



Republic of Serbia
Statistical Office of the Republic of Serbia

INSTRUCTIONS
for filling in the form

“REPORT ON GOVERNMENT BUDGET OUTLAYS FOR RESEARCH AND DEVELOPMENT, 2017 – 2018”

Belgrade, 2018

INSTRUCTIONS FOR FILLING IN THE FORM BIN

In the beginning when filling in the form **BIN**, distinction should be made between the R&D activity and activities other than R&D. The main difference between the R&D activity and activities other than R&D is in a larger presence or absence of novelty or innovation elements.

Activities not falling within R&D are excluded from the coverage:

- Routine testing and analysis of all kinds, whether serving for the control of materials, components or products, whether to control their quality and quantity (testing and analysis being part of a R&D process should be however included);
- Market research, operational researches, working studies, cost analysis, management activities, etc;
- Experimental production which primary objective is not to improve a product;
- Design costs for following up changes in fashion trends and following up work on artistic design;
- Legal and administrative work connected with patent application and registration, work connected with patent and licence sale, experimental work serving only patent registration.

Table 1

The general interest and strategic objectives in the R&D activity are realised through the programmes listed in Table 1 and defined by the Law on the R&D Activity.

In row **01** indicate the total amount of funds which, by the 2017 budget, have been invested in R&D. Row 01 equals the sum of rows 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 17, 18, 19, 20, 21, 22, 23, 24, 25, and 26

In row **02** indicate funds invested in basic research..

In row **03** indicated the funds invested in research in technological development.

In row **04** indicate all funds that are invested for co-financing of integral and interdisciplinary researches.

In rows **05, 06** and **07** show the total funds invested in innovative activities.

In row **08** indicate the total funds invested in research of SANU (Serbian Academy of Arts and Sciences) and Matice Srpske (The oldest Serbian literary, cultural and scientific institution).

In row **09** show the total funds invested in research centers of excellence.

In rows **10, 11** and **12** indicate all funds that are invested in the development of equipment and facilities necessary for R&D: all the resources invested in research and development infrastructure, individual investments in research equipment and facilities for research.

In row **13** indicate all the funds invested for programmes and projects falling within international R&D co-operation. Row 13 equals the sum of rows 14, 15 and 16.

In row **17** indicate the total funds invested in information technologies.

In row **18** indicate the funds invested in training personnel for R&D work.

In row **19** indicate the funds invested in scholarships for students achieving excellent results in learning and research, scholarships for students on specialised master studies / cycle II studies, scholarships of students on doctorate studies / cycle III studies, as well as the funds invested in vocational training of R&D personnel.

In rows **20** and **21** indicate the total funds invested in the purchase of specialised literature from abroad, as well as the funds for publishing publications and organising meetings.

In row **22** indicate all the funds spent for encouraging the activities of science promotion (societies, associations, organisations).

In rows **25** and **26** indicate the resources invested in programs that could not be classified in the above mentioned position.

Table 2

The funds indicated in table 1 are to be classified in table 2 by fields of research, socio-economic objectives and sector of performance.

Row **01** equals the sum of rows 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13 and 14.

Row **12** equals the sum of rows 12.1, 12.2, 12.3, 12.4, 12.5 and 12.6.

Row **13** equals the sum of rows 13.1, 13.2, 13.3, 13.4, 13.5 and 13.6.

The purpose of a R&D programme or project, for which budget funds are appropriated, is to be shown by socio-economic objectives defined by the Nomenclature for the Analysis and Comparison of Scientific Programmes and Budgets (NABS 2007). Socio-economic objective is the principal purpose of funds appropriated for R&D, which has been set up by OECD.

It is important to determine the socio-economic objective of a programme or project being financed according to its purpose, but not its content.

