

Science / Research-Development Statistics

Metadata

National Bureau of Statistics of the Republic of Moldova (NBS)

1. Contact Information

1.1. Responsible subdivision within NBS

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2. Metadata Update

2.1. Last certification of metadata

15.03.2018

2.2. Last update of metadata

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3. Statistical Presentation

3.1. General description

Statistical data regarding the research-development activity are obtained through annual exhaustive statistical surveys. The survey questionnaires are filled in by all types of units which carry out research-development activities, as their main or secondary activity.

The main goal of the statistical survey in the area of research-development activity is to collect data regarding the quantitative indicators referring to human resources and expenses. This survey serves as basis to obtaining the statistical information necessary for knowledge-based economy development. The statistical indicators are based on the methodology provided in the Frascati Manual (version 2002), developed by the Organization for Economic Cooperation and Development Cooperation (OECD) and Eurostat, which sets forth the content and the methodology of the research-development survey. Hence, this statistical survey obtains the necessary information for internal beneficiaries, comparable at the international level.

3.2. Concepts and definitions

3.2.1. Definitions

Research-development activity – scientific research and technological development activities as a whole.

The research-development activity does not cover the following categories of activities:

- education and personnel training;
- other scientific and technological activities, including the services of technical and scientific information (except for the cases when they represent staged within a research-development activity); collecting and processing data of general destination (if they do not refer to concrete surveys); testing and standardization; feasibility studies; specialized medical assistance; services

- regarding licenses and brevets; adapting, supporting, and running existing software;
- production activity (including innovation activity)
- administration activity with other support activities (public management of research-development activity funding, etc.).

Fundamental surveys – experiment or theoretical surveys focused on obtaining some new knowledge without specific goal related to the use of such knowledge; the results of these surveys are hypotheses, theories, methods, etc.

Applied surveys – original works focused on obtaining some new knowledge with the aim to solve some concrete practical problems; the applied surveys determine the possible ways of using the results of the fundamental surveys, new methods for solving problems which were formulated previously;

Technological developments – systematic works based on existing knowledge obtained as a result of the surveys and (or) practical experience and focused on creating new materials, products, procedures, devices, services, systems or methods.

Expenses for research-development – the amounts spent for the research-development activity (costs) during a certain period of time, regardless of the sources from which the financial means are provided.

Internal expenses for research-development – expenses for the research-development activity performed with the own forces of the reporting organization.

External expenses for research-development – expenses for the research-development activity performed by third parties based on contracts signed with the reporting organization.

Current costs cover all the expenses incurred during a certain period of time, representing the costs for work remuneration, payments for material assets, supplies, equipment and tools which are not part of the capital costs; consumables, water, fuel, energy of all types, etc., as well as other current costs.

Capital costs cover all the expenses incurred during a certain period of time for building construction and purchase, for carrying out ample reconstruction, modernization and reparation of the buildings meant for carrying out scientific research, for procurement of other fixed assets, for procurement of land plots meant for carrying out scientific research. As well as other capital costs.

Number of employees in the research-development activity indicated the effective number of employees, without the persons with suspended work contract and those with cumulative work contracts.

Researchers – specialists from research-development activity who deal directly with creation of new knowledge, products, procedures, methods, and systems, as well as with managing the types of activity.

Technicians – workers who participate in the research-development activity, performing technical functions, as a rule, under the leadership of researchers (operation and maintenance of scientific installations, laboratory devices, computers, preparation of material, technical designs, carrying out of tests, analyses, etc.).

Auxiliary personnel – workers who participate in executing research-development themes or those who are directly involved in carrying out such themes: workers of the economic and financial planning subdivisions, technical-scientific information subdivisions; workers who assemble, adjust, maintain, and repair the scientific devices and apparatus; lab workers without higher and specialized secondary education.

Employees from the research-development activity – physical number of persons and conventional measurement called “full time equivalent (FTE)”. This concept is based on the evaluation unit, representing a person working full time during a certain period of time (person-year). Hence, FTE allows avoiding the extra estimation of the number of personnel, giving the fact that some persons involved in the R&D activity allocate part of the time to other activities (for ex., professional training of the students, management, health care etc.). Moreover, some persons are part-time employees, for ex. Less than 8 hours per day or 40 hours per week, or they haven’t worked during for the whole year (are employed or dismissed during the year).

