



MINISTRY OF INDUSTRY AND TRADE
OF THE CZECH REPUBLIC



Czech
Republic
**The Country
For The Future**

National Research and Innovation Strategy for Smart Specialisation of the Czech Republic 2021–2027

Annex 3 Monitoring indicators and financing

**Version 4
(December 2022)**

Table of Contents

Background.....	4
1. The concept of RIS3 strategy monitoring in the Czech Republic	5
2. RIS3 Vision	7
3. RIS3 Strategic Objectives	9
A – Increasing the innovation performance of companies	9
B – Improving the quality of public research	10
C – Increasing the availability of skilled people for R&D&I	11
D – Increasing the use of new technologies and digitalisation	12
4. Monitoring of the specific objectives of the RIS3	13
A01 – Strengthening the innovation performance of existing companies and responding to industrial transition, technological and societal changes	14
A02 – The establishment and growth of new companies and exploitation of new opportunities... ..	14
A03 – Improving the functioning of innovation ecosystems at the national and regional levels.....	14
B01 – Improving the quality and societal relevance of public research	15
B02 – Improving the quality of the environment for implementing public research	15
C01 – Improving the education system’s ability to prepare people for research, development and innovation.....	16
C02 – Developing skills for smart specialisation, industrial transition and entrepreneurship	17
C03 – Increasing the potential and motivation of researchers in research organisations	17
D01 – Promoting digitalisation and the use of new technologies in business.....	18
D02 – Promoting digitalisation and the use of new technologies in the public sector.....	18
5. Financing of the RIS3 Strategy in support programmes.....	20

List of Figures

Figure 1 - The principle of RIS3 monitoring.....	6
--------------------------------------------------	---

List of Tables

Table 1 - Context indicators V	7
Table 2 - Context indicators A	10
Table 3 - Context indicators B	11
Table 4 - Context indicators C	11
Table 5 - Context indicators D	12
Table 6 - Project indicators A01–A03	15
Table 7 - Project indicators B01–B02	16
Table 8 - Project indicators C01–C03	18
Table 9 - Project indicators D01–D02	19
Table 10 – Indicative allocations of financial resources in operational programmes.....	20
Table 11 - Indicative allocations of financial resources in TA CR programmes.....	22
Table 12 – Indicative allocations of financial resources in departmental programmes	23

Background

The document entitled National RIS3 Strategy for 2021-2027 was approved by the Government of the Czech Republic on 25 January 2021. The dynamic developments in the innovation environment and the newly emerging trends and opportunities are reflected in the National RIS3 Strategy through continuous updates to the Annexes to the main document.

An update to this Annex (Version 4) was discussed and approved by the RIS3 Management Committee on 14 December 2022 and approved through a Regulation of the Minister of Industry and Trade 23 December 2022

Annex 3 of the National RIS3 Strategy 2021–2027 is related to Chapter 5.4 Monitoring and evaluation of the National RIS3 Strategy and Chapter 5.5 Financing of RIS3 strategies.

The first section of the annex contains a brief description of the concept of monitoring the RIS3 Strategy in the Czech Republic. It is followed by a description of the monitoring of the long-term vision, strategic and specific objectives of the RIS3 Strategy. The texts also include additional links to data sets of context indicators and project result and output indicators. The indicators are broken down according to the various strategic and specific objectives of the National RIS3 Strategy. Context indicators and result and output indicators together make up the indicator system of the National RIS3 Strategy.

The second part of Annex 3 identifies the link between the strategic objectives of the National RIS3 Strategy and the specific objectives of the support programmes and contains an indicative allocation of financial resources of operational programmes and national support programmes to the strategic objectives of the National RIS3 Strategy.

The data presented in the tables of this annex are indicative and may be subject to changes resulting from the implementation of the support programmes and the implementation and realisation of the RIS3 Strategy itself. Annex 3 will therefore be updated regularly. The updates will be discussed by the RIS3 Management Committee and subsequently approved through a Regulation of the Minister of Industry and Trade.

The **DATASET 3.1 and DATASET 3.1 b indicator sets**, which are an integral part of this Annex, are used to monitor the objectives of the RIS3 Strategy.

1. The concept of RIS3 strategy monitoring in the Czech Republic

Three main purposes of the monitoring system of the RIS3 strategy can be identified:

- *monitoring current transition processes and keeping responsible authorities updated on the processes in an adequate manner;*
- *building and strengthening trust and cooperation between the parties involved in the transition process;*
- *helping to ensure accountability in policy-making.*

The monitoring system serves these purposes through three key roles:

- *collecting information and making it available to decision-makers;*
- *clarifying the purpose and operation of the strategy and making it understandable to the general public;*
- *supporting constructive stakeholder engagement through transparent communication.*

Monitoring of the National RIS3 Strategy complies with the Commission's requirements on the set-up of the RIS3 monitoring system. The bottom-up set-up of monitoring (projects in the ESIF programmes, departmental programmes and TA CR national programmes) meets the basic requirement on the reliability, feasibility and cost-effectiveness of the system in question. It focuses in particular on the use of funds for the interventions implemented, broken down by the strategy's horizontal and vertical objectives, and on the fulfilment of the indicators of the strategy broken down by its strategic and specific objectives.

To meet the national level requirements, each regional authority must fill out their own regional cards recording R&D&I activities – **P2 Regional Cards**¹. The complete monitoring of the regional RIS3 strategies is the responsibility of individual regions. Regional authorities receive methodological support at the national level, and in case of some context indicators, the NUTS 3 level is also included. In cooperation with CZECHINVEST, data are acquired from the mapping of regional innovation ecosystems.²

Context indicators (DATASET 3.1 a) are used for monitoring the **substantive impacts** of the vision and strategic objectives of the RIS3 Strategy. Project indicators (DATASET 3.1 b) are used for monitoring the **results and outputs** of the RIS3 Strategy.

