

**QUALITY REPORT FOR STATISTICAL SURVEY**  
**Annual Report on Research and Development (R&D)**  
**for 2016**

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September 2022.

## 0. Basic information

- Purpose, goal, and subject of the survey

The survey Research and Development (R&D) is aimed at observing the R&D activity in the Republic of Croatia. The survey is carried out every year in order to collect and release data on persons in employment engaged in R&D, expenditures and sources of funds for R&D as well as on results of R&D activities. Survey results enable measuring of R&D activity in the Republic of Croatia and partly make grounds for developing a rational policy on R&D activity and monitoring its implementation, and they also provide official data on R&D activity in the Republic of Croatia, which are released in national and international publications and data bases. In addition to the continuous monitoring of R&D activity, the survey is also important in the calculation of domestic gross product (GDP).

- Reference period

Calendar year.

- Legal acts and other agreements

Relevant national standards:

Act on Scientific Activity and Higher Education (OG, Nos 123/03, 198/03, 105/04, 174/04, 2/07, 46/07, 45/09, 63/11, 94/13 and 139/13)

Act on Academic and Professional Titles and Academic Degree (OG, Nos 107/07 and 118/12)

Ordinance on Scientific and Artistic Areas, Fields and Branches (OG, Nos 118/09, 82/12 and 32/13)

Decision on the National Classification of Activities – NKD 2007. (OG, Nos 58/07 and 72/07)

Register of Spatial Units (codes of cities/municipalities, settlements)

Ordinance on Register of Spatial Units (OG, No. 37/08)

Relevant international standards:

Frascati Manual 2015 – Guidelines for Collecting and Reporting Data on Research and Experimental Development, OECD, 2015

Measurement of Research and Development in Developed Countries, Anex to the Frascati Manual, OECD, 2012

Classification of Fields of Science and Technology, OECD, 2006

Nomenclature for the analysis and comparison of scientific programmes and budgets – NABS 2007, Eurostat, 2007

Decision No 1608/2003/EC of the European Parliament and of the Council of 22 July 2003 concerning the production and development of Community statistics on science and technology

Commission Implementing Regulation (EU) No 995/2012 of 26 October 2012 laying down detailed rules for the implementation of Decision No 1608/2003/EC of the European Parliament and of the Council concerning the production and development of Community statistics on science and technology.

- Classification system

National Classification of Activities 2007

International Standard Industrial Classification of All Economic Activities

International Standard Classification of Education

- Concepts and definitions

Definitions of the field of research and development are based on the international methodology – the Frascati Manual 2015. (Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development, the Measurement of Scientific, Technological and Innovation Activities, publisher: OECD, Paris, 2015).

Research and development comprise creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of man, culture and society – and to devise new applications of available knowledge. For an activity to be an R&D activity, it must satisfy five criteria. The activity must be novel, creative, uncertain, systematic and transferable and/or reproducible. There are three types of R&D activities: basic research, applied research and experimental development. Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view. Applied research is original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective. Experimental development is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

Activity groups, i.e. NKD 2007. activities, have been arranged for the purpose of this survey so that certain divisions, groups or classes are grouped together. There are 69 groups obtained in this manner and they are harmonised with NKD 2007., thus comparable with NACE and ISIC classifications. Source funds for R&D are basically directed to socio-economic objectives determined by OECD, and these objectives are divided into 13 categories. Gross domestic expenditure on R&D (GERD) is the total intramural expenditure on R&D performed in the national territory during the reporting calendar year. GERD includes domestically performed R&D that is financed from abroad but excludes funding for R&D performed abroad. Intramural R&D expenditures are all current expenditures and gross fixed capital expenditures for R&D performed within reporting unit, irrespective of the source of funds. Current expenditures comprise labour costs and other current costs used in R&D. Labour costs include compensations of employees (wages and salaries and social contributions paid by an employer), vocational training costs and other labour costs. Other current costs comprise material costs, costs of persons hired under contractual agreement or author's contract, acquiring services to support intramural R&D and other costs (costs of indirect services). Capital expenditures are the annual gross amount paid for the acquisition of fixed assets that are used repeatedly or continuously in the performance of R&D for more than one year. They comprise investing in land and buildings, machinery and equipment, computer software and patents, licences, studies and projects.