According to the Frascati Manual, the purpose is more important than the content of a programme or project from the point of view of the R&D policy of the Republic of Serbia. If a programme or project has more than one objective, the data should be indicated by the primary objective. Socio-economic objectives are classified in 13 categories:

- Exploration and exploitation of the Earth;
- Environment;
- Exploration and exploitation of space;
- Transport, telecommunications and other infrastructures;
- Energy;
- Industrial production and technology;
- Health;
- Agriculture;
- Education;
- Culture, recreation, religion and mass media;
- Political and social systems, structures and processes;
- General advancement of knowledge: R&D financed from General University Funds;
- General advancement of knowledge: R&D financed from other sources than General University Funds;
- Defence

The funds which the **Ministry of Education, Science and Technological Development** has devoted to the tertiary sector for R&D should be indicated in row 12. These are general university funds that include the coverage of costs of R&D work and of the work of teachers and assistants in tertiary education institutions on post-graduate studies / II and III cycle studies.

Table 3

In table 3 indicate the funds planned by the budget adopted for 2018 (before budget adjustment) according to socio-economic objectives listed in the Nomenclature for the Analysis and Comparison of Scientific Programmes and Budgets (Annex 2).

Row 01 equals the sum of rows 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13 and 14.

Row 12 equals the sum of rows 12.1, 12.2, 12.3, 12.4, 12.5 and 12.6.

Row 13 equals the sum of rows 13.1, 13.2, 13.3, 13.4, 13.5 and 13.6.

Methodological explanations

1. Legal framework

The statistical survey on budget appropriations and outlays for research and development is regulated by the Law on Official Statistics ("Official Journal of the RS", number 104/09).

2. Methodological basis

The methodology for the survey is harmonised with the international standards set up by OECD and published by the latter in the Frascati Manual (*The Measurement of Scientific and Technological Activities - Proposed Standard Practice for Surveys of Research and Experimental Development - Frascati Manual*, 2002 and 2007; publisher: OECD).

2.1. Objective and scope of the statistical survey

The survey on government budget appropriations and outlays for research and development (form **BIN**) is aimed to obtain data on budgetary funds of the Republic of Serbia devoted to R&D. Those are funds that the Republic has devoted for R&D according to the type of incentive and intended socio-economic objective. The aim of the survey is to enable the monitoring of the R&D policy of the Republic through its financing of the R&D activity. Unlike surveys undertaken by organisations engaged in R&D, this survey is focused on organisations that finance R&D.

2.2. Coverage

The statistical report on government budget appropriations and outlays for research and development (BIN) is to be completed by all direct beneficiaries of the budget of the Republic that participate in the allocation of funds for R&D in the Republic of Serbia.

Reporting units (financiers of R&D) indicate the realised budgetary funds for R&D (after budget adjustment) and planned budgetary funds for R&D (before budget adjustment).

Data on government budget appropriations and outlays for R&D include also the financing of current costs and capital expenditures of R&D.

2.3. Definitions of main concepts

When speaking of R&D the most frequent terms are "science and technological development", "scientific research and research-development work", i.e. "research and development – R&D" or only "*science, technology and innovation – STI*". To avoid possible ambiguity but also for comparison with the situation in the rest of the world and use of common terms used in various reports of the UNESCO, OECD, EUROSTAT and other similar organisations the following is to be taken into consideration: science development shall imply the development of scientific research activity; technological development shall imply, mostly, the development of research development activity; technological development shall imply, mostly, the development of research-development activity; development of technology, i.e. the concept "research and development" (R&D) is in a way synonym of "scientific and technological development, the abbreviation "IR" corresponding to the abbreviation "R&D".

Science is a set of systematised and argument-based knowledge, i.e. facts, concepts, principles, data, information, theories, laws and patterns in a selected historical period about objective reality, i.e. nature and society, obtained through the application of objective scientific methods, and which main purpose and objective is to apprehend the laws and patterns about the past, the present and future of natural and social phenomena, as well as to improve efficient work in all fields of human activities.

Scientific research is theoretical or experimental work undertaken for acquiring new scientific knowledge and increasing human stock of knowledge. Scientific research implies basic and applied research.