Monitoring of the RIS3 Strategy was set up in a way that, in addition to the above substantive indicators, monitoring includes PROJECT SETS for operational and national support schemes that allow for the identification of the **sources and scale of financial support** in all individual projects with links to the RIS3 Strategy for the following entities:

- *specific objectives of the RIS3 Strategy;*
- *RIS3 Strategy specialisation domains;*
- *R&D&I strategic topics;*
- *key enabling technologies (KETs);*
- *R&D&I topics in social sciences and humanities;*
- *regional domains of specialisation in support schemes designed to give support to disadvantaged and deprived regions in the Czech Republic.*

The annual progress of the RIS3 Strategy is monitored and the outputs/results of the implementation of the RIS3 Strategy are published in **RIS3 Execution and Implementation Reports**³. The concept of RIS3 Strategy monitoring in the Czech Republic (see Figure 1).

¹ P2 regional cards: https://www.mpo.cz/assets/cz/podnikani/ris3-strategie/2021/10/P2_Krajske-karty.pdf

² Passporting of the business environment: <https://www.czechinvest.org/cz/Sluzby-pro-municipality/Pasport-podnikatelskeho-prostredi>

³ Report on the implementation of the National RIS3 Strategy: https://www.mpo.cz/assets/cz/podnikani/ris3-strategie/dokumenty/2021/10/ZoR_2020_fin.pdf

Figure 1 - The principle of RIS3 monitoring

MONITORING NATIONAL RIS3

STRUCTURE	ENTITY R&DAI	TOOLS	SOURCES
RIS3 Vision	<ul style="list-style-type: none"> • knowledge potential • technological potential • Infrastructure 	<p>DATASET3.1a- VIZE</p> <ul style="list-style-type: none"> • 10 selected contextual indicators (composite, composite) 	<ul style="list-style-type: none"> • CSO • EURST • EC, WEF
Strategic objectives	<ul style="list-style-type: none"> • R&D&I - enterprises • R&D - research organisations • human resources • High technology - digitalisation 	<p>DATASET3.1a- STRATEGIC OBJECTIVES</p> <ul style="list-style-type: none"> • 43 selected contextual indicators (composite, composite) <p>PROJECT FACILITIES - financial resources; programmes</p>	<ul style="list-style-type: none"> • CZSO, EC • EUROSTAT • MS2021+ • IS R&Dal
Specific objectives	<ul style="list-style-type: none"> • Enterprises: R&D&I, new companies; infrastructure • EQ: R&D quality; infrastructure • People: education; skills; motivation • Digitisation: business; public sphere 	<p>DATASET3.1b- SPECIFIC OBJECTIVES</p> <p>PROJECT KITS</p> <ul style="list-style-type: none"> • financial resources; programmes • Substantive (project) indicators (outputs, results) 	<ul style="list-style-type: none"> • MS2021+ • IS R&Dal
Research specialisation	<ul style="list-style-type: none"> • domains of specialisation (sectors; industries) • technologies • research topics 	<p>PROJECT KITS</p> <ul style="list-style-type: none"> • financial resources; programmes; • Recipients 	<ul style="list-style-type: none"> • MS2021+ • IS R&Dal
Regional dimension	<ul style="list-style-type: none"> • KRIS3 objectives • regional domains of specialization • research topics • funding 	<ul style="list-style-type: none"> • structured text information about KRIS3 - MAP • structured FINANCIAL TABLE • selected indicators from the DATA SET • aggregated INKA data (TA CR); map layers (CI) • selected data from the PROJECT SETS 	<ul style="list-style-type: none"> • KRIS3 • MS2021+ • IS R&Dal • CZSO, EURST

2. RIS3 Vision

The long-term vision of the National RIS3 Strategy places emphasis on the knowledge economy sector and on transforming the economy in a way to increase innovation-based competitiveness, on the use of the Czech Republic's knowledge and technological potential and the use of the good-quality infrastructure for research and development.

The objective of RIS3 is, among other things, to support the generation of high added value in promising fields by using advanced technologies to promote industrial/digital transitions. Supporting the growth of endogenous Czech companies with internationally competitive products and the development of innovative start-ups. Equally important is the area focusing on giving support to businesses' ability to adapt to new societal challenges and exploit opportunities that arise from international cooperation in managing risks and preventing their negative impacts on society.

Monitoring of the Vision

The tool that makes it possible to monitor the long-term development of competitiveness based on innovation and on the use of the Czech Republic's knowledge and technological potential is the continuous long-term monitoring of oriented and applied research in the Czech Republic using context indicators V – DATASET 3.1 a.

Table 1 - Context indicators V

Context indicators – V			
ID	Indicator title	Time series	Data source
V01	The Global Competitiveness Index 4.0	2017-2019	WEF
V02	Gross value added by sector	2016-2019	ČSÚ
V03	Labour productivity by sector (GVA/employee)	2016-2019	ČSÚ
V04	Exports of high-tech goods	1993-2019	ČSÚ
V05	Total imports of high-tech goods to the Czech Republic	1993-2019	ČSÚ
V06	The Global Innovation Index (GII)	2018-2020	GII
V07	The Digital Economy and Society Index (DESI)	2017-2018	EK
V08	The European innovation scoreboard (EIS)	2012-2019	EK
V09	Research and development expenditure in the Czech Republic (GERD)	2005-2019	ČSÚ
V10	Total R&D expenditure (GERD) – share of GDP (R&D intensity)	2005-2018	ČSÚ

RIS3 Policy Objectives

The objective of the long-term monitoring of the RIS3 Strategy vision is to detect trends in key areas that are indirectly affected by the implementation of RIS3. The indicators in place have been chosen so that they represent and describe the development of trends affecting the Czech Republic's competitiveness based on innovation and on the use of the Czech Republic's knowledge and technological potential.