Human and financial resources from the research-development activity are presented by sector of execution, according to the methodology set forth in the Frascati Manual, taking into account the

respective economy sectors:

State sector covers the institutions that provide public administration and ensure the needs of the society as a whole and the non-profit organization which is controlled and funded mainly by the State. This sector includes: institutions subordinated to central and local public administration, research/development institutions of the Academy of Science, except for those that provide services of/for higher education.

Higher education sector covers all the higher education institutions, scientific research centers under the institutions of higher education;

Entrepreneurship sector covers all the enterprises and organizations, which deal (as main activity) with production of goods or services for the market (other than higher education services), including the State ones, as well as the non-profit private organizations which provide for them services.

Non-commercial private sector covers private organizations which do not produce for the market and population households.

3.2.2. Unit of measurement

The expenses incurred for the research-development activity are expressed in *thousand lei*, in current prices. The employees from the research-development activity are expressed in *physical number of persons* and in a conventional measurement called “*full time equivalent*” (*FTE*) (person-year).

3.2.3. Formula of calculation

Full time equivalent employees - SENI

$$SENI = \sum_i (T_{si} * T_{ai} * T_{ci}), \quad i = \overline{1, n}$$

T_{si} - no. of worked days * no. of hours /40 hours (the time worked per week based on the contract)

T_{ai} - no. of months / 12 months (complete worked months)

T_{ci} - % of time dedicated to research-development activities (100%=1,0)

i – part time worker (1,2...n)

3.3. Used classifications

The following classifications/nomenclatures are used to ensure the unitary collection, processing, and analysis of data in the statistical research-development system:

Nomenclature of scientific specialties approved through the Government Decision No. 1025 dated September 14, 2004 was used until 2013 and from 2014 has been implemented Fields of Science Classification according to the methodology in the Frascati Manual (OECD, 2002 and Revised Fields of Science and Technology Classification, 2006).

Classification of Activities in Moldova Economy (CAEM - *Clasificarea Activităților Economiei Moldovei in Romanian*), harmonized with NACE ver.1, approved via the Moldova – Standard Decision No. 694-ST dated 09.02.2000, including modification no.1 approved via Decision No. 1444-ST dated 04.01. 2004; enforced since 01.02.2004; edition 2005. Since 2014 is implemented in practice Classification of Activities in Moldova Economy, Rev.2, (CAEM-2 ***Clasificatorul Activităților din Economa Moldovei, Rev.2 in Romanian***) fully harmonized with the Nomenclature of Economic Activities in the European Community (NACE, 2 Inspection), approved via Decision of College of National Bureau of Statistics No. 20 dated 29.12.2009; implemented from 01.01.2014.

Classification of execution sector according to the OECD methodology.

Classification of the educational system in the Republic of Moldova according to the Law on Education No. 547 – XIII dated 21.07.1995. Since 2016, it is used the Classification of the Education System of the Republic of Moldova according to the Education Code of the Republic of Moldova No. 152 from 17.07.2014.

Classification of ownership forms in the Republic of Moldova (CFP- *Clasificatorul formelor de proprietate din Republica Moldova in Romanian*) approved via the Decision of the Standards,

Metrology and Technical Supervision Department No. 276-st dated 04.02.1997
3.4. Scope
3.4.1. Sector coverage
The statistical surveys in the research/development field cover the units that carry out research-development activities as their main and secondary activities, according to the Classification of Activities in Moldova Economy – CAEM rev.2, division 72, as well as the public institutions with other basic activity than the research-development, but which have structures/centers which carry out research-development activities (educational, medical institutions etc.).
3.4.2. Statistical population
Institutions, organizations, enterprises which carry out research-development activities on the territory of the Republic of Moldova.
3.4.3. Geographical coverage
The information is developed and disseminated without the data of the enterprises and organization from the left part of the River Nistru and Bender municipality.
3.4.4. Time coverage
Time series are available starting with 1960.
3.5. Level of disaggregation
<p>Statistical data on personnel are disaggregated by:</p> <ul style="list-style-type: none"> ▪ sectors of execution ▪ occupations ▪ age groups ▪ sexes ▪ training level ▪ scientific areas <p>Statistical data on expenses are disaggregated by:</p> <ul style="list-style-type: none"> ▪ sectors of execution ▪ destination ▪ scientific areas ▪ funding source ▪ types of research
3.6. Dissemination frequency
Annually
3.7. Timeliness
Month of April after the reference year.
3.8. Revision
Data are final when disseminated for the first time.
3.9. Period of reference
Year.