Basic research implies research that increases the general stock of scientific facts and knowledge, and determines new fields of human knowledge and perception, but not involving or not necessarily involving any direct application of the obtained results. Basic research discovers phenomena, processes, cause-and-effect relationships and patterns in nature, society, as well as human thoughts primarily in order to improve human knowledge and create basic knowledge that serves as a base for applied and experimental (development) research, and which does not have any direct commercial objectives.

Applied research is theoretical or experimental work undertaken in order to acquire new knowledge, and directed towards resolving any practical task, i.e. achieving any practical objective. Applied research broadens and deepens existing knowledge in order to solve certain problems. It is undertaken for

possible application of the results of a basic research or for establishing new methods or procedures for achieving an objective set in advance. Therefore applied research is directed towards acquiring new scientific knowledge and applying the latter in order to achieve certain commercial objectives.

Experimental (development) research is systematic work, based on knowledge acquired through basic or applied research, i.e. practical experience, which is primarily directed towards introducing new processes, products and services. Those are processes occurring between invention and production: experiments on drawings, development of prototypes, experiments, pilot projects, models, new solutions. This research has an extremely practical objective. Its main characteristic is a clear purpose and direct and quick profit in a specific field. Experimental (development) research is also called technological improvement.

Scientific development work is a systematic activity which, through the application of scientific methods, brings new scientific knowledge, i.e. uses creatively existing knowledge for new applications. This is creative work on acquiring new knowledge, which is aimed to raise the general civilisation level of society and to use that knowledge in all fields of socio-economic development. Scientific development work is undertaken by scientists and researchers selected in respective scientific, scientific-teaching and research titles.

Expenditure on research and development by types are divided into current costs and capital expenditures.

Current costs include:

- a) labour costs (gross wages and salaries for all employees in the R&D activity); other R&D employees' remuneration costs, e.g. scholarships, gratuities, etc.
- b) other current costs (material costs for R&D work – raw materials, supplies, energy; payments based on work by contract and work for hire; daily allowances, travel costs, representation, etc).

Capital expenditures include expenditures on land and buildings; machines and equipments; patents, licences, studies and projects; software and hardware (implying total expenditures related to the purchase of computers, devices, systems, components and equipment, as well as purchase costs or costs for software development for own account), and other expenditures.

According to the Frascati Manual, sectors are defined by the economic activity of the entity dealing with research development work. The definitions of the sectors are generally based on the System of National Accounts (SNA), the sector of tertiary education being observed separately, while households are attached to the non-profit sector. The decisive criterion for classification into sectors is the major source of financing of the business entity.

Non-financial (business) sector includes business entities and organisations which primary activity is the market production of goods and services and their sale at economically significant prices, as well as R&D incorporated units.

Tertiary education includes higher schools and universities with incorporated units, faculties, academies and R&D institutes, whatever the sources of finance and legal status. This sector covers also research institutes and clinics under the direct control or administration of a tertiary education organisation.

Government sector includes organisations, offices and other bodies, except tertiary education, furnishing to the community free common services which could not be provided under market conditions, and which reflect the economical and social policy of the society; by definition this sector covers the activities of the administration, defence and public order enforcement; health, education, culture, recreation and other social services.

Non-profit sector includes non-market private non-profit organisations serving households without charging or at a low price. Those organisations may be founded by citizens' associations, for providing goods and services to the members or for general purposes.

Sector abroad includes organisations and individuals being outside the political boundaries of a country, as well as corresponding land owned by those organisations. It covers also all international organisations, including their buildings on domestic territory. Are to be excluded from the sector abroad general contributions to organisations such as: UN, OECD, EU, etc, but are to be included appropriations and outlays for all other organisations such as: CERN, ESA, CGIAR, ESRF, EMBO, IAEA, COST and EUREKA..