Analyses of individual indicators are reflected in regular annual RIS3 Execution and Implementation Reports, approved by the RIS3 Steering Committee and published on the MIT website, and they will also be available on the RIS3 portal that is being prepared. The report's outputs are also reflected in a document entitled **Analysis of Research and Development in the Czech Republic**⁴, which analyses the state of R&D&I in the Czech Republic and which is prepared on an annual basis by the Office of the Government of the Czech Republic.

The above documents allow members of the RIS Steering Committee (representatives of national and regional RIS teams, representatives of the managing authorities for operational and national programmes, representatives of the entrepreneurial and research environment, representatives of the Government Council for R&D&I) to monitor trends in the development of crucial indicators and

⁴ Analysis of research and development in the Czech Republic: <https://www.vyzkum.cz/FrontClanek.aspx?idsekce=677142>

respond to the development of applied and oriented research in the Czech Republic.

As described above, context indicators are used to map long-term trends (long-term time series). Since these are not sub-indicators relating to specific dates, no target values are set at the RIS3 level.

3. RIS3 Strategic Objectives

The economy's development towards greater innovation and added value is hampered, among other things, by a lack of a stable, predictable and motivating entrepreneurial environment, a well-functioning public research and development system that produces good-quality results and may contribute significantly to the development of an economy that is based on knowledge, added value and responsiveness to current technological trends, the lack of skilled people in research, development and innovation, and an insufficient emphasis on the use of new technologies and digitalisation.

Despite the significant potential of some domestic research organisations and infrastructures, there are still gaps in the use of public research results for the needs of companies and society, gaps in the possible wide application of digital technologies and the use of new technologies by companies and the public sector.

Within the National RIS3 Strategy, the following priority areas have been proposed for support:

- A. Increasing the innovation performance of companies*
- B. Improving the quality of public research*
- C. Increasing the availability of skilled people for R&D&I*
- D. Increasing the use of new technologies and digitalisation*

RIS3 strategic objectives for the 2021–2027 period are **medium- to long-term**, were formulated based on the R&D&I analyses conducted in the Czech Republic⁵ and follow up the implementation of RIS3 in the preceding period.

RIS3 Policy Objectives

The purpose of monitoring RIS3 strategic objectives is to determine whether the **expected impacts of RIS3** are being achieved in given objectives. The indicators in place have been chosen in a way that they reflect the impacts expected. An analysis of selected indicators will then make it possible to evaluate and, if necessary, redefine the set-up of strategic objectives.

The outputs of analyses are also reflected in regular annual RIS3 Execution and Implementation Reports and in the Analysis of Research and Development in the Czech Republic. Responsible entities (including both the professional community and the general public) can thus monitor the long-term development of the process of achieving the expected impacts of the RIS3 strategy.

Similarly, as is the case of fulfilling the RIS3 vision, context indicators are used to map the development of the fulfilment of the RIS3 strategic objectives (RIS3 impacts), and therefore are not sub-indicators relating to specific dates, and therefore, no target values are set at the RIS3 level.

A – Increasing the innovation performance of companies

The intention of strategic **objective A** is to increase the added value and labour productivity of enterprises, to refocus them on innovation of a higher-order, to improve their position within multinational concerns and global supply chains, and to encourage the use of new opportunities and the resulting creation and development of new businesses. At the same time, the endogenous business sector should be strengthened. A basic prerequisite for improving the innovation performance of companies is to improve the functioning of innovation ecosystems (at the national and regional levels) and to improve the entrepreneurial environment in general. Similarly, it is necessary to respond to industrial transitions and current technological and societal trends.

Expected Impacts of RIS3

- *an increase in companies' value added*
- *an increase in labour productivity*
- *higher-order innovation of companies*
- *improved position of companies within multinational concerns and global supply chains*

⁵ Input analysis: <https://www.ris3.cz/analyzy/vstupni-analyzy>

- *an increase in the level of new business activity*
- *the establishment and development of new high-tech companies*

Monitoring of Impacts

The tool that makes it possible to monitor the development of the economy towards greater innovation, added value and the promotion of a stable, predictable and motivating entrepreneurial environment is the continuous long-term monitoring and evaluation of oriented and applied research in the Czech Republic using context **indicators A – DATASET 3.1 a.**

Table 2 - Context indicators A

Context indicators A			
ID	Indicator title	Time series	Data source
A01	R&D expenditures financed from business sources	2005-2019	ČSÚ
A02	Early-stage venture capital investment (% of GDP)	no	OG CR
A03	High tech sector – value added per employee	2005-2018	ČSÚ
A04	Basic indicators of innovation activities of businesses with 10 or more employees in the Czech Republic in the periods under review – innovating enterprises	2008-2018	ČSÚ
A05	Change in the number of newly supported businesses (first-time beneficiaries) compared to the previous period	no	NP R&D&I
A06	Patent applications filed in the Czech Republic	1995-2019	ČSÚ
A07	The Czech Republic's licensing income from granted rights to use patent-protected inventions	2008-2019	ČSÚ
A08	Innovation-friendly environment (EIS)	2012-2019	EK
A09	Firm investments (EIS)	2012-2019	EK
A10	Innovators (EIS)	2012-2019	EK
A11	Intellectual assets (EIS)	2012-2019	EK
A12	Sales impacts (EIS)	2012-2019	EK

B – Improving the quality of public research

Specifically, strategic **objective B** should primarily lead to an increase in the number of publications in prestigious journals, which will then be frequently cited, and to increased involvement in international projects. Improved cooperation between the research and business sectors should lead to an increase in the share of business spending on public research, increased revenues from the commercialisation of results and also to a greater (and more effective) use of intellectual property tools. In terms of the quality of the research environment, administrative complexity should be reduced, legislation should be amended and the whole system of public research and development management, including the management system for the implementation of the National RIS3 Strategy itself, should be improved. At the level of research organisations, the quality of their management should improve, with emphasis placed on improving people management and developing tools to support researchers.