- Statistical units

Observed statistical units are enterprises/companies, public companies, institutions and other government sector bodies, non-profit organisations and institutions of higher education.

- Statistical population

Statistical population includes enterprises/companies within business enterprise sector, institutions and other government sector bodies, non-profit organisations in private non-profit sector and institutions of higher education in higher education sector.

## 1. Relevance

### 1.1. Data users

Survey data are used by departments inside the Croatian Bureau of Statistics – National accounts, Energy, Investment – and external users: national – Ministry of Science, Education and Sports – and international –directorates-generals for policies of the European Commission, which use survey data for a systematic and user-oriented presentation of internationally comparable indicators on research and development (for all EU Member States).

#### 1.1.1. User needs

National accounts require data on expenditure on R&D and for computation of regional investments.

Energy – need data on costs of investments in R&D made by foreign companies in Croatia – FATS (iFATS i OFATS).

#### 1.1.2. User satisfaction

User satisfaction, targeted specifically at the Survey on Research and Development data, is not measured. However, a general survey on user satisfaction was carried out in 2015, which provided an assessment of user satisfaction in the domains of education, research and development, and culture. According to the survey results, out of the total number of all CBS data users, as much as 27% inquired data in the domain of education, R&D and culture (the domain that includes this Survey as well) and graded data quality very high (3.61). More detailed survey results are available on the link [http://www.dzs.hr/Eng/international/Quality\\_Report/Quality\\_Report\\_Documents/Quality\\_ReportSatisfaction\\_Survey.pdf](http://www.dzs.hr/Eng/international/Quality_Report/Quality_Report_Documents/Quality_ReportSatisfaction_Survey.pdf).

### 1.2. Completeness

The survey is carried out pursuant to the Official Statistics Act (OG, Nos 103/03, 75/09, 59/12 and 12/13 – consolidated text). Legal basis of the European Union for this survey is Decision No 1608/2003/EC of the European Parliament and of the Council of 22 July 2003 concerning the production and development of Community statistics on science and technology and Commission Implementing Regulation (EU) No 995/2012 of 26 October 2012 laying down detailed rules for the implementation of Decision No 1608/2003/EC.

The survey results are submitted to Eurostat in a specified manner.

1.2.1. Data completeness rate

The indicator is not computed.

## **2. Accuracy and reliability**

### **2.1. Sampling error**

Not applicable.

#### 2.1.1. Sampling error indicators

The indicator is not applicable.

### **2.2. Non-sampling error**

Not applicable.

#### 2.2.1. Coverage error

The survey includes all units which are either known or assumed to be engaged in research and development (R&D).

#### 2.2.2. Overcoverage rate

The indicator is not computed.

#### 2.2.3. Measurement errors

Not applicable.

#### 2.2.4. Non-response errors

Not applicable.

#### 2.2.5. Unit non-response rate

The indicator is not computed.

#### 2.2.6. Item non-response rate

The indicator is not computed.

#### 2.2.7. Processing errors

The revision also included improvement of data collection and editing process. The data collection instrument is an electronic Excel form with built-in data verification procedures and notes on methodology. Additional verification procedures were introduced in the process of collection of primary data, which led, together with repeated contacting of reporting units, to the reduction of the item non-response rate. Transition to electronic data collection led to modernisation of data editing process, data verification procedures and tabular presentation.

#### 2.2.8. Imputation rate

The indicator is not applicable.

#### 2.2.9. Model assumption error

Not applicable.

### 2.3. Data revision

#### 2.3.1. Data revision – policy

The users of statistical data are informed about revisions (preliminary data, final data) on the website of the Croatian Bureau of Statistics.

#### 2.3.2. Data revision – practice

In 2016, a revision of R&D data took place due to the modernisation of several statistical production processes. The survey methodology was revised in line with the Frascati Manual 2015 and Eurostat's methodological guidelines on the implementation of the Frascati Manual 2015 as well as on methodological harmonisation of R&D statistics in EU Member States. The revision brought some changes in definitions and, accordingly, particular methodological concepts in the form were broken down in more detail. The data collection and editing process was also improved. The data collection instrument is an electronic Excel form with built-in data verification procedures and notes on methodology. Additional verification procedures were introduced in the process of collection of primary data, which led, together with repeated contacting of reporting units, to the reduction of the item non-response rate. Transition to electronic data collection led to modernisation of data editing process, data verification procedures and tabular presentation.

