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Government budget appropriations or outlays for R&D, 2019/2020

−Research and development−

In the Republic of Serbia, in 2019 the amount of 21,856.218 thousand RSD of budgetary funds were spent for the Research and Development (R&D) activity.

The share of total budgetary funds for R&D in GDP reached 0.40% in 2019.

The largest percentage of the budget for research and development in 2019 came from the government sector (58.7%), followed by the tertiary education sector (26.9%). In total funds for financing research and development, funds from international organizations account for around 10%. The non-financial (business) sector accounts for around 3.4%, while less than 1% of the funds were allocated for the non-profit sector.

Regarding the socio-economic objectives, the highest budgetary funds allocated for research and development in 2019 were spent on the goal: General Knowledge Improvement - Research and Development funded from the General University Funds - GUF (25.1%). For the goal: Industrial Production and Technology 16.5% were spent, and the least funds were spent on the goal: Exploration and Exploitation of space (0.5%).

The planned government budget appropriations or outlays for the R&D activity in 2019 (before budget adjustment) amounted to 15,954,389 thousand RSD. Most of funds, 26.8%, were intended for the objective General Advancement of Knowledge: R&D financed from the General University Funds.

**Graph. 1. Total expenditures for R&D in 2019, by sector (%)**

**1. Budgetary funds of the Republic of Serbia for R&D (actual outlays) in 2019, by types of programmes and sectors**

thous. RSD

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Programmes | Total | Non-financial (business) sector | Government sector | Tertiary education | Private non-profit sector | International organisations |
|  |  |  |  |  |  |  |
| **Total** | **21856218** | **750159** | **12831293** | **5868633** | **198825** | **2207308** |
| Programs and projects of scientific research |  |  |  |  |  |  |
| Doctoral and postdoctoral fellowship programs | 7599693 | 214581 | 4273943 | 2779939 | 1230 | - |
| Programs and projects of technological research and development activities | 5967 | - | 5967 | - | - | - |
| Dedicated institutional financing of scientific activities | 8241736 | 535578 | 4622246 | 3083912 | - | - |
| Training program for new scientists | 4782 | - | - | 4782 | - | - |
| Scientific equipment and infrastructure | 197595 | - | - | - | 197595 | - |
| International participation in programs and projects that have the characteristics of research and development | 3032376 | - | 3032376 | - | - | - |
|  National contributions to transnational public R&D contractors | 2207308 | - | - | - | - | 2207308 |
|  National contributions to transnational public R&D programs across Europe | 336427 | - | - | - | - | 336427 |
|  National contributions to bilateral or multilateral public research and development programs established between the governments of EU countries, candidate countries and EFTA countries | 336427 | - | - | - | - | 336427 |
|  National contributions to other international programs and projects that have the characteristics of research and development | 4934 | - | - | - | - | 4934 |
| Other expenditure on research and development | 78735 | - | - | - | - | 78735 |

**Graph. 2 The share of budget funds for R&D in 2019 according to programs, %**

**2. Budgetary funds of the Republic of Serbia for R&D (actual outlays) in 2019, by socio-economic objectives and sectors**

 thous. RSD

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Socio-economic objectives of researches | Total | Non-financial (business) sector | Government sector | Tertiary education | Private non-profit sector | International organisations |
|  |  |  |  |  |  |  |
| **ТОТАL** | **21856218** | **750159** | **12831293** | **5868633** | **198825** | **2207308** |
| Exploration and exploitation of the Earth | 205018 | 25623 | 179395 | - | - | - |
| Environment | 595615 | 16928 | 59687 | - | - | - |
| Exploration and exploitation of space | 111104 | - | 111104 | - | - | - |
| Transport, telecommunications and other infrastructures | 579347 | 187639 | 389923 | 1785 | - | - |
| Energy | 261439 | 6095 | 255344 | - | - | - |
| Industrial production and technology | 3597877 | 333929 | 3261683 | 2265 | - | - |
| Human health | 617261 | 10845 | 606415 | - | - | - |
| Agriculture | 1816859 | 105179 | 1711680 | - | - | - |
| Education | 3357750 | - | 3155373 | 4782 | 197595 | - |
| Culture, recreation, religion and mass media | 873033 | 29073 | 834377 | 8353 | 1230 | - |
| Political and social systems, structures and processes | 541043 | - | 541043 | - | - | - |
| General advancement of knowledge: from general university funds | 5496401 | 7311 | 52833 | 5436257 | - | - |
| R&D related to natural sciences | 23315 | 300 | 590 | 22425 | - | - |
| R&D related to engineering and technology | 1570915 | 2593 | 17085 | 1551237 | - | - |
| R&D related to medical and health sciences | 1626277 | 2936 | 10430 | 1612911 | - | - |
| R&D related to agricultural sciences | 782795 | 1481 | 4608 | 776705 | - | - |
| R&D related to social sciences | 603606 | - | 1881 | 601726 | - | - |
| R&D related to humanities | 889492 | - | 18238 | 871254 | - | - |
| General advancement of knowledge: from other sources – not from general university funds | 3140125 | 27536 | 490089 | 415191 | - | 2207308 |
| R&D related to natural sciences | 2624572 | 45 | 2027 | 415191 | - | 2207308 |
| R&D related to humanities | 515553 | 27491 | 488062 | - | - | - |
| Defence | 663346 | - | 663346 | - | - | - |