Expected Impacts of RIS3

- *an increase in the number of publications in prestigious journals, which will then be frequently cited*
- *higher share of corporate expenditure on public research*
- *an increase in income from the commercialisation of results*
- *support for Open Science*
- *an improvement in the quality of research organisation management*

Monitoring of Impacts

Within the National RIS3 Strategy, the functioning of support for the public oriented and applied research system in the Czech Republic will be continuously monitored using context **indicators B – DATASET 3.1 a.**

Table 3 - Context indicators B

Context indicators B			
ID	Indicator title	Time series	Data source
B01	R&D expenditures by the government and higher education sector	2009-2019	ČSÚ
B02	Expenditures on R&D carried out in the government and HEI sector financed from domestic business sources – % of GDP	2005-2017	ČSÚ
B03	Institutional state-budget expenditures on R&D&I	2014-2018	OG CR
B04	Share of scientific publications co-authored by domestic and foreign researchers	2018-2019	OG CR
B05	Share of highly cited publications (the share of publications in the top 10% of most cited publications in the total number)	2018-2019	OG CR
B06	Share of publications co-authored by the public and private sector in the total number of publications	2018-2019	OG CR
B07	Total number of ERC grants per thousand researchers in the government and HEI sectors	no	OG CR
B08	Number of participations in the Horizon 2020 programme per thousand researchers	no	OG CR
B09	Attractive research systems (EIS)	2012-2019	EK
B10	Finance and support (EIS)	2012-2019	EK
B11	Linkages (EIS)	2012-2019	EK

C – Increasing the availability of skilled people for R&D&I

Strategic **objective C** should lead to the modernisation of the education system for initial training, the development of the further education system, especially in terms of developing skills for smart specialisation, industrial transition and entrepreneurship, and to an increase in the professional potential of people in research organisations.

Expected Impacts of RIS3

- *modernisation of the education system for initial education with links to practice*
- *development of the further education system, especially in terms of the development of skills for smart specialisation, industrial transition and entrepreneurship*
- *an increase in the professional potential of people in research organisations*

Monitoring of Impacts

Within the implementation of the National RIS3 Strategy, the trends in the availability of skilled people for oriented and applied research, development and innovation will be tracked through continuous long-term monitoring using context **indicators C – DATASET 3.1 a**.

Table 4 - Context indicators C

Context indicators C			
ID	Indicator title	Time series	Data source
C01	HEI graduates by field of education according to the ISCED-F classification with a focus on natural science, technology and ICT fields	2018-2019	ČSÚ
C02	R&D employees (3-year annual averages)	2014-2019	ČSÚ
C03	Total ICT professionals	2015-2018	ČSÚ
C04	Specialists in science and technology	2012-2018	ČSÚ
C05	Foreign PhD students as a percentage of all PhD students	2001-2020	ČSÚ
C06	Employment in knowledge-intensive activities	2008-2017	EUROSTAT
C07	Researchers – Business enterprise sector	2010-2019	EUROSTAT
C08	Share of foreign researchers in the total number of researchers in the government and HEI sectors	no	OG CR
C09	Number of employees newly trained in digital skills	no	NP R&D&I
C10	Number of employees working in AI technologies in companies	no	NP R&D&I
C11	Human resources (EIS)	2012-2019	EK
C12	Employment impacts (EIS)	2012-2019	EK

D – Increasing the use of new technologies and digitalisation

Strategic **objective D** should lead companies to invest in technology, robotisation and automation, and to implement Industry 4.0 principles. It should also lead to the development of systematic support for SMEs in this area, including the necessary infrastructure and services, support for the building and development of Digital Innovation Hubs and investments complementary to the EU's Digital Europe programme. In the area of public administration, it is expected that eGovernment will be developed and the digitalisation of public administration will be increased and, in turn, the use of electronic services by citizens, companies and authorities themselves will increase.

Expected Impacts of RIS3

- *an increase in investments in technology, robotisation and automation and the introduction of Industry 4.0 principles*
- *development of systematic support for SMEs in the area digitalisation, including infrastructure and services*
- *support for the establishment and development of Digital Innovation Hubs*
- *development of eGovernment and an increase in the digitalisation of public administration*
- *an increase in the use of electronic services by citizens, companies and state authorities*

Monitoring of Impacts

Within the National RIS3 Strategy, the continuous and long-term monitoring of the application of digital technologies and the use of advanced information and communication technologies by both companies and the public sector in the Czech Republic is carried out using context **indicators D – DATASET 3.1 a.**