4. Data Collecting and Processing
4.1. Data source
4.1.1. Statistical surveys
<p>Statistical data are collected through the annual statistical exhaustive report “Research-development activity” which contain the following indicator:</p> <ul style="list-style-type: none"> ▪ <i>Number of employees</i> by sex, occupations (researchers, technicians, auxiliary personnel, and other categories), level of education, age groups (up to 25 years, 25-34 years, 35-44 years, 45-54

years, 55-64 years, 65 years and over).

- **Number of researchers** by sex and scientific areas (natural sciences, engineering and technology, medical sciences, agricultural sciences, social sciences and humanities).

Internal expenses for research-development according to the destination (current and capital costs), scientific areas (natural sciences, engineering and technology, medical sciences, agricultural sciences, social sciences and humanities), destination of results, finance source (means from the budget, own means, economic agents, means of higher education units, from abroad, means of institutions without lucrative purposes for population service).

4.1.2. Administrative sources

Not used.

4.1.3. Estimations

Not applicable.

4.2. Characteristics of the statistical survey/administrative sources

4.2.1. Objective and background

The main objective of the statistical report on research-development activity is:

- to collect data on quantitative indicators referring to human resources and expenses related to this area;
- to obtain some relevant indicators which measure the condition and the evolution of activities in the research-development area;

The content and methodology of the statistical report are based on the methodology set forth in Frascati Manual (version 2002), developed by the Organization for Economic Cooperation and Development (OECD) and Eurostat.

The statistical information regarding the research-development activity, previously called "Performance of technical-scientific works" is produced starting with 1960, being focused mainly on assessing human scientific potential, the network of institutions with activity in the area, and research themes.

Starting in 1986, gradually there were introduced indicators regarding the expenses in the area and the sources to fund them. Currently, the research-development statistics are partially harmonized with the UNESCO recommendations.

4.2.2. Statistical unit

The survey unit is the institution, organization, enterprise which carries out activities in the research-development area.

4.2.3. Circle of units covered in the survey

The number of research units (in 2016) covers 63 units, including institutions of scientific research (40 units), organizations for design-exploration and design and construction offices (6 units), higher education institutions (16 units) and other (1 unit).

4.2.4. Survey periodicity

Annually.

4.2.5. Data collection

The statistical data on *research-development activity* is performed by the NBS.

The list of institutions and organizations active in the research-development area and which subsequently participate in research is revised annually. The report is submitted on the NBS address through mail or directly.

The reference period for collecting data is the calendar year.

4.3. Processing and compilation of data

4.3.1. Validation of data

Data are verified and analyzed regarding their quality, especially in relation to their internal and temporal

coherence.
4.3.2. Compilation/extrapolation of data
Data are compiled based on generalizing the information from the questionnaires submitted by the survey units.
4.3.3. Adjustments
Not applicable.
4.3.4. Quality assurance
<p>The quality of statistical data is assured by observing the fundamental principles of official statistics approved by the UN Economic Commission for Europe in 1992 (and Statistical Commission/UN in 1994), as well as those set forth in the Republic of Moldova Law on Official Statistics.</p> <p>In its activity of producing statistical information, NBS pays huge importance to ensuring high quality of data. In this respect, a number of measures for quality assurance are carried out at every stage of the statistical process: organization of statistical surveys, collection, processing, and development of statistical information.</p> <p>Important efforts are undertaken to ensure the plenitude and quality of data presentation by the respondents included in the statistical surveys.</p> <p>Errors, inconsistencies, and suspicious data are brought to light so as to be verified and corrected.</p> <p>The primary data are verified and analyzed from internal coherence point of view (within the questionnaire), temporal coherence (with data from previous periods), with data of other similar units, as well as with data available from other statistical surveys and administrative data sources. The missing or inconsistent data are imputed, if needed.</p> <p>To ensure the quality of the primary data, meetings (seminars) are organized with interviewers – respondents for explaining the definitions, the correct way to fill in the questionnaires, especially when they are modified or implemented.</p>
4.4. Data accuracy
4.4.1. Non-response rate
Not applicable
4.4.2. Sampling errors
Not applicable