**Graph. 3 The share of budget resources for R&D in 2019, by the socio-economic objectives (actual expenditure), %**

**3. Planned budgetary funds of the Republic of Serbia for R&D by socio-economic objectives,**

 **(adopted budget, prior to budget adjustment), 2020**

|  |
| --- |
| thous. RSD |
| Socio-economic objectives of researches | Planned budget for 2020 |
|  |  |
| **ТОТАL** | **15954389** |
| Exploration and exploitation of the Earth | 159194 |
| Environment | 500825 |
| Exploration and exploitation of space | 86270 |
| Transport, telecommunications and other infrastructures | 449854 |
| Energy | 203003 |
| Industrial production and technology | 2793697 |
| Human health | 479294 |
| Agriculture | 1866951 |
| Education | 2607242 |
| Culture, recreation, religion and mass media | 683559 |
| Political and social systems, structures and processes | 420112 |
| *General advancement of knowledge: from general university funds* | 4267872 |
|  R&D related to natural sciences | 18104 |
|  R&D related to engineering and technology | 1219792 |
|  R&D related to medical and health sciences | 1262779 |
|  R&D related to agricultural sciences | 607828 |
|  R&D related to social sciences | 468691 |
|  R&D related to humanities | 690677 |
| *General advancement of knowledge: from other sources – not from general university funds* | 724318 |
|  R&D related to natural sciences | 323999 |
|  R&D related to humanities | 400319 |
|  Defence | 742200 |

**Graph. 4. The share of planned budget funds for R&D (adopted budget before adjustment), by the objectives, 2020 (%)**

Methodological explanations and **definitions**

**Data source**

Data are the result of the processing of the survey on overall budgetary appropriations and outlays for science over 2019-2020 in the Republic of Serbia. The survey refers to institutions that finance the R&D activity, direct budgetary funds beneficiaries, which financed in 2019 or were expected to finance the R&D activity in 2020 – direct budgetary funds beneficiaries taking part in the allocation of financial resources for R&D in the Republic of Serbia. Based on the legislation, which has been changed, the calculation period for this research was 13 months (December 1, 2018 - December 31, 2019).

**Coverage and comparability**

The survey is intended to collect data on budget appropriations and outlays for R&D by socio-economic objectives, including all financing of R&D international programmes or institutions abroad. The survey measures R&D government policy through its financing of R&D activities.

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 Researchand Experimental Development - Frascati Manual).

The Nomenclature for the Analysis and Comparison of Scientific Programmes and Budgets – NABS 2007, which is linked with the Frascati Manual, was used in monitoring the allocation of the Government Budget appropriations or outlays according to the socio-economic objectives. This Nomenclature classifies the spent funds for R&D in 13 categories.

**Definitions of main concepts**

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.

Applied research is a theoretical or experimental work undertaken in order to acquire new knowledge, and directed towards resolving any practical task, i.e. achieving any practical objective.

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.

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 civilization level of society and touse that knowledge in all fields of socio-economic development.

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

 **Current costs include**: labour costs; other R&D employees’ remuneration costs, 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.

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

Tertiary education includes higher schools and universities within corporate 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 economic 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 organizations and individuals being outside the politica lboundaries 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 organizations such as: UN, OECD, ЕU, etc.

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