Table 5 - Context indicators D

Context indicators D			
ID	Indicator title	Time series	Data source
D01	Active fixed internet connections	2018-2020	ČSÚ
D02	Companies with a maximum internet connection speed of 30/100 Mbps or higher	no	ČSÚ
D03	Number of projects with digitalisation and artificial intelligence elements under national programmes	no	NP R&D&I
D04	Number of projects with digitalisation and artificial intelligence elements co-implemented by Czech business entities under international programmes	no	NP R&D&I
D05	Increasing the total value of services provided by DIHs to domestic customers	no	NP R&D&I
D06a	Businesses in the manufacturing industry in the Czech Republic that use industrial robots	2018, 2020	ČSÚ
D06b	Businesses in the Czech Republic that use 3D printing	2017, 2019	ČSÚ
D06c	Businesses in the Czech Republic that use paid cloud computing	2014-2020	ČSÚ
D06d	Businesses in the Czech Republic that analyse Big Data	no	ČSÚ
D07	Number of companies using AI technologies	no	NP R&D&I
D08	Number of projects transferring the results of cutting-edge AI research into industrial practice (source: NP R&D&I)	no	NP R&D&I
D09	Internet security – providing personal data for advertising purposes in the Czech Republic	no	ČSÚ

4. Monitoring of the specific objectives of the RIS3

Relevant instruments and model activities intended to fulfil particular objectives are defined at the level of **specific objectives**. The list of model activities is not exhaustive and it is expected to be further expanded and modified during the implementation of the RIS3 Strategy and in relation to the EDP. RIS3 activities are implemented through operational and national support schemes.

Within the National RIS3 Strategy, the following priority areas have been proposed for support as part of the specific objectives:

- *A01 – Strengthening the innovation performance of existing companies and responding to industrial transitions, technological and societal changes*
- *A02 – The establishment and growth of new companies and exploitation of new opportunities*
- *A03 – Improving the functioning of innovation ecosystems at the national and regional levels*
- *B01 – Improving the quality and societal relevance of public research*
- *B02 – Improving the quality of the environment for implementing public research*
- *C01 – Improving the education system’s ability to prepare people for research, development and innovation*
- *C02 – Developing skills for smart specialisation, industrial transition and entrepreneurship*
- *C03 – Increasing the potential and motivation of researchers in research organisations*
- *D01 – Promoting digitalisation and the use of new technologies in business*
- *D02 – Promoting digitalisation and the use of new technologies in the public sector*

RIS3 specific objectives for the 2021–2027 period are **medium- to short-term** and have been formulated based on the R&D&I analyses conducted in the Czech Republic⁶. Again, they follow up on the implementation of RIS3 in the preceding period.

The structure of specific objectives is linked to a set of **project indicators (DATASET 3.1 b)** that measure shifts in the individual specific objectives.

RIS3 Policy Objectives

The purpose of monitoring RIS3 specific objectives is to determine whether the **expected outputs and results of RIS3** are being achieved in given objectives. Long and complex meetings with representatives of the support schemes’ managing authorities preceded the setting of project indicators and their target values. The indicators were set up so that they reflect the expected realistic outputs and results of RIS3. A continuous analysis of selected indicators will make it possible to evaluate and, if necessary, **amend the set-up of the RIS3 specific objectives**.

Responsible entities involved in the implementation of the RIS3 strategy in the Czech Republic (including both the professional community and the general public) can thus monitor the development of the process of achieving the expected outputs and results of the RIS3 strategy.

Substantive indicators of national support schemes with links to the RIS3 Strategy also include **planned applied results**⁷ registered in the information system operated by the Office of the Government of the Czech Republic⁸. A total of 1,719 results that can be applied in industrial practice have been scheduled for 2021–2027 period.

The outputs of analyses are also reflected in regular annual RIS3 Execution and Implementation Reports and in the Analysis of Research and Development in the Czech Republic.

⁶ The project entitled “Comprehensive analysis of the background and proposal for implementation of revised measures of the National RIS3 Strategy 2021-2027”: <https://www.mpo.cz/cz/podnikani/ris3-strategie/projekty-na-podporu-ris3/operacni-program-technicka-pomoc/projekt-komplexni-analyza-vychodisek-a-navrh-implementace-revidovanych-opatreni-narodni-ris3-strategie-2021--248427/>

⁷ Applied results mean the following results: P – patent; G – prototype, functional sample; Z – pilot operation, proven technology; R – software;

F – industrial and utility model.

⁸ RESEARCH AND DEVELOPMENT AND THE INNOVATION SYSTEM: <https://www.isvavai.cz/>

A01 – Strengthening the innovation performance of existing companies and responding to industrial transition, technological and societal changes

Objective A01 focuses on supporting the improvement of companies' innovation performance and increasing their investment in research, development and innovation activities. Support should be given primarily to small- and medium-sized enterprises (SMEs). Investments in new technologies will be supported as part of the necessary response to the ongoing industrial transitions (in particular digitalisation, automation and robotisation). At the same time, SMEs will be supported in their efforts to penetrate foreign markets and strengthen international cooperation.

Expected outputs and results of RIS3

- *improvement in the technological equipment of SMEs*
- *an increase in the number of innovating SMEs (product and process innovation; marketing and organisational innovations)*
- *an increase in the number of patent, trademark and design applications*

A02 – The establishment and growth of new companies and exploitation of new opportunities

Objective A02 focuses on ensuring appropriate conditions for the establishment and development of technology companies that respond to new opportunities related to current technological and societal trends. The objective will support the development of a well-functioning environment for the establishment and growth of new companies, start-ups and spin-offs.

Expected outputs and results of RIS3

- *developing a nationwide system to support an environment for the establishment and growth of new companies*
- *an increase in the number of businesses receiving financial support other than grants*
- *an increase in the number of SME participations in exhibitions and trade fairs abroad*
- *an increase in the number of SME participations in collaboration with a designer*

A03 – Improving the functioning of innovation ecosystems at the national and regional levels

Objective A03 – the successful development of small- and medium-sized enterprises requires the development of support services, including specific advice in the form of coaching and mentoring, and includes support for the necessary infrastructure and services to enable the testing of research and development results and others. It is also necessary to develop cooperation both between enterprises and between the business and research (academic) sectors and to promote the transfer of technology and research and development results into practice.

