

Statistical survey on innovations and innovation activities of business entities

STI_INOV_A_EN_2022_1

Reference Metadata in ESMS 2.0 structure

1	Contact
1.1	Contact organisation
State Statistical Office	
1.2	Contact organisation unit
Department for research and development, innovation and ICT	
1.3	Contact name
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2	Metadata update
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2.1	Metadata last certified
18/06/2025	
2.2	Metadata last posted
18/06/2025	

2.3	Metadata last update
14/11/2022	
3	Statistical presentation
3.1	Data description
<p>Mandatory non-structural variables</p> <ol style="list-style-type: none"> 1. 'Co-operation with other enterprises or organisations during the reference period' (including identification of public-private partnerships) 2. 'Access to finance' 3. 'Public financial support' 4. 'Innovations with environmental benefits' <p>Structural Variables</p> <ol style="list-style-type: none"> 1. Introduction of a product innovation 2. 'New to the market / new to the firm' 3. Turnover from innovative products 4. Developer of product innovation 5. Introduction of a business process innovation 6. Developer of business process innovation 7. Innovation activities 8. Expenditure on innovation activities 9. Reasons for not having (more) innovation 10. Number of enterprises 11. Employees and self-employed persons 12. Total turnover 13. Age of the enterprise 	
3.2	Classification system
National Classification of Activities - NKD Rev.2.	
3.3	Sector coverage
<p>Sections:</p> <p>B - Mining and quarrying;</p> <p>C - Manufacturing;</p> <p>D - Electricity, gas, steam and air conditioning supply;</p> <p>E - Water supply; sewerage, waste management and remediation activities;</p> <p>H - Transportation and storage;</p> <p>J - Information and communication;</p>	

K - Financial and insurance activities.

Divisions:

46 - Wholesale trade, except of motor vehicles and motorcycles;

71 Architectural and engineering activities; technical testing and analysis,

72 Scientific research and development and

73 Advertising and market research.

3.4 Statistical concepts and definitions

The CIS provides information on the characteristics of innovation activities at enterprise level. It allows Europe's progress to be monitored in the area of innovation, creating a better understanding of the innovation process with analyses of the objectives and the effects of innovation. These results can also be linked to variables related to competitiveness, employment and economic growth.

The concepts are in line with those recommended by the Oslo Manual (2018, 4th Edition), which is the internationally recognized standard methodology for collecting innovation statistics.

Main concepts and definitions used for the CIS data collection:

An **innovation** is a new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process).

The minimum requirement for an innovation to occur is that the product or process (marketing or organizational) method must be new or significantly improved to the firm. This includes not only products, processes and methods that firms are the first to develop but also those that have been adopted from other firms or organisations.

Innovation activities include all developmental, financial and commercial activities undertaken by a firm that are intended to result in an innovation for the firm.

Types of innovation activities:

- Successfully introduced product or process innovation
- Completed by not yet implemented innovation
- On-going, with work in progress that has not yet resulted in the implementation of an innovation
- Abandoned before the implementation of an innovation
- R&D activities

R&D activities comprises creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge.

A **product innovation** is a new or improved good or service that differs significantly from the firm's previous goods or services and that has been introduced on the market. Changes of a solely aesthetic nature and the simple resale of new goods and services purchased from other enterprises are not considered as innovation.

A **business process innovation** is a new or improved business process for one or more business functions that differs significantly from the firm's previous business processes and which has been implemented within the firm. Business process innovation merges the previously separated process, marketing and organisational innovation.

3.5 Statistical unit

Statistical units are business entities.

3.6 Statistical population

Statistical population are business entities with at least 10 employees, registered in the following sections: B, C, D, E, H, J and K and divisions: 46, 71, 72 and 73.

3.7 Reference area

NUTS 1 and 2 (Republic of North Macedonia).

3.8 Time coverage

Two years (for the last 3 periods) starting from 2012.

3.9 Base period

Not applicable.

4 Unit of measure

CIS indicators are available according to 4 units of measure:

- **Number** for number of enterprises and number of persons employed.
- **Thousands of euros** - All financial variables are provided in thousands of euros, i.e. Turnover or Innovation expenditure.
- **Percentage** - as a relative indicator of the relationship between selected combinations of indicators and as an indicator of participation in GDP for selected financial indicators.

5 Reference period

Three years (2020-2022).

6 Institutional mandate

6.1 Legal acts and other agreements

NATIONAL LEGISLATION

Law on State Statistics ("Official Gazette of the Republic of Macedonia" No. 54/1997, 21/2007, 51/2011, 104/2013, 42/2014, 192/2015, 27/16, 83/18, 220/18 and "Official Gazette of the Republic of North Macedonia" No. 31/20)

Programme of Statistical Surveys 2018-2022 ("Official Gazette of RM" No. 22/18, 224/18 and "Official Gazette of the Republic of North Macedonia" No. 18/20 and 300/20.)