5. Comparability and Coherence
5.1. International comparability
Statistical indicators are based on the methodology of the Organization for Economic Cooperation and Development (OECD) and Eurostat - Frascati Manual (version 2002). The differences existing in some methodological approaches refer to the national needs and peculiarities.
5.2. Comparability over the time
<p>The modification of the statistical report's methodological approaches and its content contributed to improving the quality of the obtained data, and at the same time, these changes involve the fact that indicators are not fully comparable with those from the previous years.</p> <p><i>Differences in defining indicators:</i></p> <ul style="list-style-type: none"> - Personnel from research-development activity: during 1992-2007, the number of employees has also included the number of persons who were carrying out scientific research and developments (without twicers); in the higher educational and medical institutions – the workers of the research subdivisions. Starting in 2008, the total number of employees does not include the persons with suspended work contracts and external twicers, at the same time, the higher educational and medical institutions include the persons who in parallel to the didactical and medical activity have also performed scientific research; - <u>Volume of research-development works:</u> during 1992-2007, the volume of research-

development works included the volume of scientific services, but starting in 2008 these services are excluded.

Note: Starting in 2008 other age groups are used.

5.3. Coherence with other statistics

Differences in concepts used by NBS and Moldova Academy of Science (MAS):

Number of personnel: the NBS statistical reports follow only the persons who perform the research-development activity (execute research-development themes or are directly involved in execution of such themes) based on a work contract, but to not include the persons with suspended work contract and external twicers. The MAS reports include in the personnel number all the persons who have performed activities in the research-development area, including the external twicers.

Costs for research-development: the NBS statistical reports include the expenses for the research-development activity, while the MAS reports – the total expenses of the institutions. The NBS data refer to the effective expenses, while the MAS reports collect information regarding the expenses from the determined or executed plan.

6. Institutional Mandate (normative-legal basis)

The NBS activity is based on respecting the Republic of Moldova Constitution, the Law on Official Statistics No. 93 dated 26.05.2017, other legislative and normative acts, NBS management decisions and orders.

The Law on Official Statistics regulates the organization and operation of the unique system of official statistics, establishing the general principles for collecting, processing, centralizing, diminishing, and stocking statistical information (art.1).

Art. 5 of the Law provides that the production of statistical information is based on respecting the following principles: impartiality, objectiveness, relevance, transparency, confidentiality, cost-efficiency etc.

Being the central statistical body, the National Bureau of Statistics is an administrative authority created under the Government for leading and coordinating the activity in the statistics area.

In line with the Government Decision No. 1034 dated 29.12.11 on approval of the NBS Regulation and the Nominal Composition of the NBS Collegium, the National Bureau of Statistics:

- develops alone or jointly with other central administrative authorities and approves the methodologies for statistical surveys, as well as the methodologies for calculating statistical indicators, in line with the international standards, especially the EU standards, and with the advanced practice of other countries, and taking into account the peculiarities of the social-economic conditions of the Republic of Moldova;
- organizes, in line with the Program of Statistical Work, approved annually by the Government, statistics surveys regarding the economic, social, and demographic situation and development of the country, carrying out collection, processing, centralization, stocking, and dissemination of statistical data;

The legislative and normative acts ruling the activity of the NBS are available on its official page www.statistica.md, under About NBS (<http://www.statistica.md/pageview.php?l=en&idc=323&>)

7. Confidentiality

7.1. Principles

According to art. 19 of the Law on Official Statistics No. 93 dated 26.05.2017, producers of official statistics shall take all regulatory, administrative, technical and organizational measures to protect confidential data and prevent their disclosure.

Chapter VII of the above-mentioned law stipulates that the data collected, processed and stored for the production of statistical information are confidential if they allow the direct or indirect identification of

the respondents.) The following shall not be considered confidential:

- a) data that can be obtained from publicly accessible sources according to the legislation;
- b) individual data on address, telephone, name, type of activity, number of employees of legal entities and individual entrepreneurs;
- c) data referring to public enterprises, institutions and organizations funded from the budget, submitted at the request of the public administration authorities.

According to the Law on Official Statistics, art. 20, access to confidential information is granted to the persons who, according to their official functions, participate in the production of statistical information shall have access to individual data in so far as individual data are necessary for producing this information.

The same article stipulates that the access to individual data, which do not allow the direct identification of respondents, may be given for scientific survey projects, whose expected results do not refer to identifiable individual units, under the regulation approved by the central statistical authority.

Art. 23 (5) of the Law stipulates that the the statistical information cannot be disseminated to users if it refers to 1-3 statistical units.