Expected outputs and results of RIS3

- *an increase in private investments corresponding to public support for businesses*
- *an increase in the number of businesses cooperating with research institutions*
- *an increase in the number of projects addressing societal challenges*
- *an increase in the number of new, expanded or modernised research organisational units in businesses*
- *an increase in the number of new joint projects created within a cluster, technology platform or cooperative innovation network*
- *an increase in the number of implemented technology and knowledge transfers into practice*

Monitoring of Outputs and Results

Within the National RIS3 Strategy, support for the innovation performance of companies, the establishment and growth of new companies and the functioning of research innovation ecosystems will be continuously monitored using indicators – **DATASET 3.1 b** (project indicators A01–A03).

Table 6 - Project indicators A01–A03

Project indicators A01–A03				
ID	Indicator title	Target value 2029	Unit	Data source
A01MSP01	Small- and medium-sized enterprises introducing product or process innovation	274	MSP	OP TAC
A0101	Patent applications submitted	96	Patent applications	OP TAC
A0102	Trademarks and industrial designs	246	Trademark and design applications	OP TAC
A0103	The number of new, expanded and modernised research organisational units in businesses	200	Workplaces	OP TAC
A0104	The number of implemented innovations	820	Innovation	OP TAC
A01MSP03	Share of SMEs in supported projects	30	%	TA CR
A01MSP04	Share of SME first-time applicants	46	%	TA CR
A0201	New enterprises supported	55	Enterprises	OP TAC
A0202	Enterprises receiving non-financial support	1 083	Enterprises	OP TAC
A0203	Enterprises supported from grants	907	Enterprises	OP TAC
A0301	Enterprises supported from grants	3 635	Enterprises	OP TAC
A0302	Private investments of a size comparable to support from public sources (of which are: grants, financial instruments)	980 486 288	EUR	OP TAC
A0303	Enterprises cooperating with research organisations	5 379	Enterprises	OP TAC
A0305	Share of projects in cooperation between ROs and businesses	70	%	TA CR
A03MSP01	Share of projects in cooperation between SMEs and LEs	10	%	TA CR

B01 – Improving the quality and societal relevance of public research

The instruments used to achieve objective **B01** include namely support for increasing the degree of internationalisation of Czech research (e.g. both in terms of a wider involvement in international programmes and projects and in terms of increasing the number of foreign researchers in this country), as well as the support and development of cooperation between the research sphere and the application sphere (with emphasis placed on the development of long-term cooperation), and technology transfer.

In past programming periods, substantial investments were made in building and developing research organisations, but given the rapid developments in technology, equipment needs to be continuously added, upgraded and adapted to emerging trends.

Expected outputs and results of RIS3

- *greater involvement in international programmes and projects*
- *an increase in the number of foreign researchers in the Czech Republic*
- *improvement in cooperation between the research and business sectors*
- *strengthened research and innovation capacities*
- *the introduction of advanced technologies*

B02 – Improving the quality of the environment for implementing public research

Objective **B02** focuses on ensuring appropriate conditions for the development of public research and improving its quality. Within this objective, attention will be paid on improving the quality of the environment in actual research organisations. As part of creating a well-functioning management system for the National RIS3 Strategy, support will be provided for the EDP process at the national and

regional level and other activities that support the development of the innovation ecosystem (e.g. analytical and evaluation activities, technology foresight, etc.). Within research organisations, support will be provided for a wide range of activities aimed, for instance, at improving the management quality and developing the institutional environment of higher education institutions and research organisations (supporting, for example, knowledge transfer and cooperation with businesses, establishing spin-offs, developing a culture of working with intellectual property, etc.), supporting the internationalisation of the environment (e.g. in the form of a welcome office for foreign researchers).

Expected outputs and results of RIS3

- *support for the EDP at the national and regional levels*
- *improvement in management quality and development of the institutional environment of HEIs and research organisations*
(focus: knowledge transfer and cooperation with businesses, establishing spin-offs, developing a culture of working with intellectual property, etc.)
- *support for internationalisation of the environment (e.g. in the form of a welcome office for foreign researchers)*

Monitoring of Outputs and Results

Within the National RIS3 Strategy, support for improving the quality and societal relevance of public research and the quality of the environment for implementing public research will be continuously monitored using indicators **DATASET 3.1 b** (project indicators B01–B02).

Table 7 - Project indicators B01–B02

Project indicators B01–B02				
ID	Indicator title	Target value 2029	Unit	Data source
B0101	Share of commercialised results	50	%	TA CR
B0102	Support for long-term cooperation projects	1 400	CZK million	TA CR
B0103	Publications from supported projects	8 700	Publications	OP JAC
B0104	Nominal value of research and innovation facilities ⁹	598 823 529	EUR	OP JAC
B0201	The number of supported research organisations	70	Organisations	OP JAC
B0202	The number of newly created strategic R&D&I management products	318	Products	OP JAC
B0203	Share of institutional stakeholders involved within the Entrepreneurial Discovery Process (EDP)	510	Participation of institutional stakeholders	OP JAC

C01 – Improving the education system’s ability to prepare people for research, development and innovation

Objective **C01** focuses mainly on supporting the modernisation (and digitalisation) of the initial education system with emphasis placed on developing the key competencies of pupils and students that are relevant to long-term success in the labour market and in independent entrepreneurship. The development of digital and business skills will be supported. Support will also be provided for linking schools and practice within the education system.

Expected outputs and results of RIS3

- *development of key competencies of pupils and students that are relevant to long-term success in the labour market and in independent entrepreneurship*
- *development of digital and business skills*
- *links between schools and practice within the education system*

⁹ It is not a project indicator, but a value based on reports from projects that is calculated by the MA OP JAC.

