKey=&StrLayoutCode=HIERARCHIC.

B. GBAORD IN THE CZECH REPUBLIC

In the Czech Republic, the GBAORD project is realized in close cooperation with R&D Council and the Ministry of Education, Youth and Sports through the Information system of research and development and its related databases.

The concept of the GBAORD project takes into account existing legal rules as stated in the Legislative Act No. 130/2002 Coll. on the Support of Research and development and government regulations, especially the Government Regulation No. 397/2009 on the Information System of Research, Development and Innovation³. According to the current law, the R&D Information System administrator is the Research and Development Council. The CEP database (Central register of R&D projects) and the CEZ database (Central register of research intentions) are used for the needs of the GBAORD project. Supplementary data are obtained from the department of budget preparing at the R&D Council. EP and CEZ databases do not include all government appropriations on R&D, and that is why detailed information about contributions to international R&D programmes or institutions abroad and the specific university research must be obtained in cooperation with the Ministry of Education. Some data on socioeconomic objective SEO 10 (e.g. general university research broken down by fields of science) are taken directly from universities. Information about returnable loans was taken directly from providers (government departments), which fund R&D activities through their budgets. In the period of 2002–2005, this concerned only two providers. Since 2006 no returnable loans have been identified.

The processing of the GBAORD project and distribution of codes of socio-economic objectives (SEO) by NABS are carried out by employees of the Czech Statistical Office. According to the data in the CEP, CEZ and CEA databases and in line with methodological guidelines of the "Frascati manual", non-R&D appropriations must be excluded from GBAORD. In this case it regards returnable loans (only projects carried out before validation Act no. 130/2002 Coll.) and certain administrative costs. Adjusted data are classified by NABS at 3-digit level of socio-economic objectives. Multi-annual projects are processed by database software and new entered projects by the manual procedure according to a specific classification key based on the structure of the CEP and CEZ database.

Since 2006 there has been a system of sophisticated control tools that further improves the quality of data. Concerning GBAORD data 2006, the complex quality report was set up within the grant project Transition Facility 2004, which was granted by Eurostat. The quality report is submitted to Eurostat every year in accordance with the new legal act for quality report in R&D statistics. Since 2006 new formulas for better estimation of preliminary data have been used as well. The methodology of these estimations will be further developed. Eurostat for GBAORD data also publishes its own estimations for every 2 forthcoming years (t+1, t+2).

Since 2007 the revised and much simpler classification NABS 2007 has been used for GBAORD data. Data are published simultaneously according to both the old (detailed) NABS 1992 and the new NABS 2007.

Since 2008 the CZSO has launched activities on linking GBAORD data with other surveys (especially with data from the research and development survey) and with the Business register. Now there is more data available according to additional breakdowns by:

- Size-class of beneficiary (micro, small, medium, large),
- Type of beneficiary (public research institutions, public and state universities, enterprises, university hospitals),
- Ownership (private domestic enterprises, foreign affiliations, public enterprises),
- R&D performing sectors (higher education, government, business, private non-profit),
- Regional breakdown (NUTS2/NUTS3/NUTS4).

Since the reference year 2012 under Commission regulation (EC) No 995/2012 GBAORD statistics have been extended with an indicator measuring national public funding to transnationally coordinated R&D (GBAORD-ERA1). Data is a subcategory of GBAORD and focuses on national public funding to transnationally coordinated R&D in European research area. National public funding to transnationally coordinated R&D data 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 programs and institutions. The condition is the participation of EU Member States.

The methodology of the GBAORD – ERA1 indicator can be found on the Eurostat website:

http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/R_%26_D_budget_statistics_-_transnationally_coordinated_research

³ For more information about the Information System of R&D&I, see the following website: <http://www.vyzkum.cz/>.

Data is available for the reference period 2007–2010. In accordance with the methodological review of R&D statistics in 2013, it will be also conducted a partial revision of GBAORD ERA-1 data (transnationally coordinated research). Starting from the reference year 2012 GBAORD data is broken down by the type of financial support, i.e. project and institutional support.

C. THE CHANGE OF THE METHODOLOGY OF GBAORD(I) IN THE CZECH REPUBLIC SINCE 2010

In 2010 the amendment of Act No. 130/2002 Coll. on research and development from public funds came into force. This led to a fundamental change in public support when the promotion of innovative activities was implemented in the public support. Public expenditure on research and development was renamed as public expenditure on research, development and innovation. The corresponding English abbreviation for the new name would be GBAORDI. However, such an indicator has been defined neither by Eurostat nor by the OECD yet. Therefore, the CZSO will attempt to eliminate the promotion of innovations, when possible, so that the data will match the existing GBAORD definition, as described in Chapter 8 in "Frascati Manual". In the purpose-oriented support it is not a problem to exclude promoting innovation, while concerning the institutional support that is difficult as research objectives gradually cease to exist.

D. THE REVISION OF GBAORD DATA CONDUCTED IN 2013

In 2013, the Czech Statistical Office within a large revision of research and development statistics (RTD survey, GBAORD) has begun revising GBAORD data for the whole reference period 2002–2011. The review should be completed in Q1 2014. In line with the reform of R&D system in the Czech Republic and requirements of the new EU legislation GBAORD data was reviewed under the methodological revision for reason it exactly matches the Frascati Manual definitions. The revision concerns the reclassification of the definition of "general university funds" (here called "general research university"). Under new requirement of Eurostat to provide GBAORD data according to a form of support the reclassification of items in socio-economic objectives had to be made. According to the revision of the 2013 under the "general research and development at universities" are classified only institutional funds of the state budget provided to universities to conduct research and development. Previously, it was both targeted and institutional funds provided to universities only through the budget of the Ministry of Youth, Education and Sports.

Now, under SEO 10 NABS1992 are classified the following budget items:

- Research intentions (institutional funds),
- Development of research organizations,
- Specific research at universities.

In the case of "specific research at universities" according to the methodology of the Frascati manual there can be found a discrepancy with the definition under the amended Act No. 130/2002 Coll., which considers "specific research at universities" as a form of targeted support. For the necessary of GBAORD statistics "specific research at universities" is considered as an institutional form of support that matches better the way how this form of support is provided (calculated according to predetermined criteria - variables). A "competition" component is not included as the basic element of projects (targeted support).

The main impact will be a reduction of the funds which are classified into SEO 10 (reduction of the percentage of this goal in total GBAORD). Some items of targeted support, which were included previously in SEO 10, will be reclassified to other SEOs according to the focus of the project (for ex. agriculture, industry, health, etc.). Although the total amount of GBAORD in a given year will remain the same, the amount and percentage of socio-economic objectives will be different from the version prior to the revision.

After completion of this review, revised data will be sent in a special mode to Eurostat to update the database and to publish them.

E. INDIRECT SUPPORT OF RESEARCH AND DEVELOPMENT (R&D TAX INCENTIVE SUPPORT)

In addition to direct public support of R&D, which represents GBAORD – 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. Information/data on this form of support Czech Statistical Office obtain from administrative sources and publish on its website. Data is available for business sector since 2007. Only Czech version 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>