Reporting units in the business enterprise sector are broken down into one of specially formed activity groups according to NKD 2007. by their main NKD activity as registered in the Statistical Business Register of the Croatian Bureau of Statistics, which differs from previous years when they were broken down into activity groups by their predominant activity, i.e. by activity with the largest share of expenditure for R&D.

#### 2.3.3. Data revision – average size

The indicator is not computed.

### 2.4. Seasonal adjustment

The indicator is not applicable for the survey.

## 3. Timeliness and punctuality

### 3.1. Timeliness

Timeliness of statistics relates to the length of time between data availability and reference period the phenomenon refers to.

Timeliness of final results is T + 10 months.

Data for 2016 were revised after various data sources had been analysed in order to improve the survey coverage and identify hitherto unrecognised legal units engaged in R&D. Based on this analysis, a total of 470 legal units which are either known or assumed to be engaged in R&D were added into the survey coverage for 2017. In order to avoid the break in time series and ensure the comparability of 2017 data with 2016 data, newly added units were sent a form for 2016 as well. Their data were included in the 2016 survey results. The revised data for 2016 were released on 17 December 2018 as being unplanned.

#### 3.1.1. Timeliness – first results

The indicator is not applicable.

#### 3.1.2. Timeliness – final results

Timeliness of final results is T + 10 months.

### 3.2. Punctuality

Timeliness of final results is T + 10 months.

#### 3.2.1. Punctuality – delivery and publication

Punctuality is 0.

## 4. Accessibility and clarity

Media for disseminating data on the survey on Research and Development:

- for printed publications – the First Release and Statistical Reports
- for website of the Croatian Bureau of Statistics – electronic versions of the First Release and Statistical Reports.

### 4.1. News release

Survey data are released in the First Release 8.2.1. “Research and Development, 2016” and in the First Release 8.2.6. “Research and Development, 2016 – Revised Data”.

### 4.2. Online database

Online database does not exist.

### 4.3. Microdata access

Conditions under which certain users can have access to microdata are regulated by the Ordinance on the Conditions and Manner of Use of Statistical Data for Scientific Purposes.

### 4.4. Documentation on methodology

Methodological documents are available in printed form of the First Release and the Statistical Reports as well as an electronic version on the website of the Croatian Bureau of Statistics.

## **5. Coherence and comparability**

### **5.1. Asymmetry for mirror flows statistics**

The indicator is not applicable for the survey.

### **5.2. Comparability over time**

Data for 2016 are not entirely comparable with data from previous years because several statistical production processes was modernised and that led to the break in time series.

#### **5.2.1. Length of comparable time series**

Length of comparable time series is 0.

The survey methodology was revised in line with the Frascati Manual 2015 and Eurostat's methodological guidelines on the implementation of the Frascati Manual 2015 as well as on methodological harmonisation of R&D statistics in EU Member States.

#### **5.2.2. Reasons for break in time series**

The survey methodology was revised in line with the Frascati Manual 2015 and Eurostat's methodological guidelines on the implementation of the Frascati Manual 2015 as well as on methodological harmonisation of R&D statistics in EU Member States. The revision brought some changes in definitions and, accordingly, particular methodological concepts in the form were broken down in more detail. The data collection and editing process was also improved. The data collection instrument is an electronic Excel form with built-in data verification procedures and notes on methodology. Additional verification procedures were introduced in the process of collection of primary data, which led, together with repeated contacting of reporting units, to the reduction of the item non-response rate. Transition to electronic data collection led to modernisation of data editing process, data verification procedures and tabular presentation.

### **5.3. Coherence – short-term and structural data**

The indicator is not computed.

### **5.4. Coherence – national accounts**

The indicator is not computed.

### **5.5. Coherence – administrative sources**

The indicator is not applicable.

## **6. Cost and burden**

### **6.1. Cost**

It is not possible to estimate data collection costs.

### **6.2. Burden**

An analysis of the burden on reporting units has not been carried out.