C02 – Developing skills for smart specialisation, industrial transition and entrepreneurship

Objective **C02** – support for vocational training for employees in the business and public sectors in the area of skills for the introduction of new technologies, digital and green industrial transitions and smart specialisation through re-skilling and up-skilling. Support will also be given to the development of all skills needed for entrepreneurship, including market competences and generally developing an entrepreneurial mind-set and thinking, and fostering entrepreneurial aspirations.

Expected outputs and results of RIS3

- *improvement in the skills of workers in the business sector in the areas of smart specialisation*
- *improvement in the skills needed for the introduction of new technologies, industrial transition and entrepreneurship*
- *an increase in the number of SMEs investing in skills for smart specialisation, industrial transition and entrepreneurship*
- *an increase in the number of SME employees who have completed further vocational education and training*

C03 – Increasing the potential and motivation of researchers in research organisations

Objective **C03** focuses on securing and retaining quality researchers, improving the institutional environment in research organisations and the working conditions of researchers. Support will be provided for researchers' participation in international collaboration and research projects, for increasing the number of foreign researchers in the Czech Republic, mobility (abroad, but also in the business/commercial sector).

Expected outputs and results of RIS3

- *an increase in the ability to attract and retain talent and skilled workers*
- *an increase in the share of foreign researchers in research*

Monitoring of Outputs and Results

Within the National RIS3 Strategy, support for an education system aimed at preparing people for research, development and innovation, developing skills for smart specialisation, industrial transition and entrepreneurship, and increasing the potential and motivation of researchers in research organisations will be continuously monitored using indicators – **DATASET 3.1 b** (project indicators C01–C03).

Table 8 - Project indicators C01–C03

Project indicators C01–C03				
ID	Indicator title	Target value 2029	Unit	Data source
C0101	The number of organisations affected by the RgŠ intervention	140	Organisations	OP JAC
C0102	The number of organisations affected by the HEI intervention	3	Organisations	OP JAC
C0103	The number of staff members affected by the RgŠ intervention	395	People	OP JAC
C0104	The number of staff members affected by the HEI intervention	258	People	OP JAC
C0201	ERDF resources used in the area of Developing skills for smart specialisation, industrial transition and entrepreneurship (intervention code 023) ¹⁰	no ¹⁰	EUR	OP TAC
C0301	Share of women in supported projects	35	%	TA CR
C0302	Number of women per project in supported projects	2	Number of women/project	TA CR
C0303	Jobs in research created in supported entities	750	Annual number of full-time jobs	OP TAC
C0304	Researchers working in supported research facilities	960	FTE	OP JAC

D01 – Promoting digitalisation and the use of new technologies in business

Objective **D01** is aimed at supporting the development of digitalisation, robotisation and automation, the ability to respond to new technological trends and the implementation of Industry 4.0 principles (the use of Digital Innovation Hubs (DIH)). Support will be provided for the establishment and development of endogenous companies that use digitalisation and new technologies (possibly also open data of public administration bodies or data of mobile operators) to create new products and services (e.g. blockchain, data analytics, robotics, automation, etc.).

Expected outputs and results of RIS3

- *an increase in the number of ICT-oriented companies and an increase in their share in the business sector*
- *an increase in the use of digital technologies in the business sector*

D02 – Promoting digitalisation and the use of new technologies in the public sector

Objective **D02** – support for the development of digitalisation of public administration and public space in order to increase both the range of eGovernment services offered by public institutions and citizens' demand for these services. Activities that generally increase the demand for innovative solutions and solutions based on digital technologies and artificial intelligence, such as the Smart Cities concept, open data, etc., will be supported.

Expected outputs and results of RIS3

- *a higher rate of Internet usage in relation to public administration by companies, citizens and other entities*
- *an increase in electronic communications and the use of electronic services between different authorities*

¹⁰ The value will be continuously monitored in cooperation with the Managing Authority of OP TAC. The target value cannot be set in advance; it depends on the number of projects implemented.

Table 9 - Project indicators D01–D02

Project indicators D01–D02				
ID	Indicator title	Target value 2029	Unit	Data source
D0101	Enterprises supported from grants	620	Enterprises	OP TAC
D0102	Private investments of a size comparable to support from public sources (of which are: grants, financial instruments)	374 118 000	EUR	OP TAC
D0103	Businesses demonstrating a high level of digitalisation	535	Enterprises	OP TAC
D0104	Value of digital services, products and processes developed for businesses	182 893 000	EUR	OP TAC
D0201	The number of homes with connections to very high capacity broadband networks	3 000	Homes	OP TAC
D0202	The number of businesses with connections to very high capacity broadband networks	50	Enterprises	OP TAC
D0203	The number of information systems acquired	445	Information systems	IROP 21+
D0204	New or modernised elements to ensure compliance with cybersecurity standards	6 245	Elements	IROP 21+
D0205	Users of new and improved public digital services and applications	368 766	Users/year	IROP 21+
D0206	Public institutions supported for the purposes of developing digital services, products and processes	198	Public institutions	IROP 21+

5. Financing of the RIS3 Strategy in support programmes

Following discussions with the managing authorities of the support programmes concerned, an indicative allocation of financial resources of operational programmes and national support programmes will be set aside for the strategic objectives of the National RIS3 Strategy. Through this procedure, it is possible to monitor and evaluate the support of the RIS3 Strategy (specific objectives; domains of specialisation; key technologies (KETs); R&D&I themes in the social sciences and humanities, etc.) from European and national (public and non-public) funds aimed at supporting the RIS3 Strategy.