ANNEX 1

CLASSIFICATION OF FIELDS OF SCIENCE

1. Natural sciences

- 101 Mathematics
- 102 Computer and information science
- 103 Physical sciences
- 104 Chemical sciences
- 105 Earth and related environmental sciences
- 106 Biological sciences
- 107 Other natural sciences

2. Engineering and technology

- 201 Civil engineering
- 202 Electrical engineering, electronic engineering, information engineering
- 203 Mechanical engineering
- 204 Chemical engineering
- 205 Materials engineering
- 206 Medical engineering
- 207 Environmental engineering
- 208 Environmental biotechnology
- 209 Industrial biotechnology
- 210 Nano-technology
- 211 Other engineering and technologies

3. Medical and health sciences

- 301 Basic medicine
- 302 Clinical medicine
- 303 Health sciences
- 304 Medical biotechnology
- 305 Other medical sciences

4. Agricultural sciences

- 401 Agriculture, forestry and fisheries
- 402 Animal and dairy science
- 403 Veterinary science
- 404 Agricultural biotechnology
- 405 Other agricultural sciences

5. Social sciences

- 501 Psychology
- 502 Economics and business
- 503 Educational sciences
- 504 Sociology
- 505 Law
- 506 Political science
- 507 Social and economic geography
- 508 Media and communications
- 509 Other social sciences

6. Humanities

- 601 History and archeology
- 602 Languages and literature
- 603 Philosophy, ethics and religion
- 604 Arts (arts, history of arts, performing arts, music)
- 605 Other humanities

Source: FOS - Fields of Science and Technology, OECD – 2006

ANNEX 2

CLASSIFICATION OF SOCIO-ECONOMIC OBJECTIVES

Objective codes	SOCIO-ECONOMIC OBJECTIVES
001	Exploration and exploitation of the Earth <ul style="list-style-type: none"> - Exploration and exploitation of the Earth's crust, mantle, seas, oceans and atmosphere - Climatic and meteorological research, polar exploration and hydrology - Mineral, oil and natural gas prospecting - Exploration of the sea-bed - Hydrology - Seas and oceans - Atmosphere
002	Environment <ul style="list-style-type: none"> - Control of pollution, aimed at the identification and analysis of the sources of pollution - Pollutants, their dispersion in the environment and their effects on man, species (fauna, flora and microorganisms) and the biosphere - Development of monitoring facilities for the measurement of all types of pollution - Elimination and prevention of all forms of pollution in all types of environment - Protection of atmosphere and climate - Waste management - Water purification - Protection of soil and groundwater - Reduction of noise and vibrations - Protection of species and their habitats - Protection against natural hazards - Protection against radioactive pollution
003	Exploration and exploitation of space <ul style="list-style-type: none"> - Civil scientific exploration of space - Applied research programmes - Launch systems - Space laboratories and space travel
004	Transport, telecommunications and other infrastructures <ul style="list-style-type: none"> - Infrastructure and land development, including the construction of buildings - Protection against harmful effects in rural and urban planning - Transport systems - Telecommunication systems - General planning of land-use - Construction and planning of building - Civil engineering (bridges, roads, machinery, etc.) - Water supply
005	Energy <ul style="list-style-type: none"> - Production, storage, transportation, distribution and rational use of energy - Processes designed to increase efficiency of energy production and distribution - Energy efficiency, energy conservation study - Capture and storage of CO₂ - Sources of renewable energy - Nuclear fission and fusion - Hydrogen and gas fuel cells - Other electrical energy and storage technology