EUROPEAN LEGISLATION

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 (EC) 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 Council concerning the production and development of Community statistics on science and technology

Regulation (EU) 2019/2152 of the European Parliament and of the Council of 27 November 2019 on European business statistics, repealing 10 legal acts in the field of business statistics

Commission Implementing Regulation (EU) 2020/1197 of 30 July 2020 laying down technical specifications and arrangements pursuant to Regulation (EU) 2019/2152 of the European Parliament and of the Council on European business statistics repealing 10 legal acts in the field of business statistics

Commission Implementing Regulation (EU) 2022/1092 of 30 June 2022 laying down technical specifications of data requirements for the topic 'Innovation' pursuant to Regulation (EU) 2019/2152 of the European Parliament and of the Council

Oslo Manual, 2018 - Guideliness for Colecting, Reporting and Using Data on Innovation, 4th Edition, OECD/Eurostat, 2018

6.2

Data sharing

Data are transmitted to Eurostat using the CIS Questionnaire (through eDamis).

7

Confidentiality

7.1

Confidentiality - policy

Individual data are protected by the Law on State Statistics.

Data collected with statistical surveys from the reporting units or indirectly from administrative or other sources are confidential data and are used only for statistical purposes. Results from the statistical processing may also generate information considered as confidential, for example: anonymised individual data, tables with low level of aggregation, as well as unreleased data.

The <u>Policy on Statistical Confidentiality</u> contains the basic principles used in the SSO.	
7.2	Confidentiality - data treatment
Pursuant to Article 38 of the Law on State Statistics (https://www.stat.gov.mk/ZakonZaStatistika_en.aspx) and the Policy on Statistical Confidentiality (https://www.stat.gov.mk/pdf/PolicyOnStatisticalConfidentiality.pdf), individual data are not published. However, if access is granted to microdata from the relevant survey, then the methods used to prevent data disclosure should be specified.	
8	Release policy
8.1	Release calendar
Data are released in accordance with the Release Calendar, which is published on the web site of the State Statistical Office. The Release Calendar is prepared annually before the beginning of each year.	
8.2	Release calendar access
Release calendar https://www.stat.mk/mk/%D0%BA%D0%B0%D0%BB%D0%B5%D0%BD%D0%B4%D0%B0%D1%80-%D0%BD%D0%B0-%D0%BE%D0%B1%D1%98%D0%B0%D0%B2%D1%83%D0%B2%D0%B0%D1%9A%D0%B0/#	
8.3	User access
In accordance with the <u>Dissemination Policy</u> , all users have equal access to statistical data at the same time. Data are released on the web site at the same time for all users, which are informed with the <u>Release Calendar</u> , and no user has privileged access.	
9	Frequency of dissemination
Biannual.	
10	Accessibility and clarity
10.1	News release
Press Release: Innovative Business Entities The announcement is published biennial and is published on the SSO website. <u>Business entities by innovations in the period 2020 – 2022</u>	
10.2	Publications
Not applicable, statistical survey data is not published in a publication.	
10.3	On-line database

MAKStat-database is available at SSO web site.

[http://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/?rxid=46ee0f64-2992-4b45-a2d9_PxWeb - Select table -cb4e5f7ec5ef](http://makstat.stat.gov.mk/PXWeb/pxweb/en/MakStat/?rxid=46ee0f64-2992-4b45-a2d9_PxWeb_-_Select_table_-cb4e5f7ec5ef)

10.4 Micro-data access

The use of microdata by external users is possible only for research purposes and is done in accordance with the [Law on State Statistics](#) (Article 41, Article 42 and Article 43). [Access to anonymised microdata](#) is defined by an internal procedure of the State Statistical Office "Access to anonymised microdata for scientific research purposes"

10.5 Other

At the request of users, data are also prepared in a form according to their needs.

10.6 Documentation on methodology

The Methodological explanations are available on the State Statistical Office website:

http://www.stat.gov.mk/MetodoloskiObjasSoop_en.aspx?id=123&rbrObl=5

Methodology for innovation statistics, Eurostat/OECD:

<https://www.oecd-ilibrary.org/docserver/9789264013100-en.pdf?expires=1543584101&id=id&accname=guest&checksum=1C01EF923FC8A7CD9E3A22A010CF09D2>

10.7 Quality documentation

- Quality report 2024 SSO, on Eurostat

11 Quality management

11.1 Quality assurance

The quality of the processes and products in the State Statistical Office is ensured by adhering to the [European Statistics Code of Practice](#) and the Quality Assurance Framework within the European Statistical System ([ESS Quality Assurance Framework](#)). The quality criteria are also determined in the Law on State Statistics in Article 4b and Article 4c ([Law on State Statistics](#))

11.2 Quality assessment

The State Statistical Office carries out statistical activities in accordance with the Statistical Business Process Model, which is based on the international model - Generic Statistical Business Process Model (GSBPM). The application of this model and international standards in statistical production ensures a high level of accuracy and comparability of data.