7.2. Practical assurance of the confidentiality rules

To ensure the protection of confidential statistical data in compliance with the Law on Official Statistics No. 93 dated 26.05.2017, the National Bureau of Statistics undertakes all the regulatory, administrative, technical, and organizational measures to protect the confidential statistical information and prevent its disclosure.

In compliance with the above-mentioned law, the employees of producers of official statistics, including temporary employees who, according to their official functions, have direct access to individual data shall be obliged to observe the confidentiality of these data during and after termination of employment.

Before being disseminated, the statistical data are verified if they meet the protection requirements set for confidential data. If the statistical data contain confidential information (see p. 7.1), they are not disseminated, but aggregated at the minimum available level which ensures the protection of data confidentiality.

8. Access to Information and Dissemination Format

8.1. Access to information

8.1.1. Calendar of statistical publications

Annually the Advance release calendar is developed by NBS.

8.1.2. Access to the calendar of statistical publications

The press release calendar is posted on the NBS official page www.statistica.md .

8.1.3. Access to statistical data

According to the Law on Official Statistics No. 93 dated 26.05.2017, art. 23:

- a) Producers of official statistics shall be obliged to disseminate the statistical information within the deadlines specified in the programme of statistical works and in the press-release calendar.
- b) The dissemination of statistical information laid down in the programme of statistical works to all categories of users shall be made free of charge and under equal access conditions in terms of volume, quality and time of dissemination

The program of statistical work may be accessed on the web page www.statistica.md, under About NBS / legislative and normative acts (<http://www.statistica.md/pageview.php?l=en&idc=323&>)

The NBS web page www.statistica.md represents the most important information source for ensuring users' access to different statistical information and transparency about the NBS activity.

All the operative information, informative notes, time series, as well as the statistical publications developed by NBS are placed on its official web page.

8.2. Dissemination format
8.2.1. Operative information / Analytical notes
The operative information and analytical notes are published on the official page of NBS: http://www.statistica.md under Press Releases, according to the Press Release Calendar.
8.2.2. Publications
<p>“Statistical Yearbook of the Republic of Moldova”</p> <p>Statistical pocket-book “Moldova in figures”</p> <p>Access to publications:</p> <ul style="list-style-type: none"> in electronic format, on NBS official page www.statistica.md, under heading Products and services / Publications http://www.statistica.md/pageview.php?l=en&idc=350&nod=1&) on hardcopies – in the NBS library (more details at the address http://www.statistica.md/libview.php?l=en&idc=340&id=2400) or may be bought from NBS office (more details on www.statistica.md, under Publications http://www.statistica.md/pageview.php?l=en&idc=350&id=2219)
8.2.3. Databases/time series
NBS official page: http://www.statistica.md under: Press Release, Statistics by themes / Education, Publications;
8.2.4. Questionnaires/data sent upon request from international organizations
UNESCO Questionnaires (UIS/ST/once in 2 years, since 2017 - annually), CIS: Table № 22.1 (annually) “Fulfillment of scientific research and developments”; Table № 22.2 (annually) “Number of personnel in the research-development activity”; Table № 22.3 (annually) “Researchers by age groups”
8.2.5. Request for additional data
NBS makes available for users additional statistical information beyond the data presented in the statistical publications, informative notes, operative information, as well as the data placed on the official web page in the limits of available information, in line with the Law on Official Statistics. Request can be sent personally, by post, by e-mail or via online web form – www.statistica.md heading Products and services / Statistical data request http://www.statistica.md/solicitare_informatii_statistice.php?l=en

9. Useful References (links)	
9.1. Accessibility of documentation on methodology	
The methodology is available on the official page www.statistica.md , under Metadata heading (http://www.statistica.md/pageview.php?l=en&idc=351&nod=1&).	
9.2. Accessibility of documentation on Evaluation Reports	
The NBS assessment reports are available on the official page www.statistica.md , under About NBS / Assessments and opinions on NBS / Assessment reports (http://www.statistica.md/pageview.php?l=en&idc=399&id=2739).	
9.3. Accessibility of information on user surveys	
User surveys are available on the official page www.statistica.md , under About NBS / Assessments and opinions on NBS / User surveys (http://www.statistica.md/pageview.php?l=en&idc=399&id=2740).	
9.4. Other useful references	
EUROSTAT database	http://ec.europa.eu/eurostat/data/database
Statistical database of the United Nations Economic Commission for Europe	http://w3.unece.org/pxweb/Dialog/
UNESCO database	http://stats.uis.unesco.org/unesco/ReportFolders/ReportFolders.aspx