006	Industrial production and technology
	<ul style="list-style-type: none"> - Improvement of industrial production and technology - Increasing of economic efficiency and competitiveness - Manufacturing - Waste recycling (metallic and non-metallic)
007	Health
	<ul style="list-style-type: none"> - Prevention, surveillance and control of communicable and other diseases - Monitoring of the health situation - Health promotion - Occupational health - Public health legislation and regulations - Personal medical care for vulnerable and high-risk populations
008	Agriculture
	<ul style="list-style-type: none"> - Promotion of agriculture, forestry and fisheries - Chemical fertilizers, biocides, biological pest control and mechanization of agriculture - Environmental impact of forestry activities - Production and technology in the foodstuffs industry - Agriculture, forestry and fishing industry - Veterinary science and other agricultural sciences
009	Education
	<ul style="list-style-type: none"> - General education, including training, pedagogy and didactics - Special education (to gifted people, people with learning difficulties) - Pre- and primary education - Secondary education - Tertiary education
010	Culture, recreation, religion and media
	<ul style="list-style-type: none"> - Impact of cultural activities, religion and recreation on life in society - Racial and cultural integration and socio-cultural changes in these areas - Includes sociology, religion, arts, sport and leisure - Culture includes: language, social integration, libraries, archives and external cultural policy - Recreational and sporting services - Cultural services - Broadcasting and publishing services - Religious and other community services
011	Political and social systems, structures and processes
	<ul style="list-style-type: none"> - Socio-political systems - Public administration and economic policy - Regional studies and multi-level governance - Social change, processes and conflicts - Development of social security and social assistance - Social aspects of the organisation of work - Gender discrimination - Development of methods of combating poverty at local, national and international level - Protection of specific population categories - Methods of providing social assistance
012	General advancement of knowledge: R&D financed from general university funds:
012.1	R&D related to natural sciences
	<ul style="list-style-type: none"> - Mathematics, computer and information science, physical sciences, chemical sciences, biological sciences, earth and related environmental sciences, other natural sciences
012.2	R&D related to engineering sciences

012.3	<p>- Civil engineering (bridges, roads, machinery, etc.), electrical engineering, electronic engineering, information engineering, mechanical engineering, chemical engineering, technology, health engineering, environmental protection, biotechnology, nano-technology, other engineering and technology</p> <p>R&D related to medical sciences</p> <p>- Basic medicine, clinical medicine, medical biotechnology, other medical sciences</p>
012.4	<p>R&D related to agricultural sciences</p> <p>- Agriculture, forestry, fishery, animal and dairy science, veterinary science, agricultural biotechnology, other agricultural sciences</p>
012.5	<p>R&D related to social sciences</p> <p>- Psychology, economics and business, educational sciences, sociology, law, political sciences, economic and social geography, media and communications, other social sciences</p>
012.6	<p>R&D related to humanities</p> <p>- History and archeology, languages and literature, philosophy, ethics and religion, arts (arts, history of arts, applied arts, music, theatre) and other humanities</p>
013	General advancement of knowledge: R&D financed from other sources – other than general university funds
013.1	<p>R&D related to natural sciences</p> <p>- Mathematics, computer and information science, physical sciences, chemical sciences, biological sciences, earth and related environmental sciences, other natural sciences</p>
013.2	<p>R&D related to engineering sciences</p> <p>- Civil engineering (bridges, roads, machinery, etc.), electrical engineering, electronic engineering, information engineering, mechanical engineering, chemical engineering, technology, health engineering, environmental protection, biotechnology, nano-technology, other engineering and technology</p>
013.3	<p>R&D related to medical sciences</p> <p>- Basic medicine, clinical medicine, medical biotechnology and other medical sciences</p>
013.4	<p>R&D related to agricultural sciences</p> <p>- Agriculture, forestry, fishery, animal and dairy science, veterinary science, agricultural biotechnology, other agricultural sciences</p>
013.5	<p>R&D in social sciences</p> <p>- Psychology, economics and business, educational sciences, sociology, law, political sciences, economic and social geography, media and communications, other social sciences</p>
013.6	<p>R&D related to humanities</p> <p>- History and archeology, languages and literature, philosophy, religion and ethics, arts (arts, history of art, applied art, music, theatre) and other humanities</p>
014	Defence

*According to the OECD methodology - NABS 2007
(Nomenclature for the Analysis and comparison of Scientific programmes and Budget)*