12 Relevance

12.1 User needs

Data from the statistical survey on innovation and innovation activities are used by various institutions at the international and national level.

At the international level, the data is used by: OECD – development of innovation policy for small and medium-sized enterprises; UNESCO (Institute of Statistics) – for measurement of innovation and comparison between countries; European Commission (DG ENTR) – for ranking countries according to innovation and types of innovation.

At the national level, the data is used by governmental, non-governmental and scientific institutions: Ministry of Education and Science - for the preparation of a proposal Strategy for Smart Specialization; MANU – preparation of a study to measure the innovation of the business sector at the national level; Center for knowledge management - preparation of a study for profiling the innovation of Macedonian enterprises.

12.2 User satisfaction

Starting from 2009, the State Statistical Office conducts a User Satisfaction Survey every three years.

12.3 Completeness

All levels of aggregation for innovation statistics, according to EU science and technology regulations, are calculated and published at national level and transmitted to Eurostat.

Data completeness at the national level = 100%.

Data completeness for Eurostat = 100%.

13 Accuracy and reliability

13.1 Overall accuracy

The survey methodology and the data collection method ensure good coverage and accuracy of the data.

13.2 Sampling error

The coefficient of variation was calculated for the key survey variables. When calculating the coefficient of variation, the weighting of the data was taken into account. The non-respondent adjustments method was used to weight the data. The Taylor series linearization method was used to evaluate the coefficients of variation.

Coefficient of variation for the percentage of innovative enterprises in the total population of enterprises is 5.8%.

13.3 Non-sampling error

Errors in data processing: Data entry is done through prepared application with manual data entry device. During the process of data entry were applied automatically controls, also an additional control was performed after the finalization of data entry. If some irregularities were noted, then the reporting units were contacted and for some items was made data imputation using the method of expert imputation.

14 Timeliness and punctuality

14.1	Timeliness
T+540	
14.2	Punctuality
The data are published on the day announced in the Advance Release Calendar.	
15	Coherence and comparability
15.1	Comparability - geographical
There is geographical comparability of the released data at national level. With respect to geographical comparability with other EU countries, it is also ensured because data are collected in line with EU regulations.	
15.2	Comparability - over time
Time series since 2010 - 2012 there is no gap in time series. The number of reference periods in the time series is 6.	
15.3	Coherence - cross domain
Not applicable, the statistical survey has no connection with other statistical surveys.	
15.4	Coherence - internal
Internal coherence of data is ensured, the data is controlled and analyzed in the production process.	
16	Cost and burden
Not calculated.	
17	Data revision
17.1	Data revision - policy
Data revision is made in accordance with the Statistical Data Revision Policy of the SSO: (https://www.stat.mk/en/about-us/policies-and-strategies/data-revision/).	
17.2	Data revision - practice
Not applicable.	
18	Statistical processing
18.1	Source data
Data source: Statistical research on innovation and innovation activities of business entities.	
18.2	Frequency of data collection
Biennial.	
18.3	Data collection
Data on innovation are collected using the statistical form: Innovations and innovation activities of business entities (INOV).	

Starting with the reference period 2018-2020, the data were collected using printed forms, i.e. the printed form was sent to the enterprises included in the sample by mail, no later than five months after the end of the reference period for which the data were collected. Enterprises were also notified of the implementation of the survey and their legal obligations and the timeframe for completing the form by e-mail notification.

Starting with the reference period 2020-2022, the data are collected using the electronic data collection platform ESTAT.

18.4 Data validation

Data validation is done through the entire process,, from the collection phase to the preparation phase of aggregated data. Data verification is also carried out before their publication.

Validation of the data in the form: Upon receipt of data through ESTAT, it is recorded, verified, and controlled. In case of errors or illogicalities, data providers are contacted. The coverage is controlled, which should exceed 70%, otherwise it is necessary to conduct a survey for reporting units that did not respond, in order to obtain an answer to the key variables of the survey and the reasons for non-response.

Validation of output data: Output data are analyzed and verified at the level of NACE department and sector. The data are compared with the data from the previous reference period. In relation to identified extreme values, the output data are analyzed and verified at the micro level (enterprise).

18.5 Data compilation

Data entry: The reporting units enter the data through the electronic data collection system ESTAT. The data received from the business entities are checked and possibly corrected in consultation with the reporting units.

Imputation: Expert imputation is performed.

Weighting: Aggregated data are obtained by weighting the data from the sample. The lowest level of aggregation is at the NTES 2 level. Data weighting is done using the Non-respondent adjustments method. Key variables used for weighting the data are: the number of employees and strata according to the NKD Rev.2.

18.6 Adjustment

Not applicable, time series adjustment and seasonal adjustment of data are not performed.

19 Comment

No comment.

A.1 Annexes