Table 10 – Indicative allocations of financial resources in operational programmes

RIS3	OP TAC ¹¹		OP JAC ¹²		IROP 21		OP ST	
Strategic objective	Specific objective	Allocation (CZK billion)	Specific objective	Allocation (CZK billion)	Specific objective	Allocation (CZK billion)	Specific objective	Allocation (CZK billion)
A. Increasing the innovation performance of companies	SO 1.1 Developing and enhancing research and innovation capacities and the uptake of advanced technologies	20.74	SO 1.1 Developing and enhancing research and innovation capacities and deploying advanced technologies	1.70	no	no	Priority 1 The Karlovy Vary Region; SO 1.1: Specific objective of FST	1.69
	SO 2.1 Enhancing sustainable growth and competitiveness of SMEs	6.29	SO 1.2 Developing skills for smart specialisation, industrial transition and entrepreneurship	0.80			Priority 2 The Ústí nad Labem Region; SO 2.1: Specific objective of FST	4.26
							Priority 3: The Moravian-Silesian Region; SO 3.1: Specific objective of FST	3.78
B. Improving the quality of public research	no	no	SO 1.1 Developing and enhancing research and innovation capacities and deploying advanced technologies	28.52	no	no	Priority 1 The Karlovy Vary Region; SO 1.1: Specific objective of FST	1.34
			SO 1.2 Developing skills for smart specialisation, industrial transition and entrepreneurship	0.71			Priority 2 The Ústí nad Labem Region; SO 2.1: Specific objective of FST	1.88
							Priority 3: The Moravian-Silesian Region; SO 3.1: Specific objective of FST	5.51

¹¹ European funds earmarked to support the RIS3 Strategy in the OP TAC. The figures are indicative and may be subject to change throughout the programming period. Annex 3 will therefore be updated regularly. The updates will be discussed by the RIS3 Management Committee and subsequently approved through a Regulation of the Minister of Industry and Trade.

¹² European and national (both public and non-public) funds earmarked to support the RIS3 Strategy in the OP TAC. The figures are indicative and may be subject to change throughout the programming period. Annex 3 will therefore be updated regularly. The updates will be discussed by the RIS3 Management Committee and subsequently approved through a Regulation of the Minister of Industry and Trade.

RIS3	OP TAC ¹¹		OP JAC ¹²		IROP 21		OP ST	
Strategic objective	Specific objective	Allocation (CZK billion)	Specific objective	Allocation (CZK billion)	Specific objective	Allocation (CZK billion)	Specific objective	Allocation (CZK billion)
C. Increasing the availability of skilled people for R&D&I	SO 1.1 Developing and enhancing research and innovation capacities and the uptake of advanced technologies	0.47	SO 1.1 Developing and enhancing research and innovation capacities and deploying advanced technologies	6.82	no	no	Priority 1 The Karlovy Vary Region; SO 1.1: Specific objective of FST	0.93
	SO 1.2 Reaping the benefits of digitisation for citizens, companies, research organisations and public authorities		SO 1.2 Developing skills for smart specialisation, industrial transition and entrepreneurship	0.60			Priority 2 The Ústí nad Labem Region; SO 2.1: Specific objective of FST	1.83
	<i>Activities will be specified according to discussions with the Commission.¹³</i>		SO 2.2 Improving the quality, inclusiveness, effectiveness and labour market relevance of education and training systems including through validation of non-formal and informal learning, to support acquisition of key competencies including entrepreneurial and digital skills ³ , and by promoting the introduction of dual-training systems and apprenticeships ¹⁴	0.07			Priority 3: The Moravian-Silesian Region; SO 3.1: Specific objective of FST	1.22
D. Increasing the use of new technologies and digitalisation	SO 1.2 Reaping the benefits of digitisation for citizens, companies, research organisations and public authorities	6.17	no	no	SC 1.1: Harnessing the benefits of digitalisation for citizens, businesses and governments	12.42	Priority 1 The Karlovy Vary Region; SO 1.1: Specific objective of FST	0.09
	SO 3.1 Enhancing digital connectivity	4.81	no	no			Priority 2 The Ústí nad Labem Region; SO 2.1: Specific objective of FST	0.40
							Priority 3: The Moravian-Silesian Region; SO 3.1: Specific objective of FST	1.41
Total		38.48		39.22		12.42		24.34

Source: MIT

¹³ The activities of SO 2.1 OP TAC (cooperation between schools and companies) are not bound by the RIS3 basic condition for RIS3 strategic objective C. However, the selected interventions will partially contribute to accomplishing the objectives of the RIS3.

¹⁴ This is an SO under Priority 2 of the OP JAK, which is not bound by the RIS3 enabling condition. However, the selected interventions in the given SO will partially contribute to accomplishing the objectives of the RIS3. The indicative allocation for the given SO will be specified in the next update to Annex 3.

Table 11 - Indicative allocations of financial resources in TA CR programmes

Financial period: 2021-2027							
RIS3 Strategic objective	Programme	Start year	End year	State budget (CZK billion)	Extent of links to RIS3 ¹⁵ (%)	Programme amount earmarked for RIS3 (CZK billion)	Planned applied outputs ¹⁶ (min. number)
B. Improving the quality of public research	National Centres of Competence	2018	2022	6.06	70%	4.24	224
A. Increasing the innovation performance of companies	EPSILON	2015	2023	1.01	50%	0.51	560
A. Increasing the innovation performance of companies	DELTA 2	2020	2025	0.80		0.40	75
A. Increasing the innovation performance of companies	ETA	2018	2023	1.02		0.51	260
B. Improving the quality of public research							
A. Increasing the innovation performance of companies	THETA	2018	2025	2.98		1.49	220
B. Improving the quality of public research							
C. Increasing the availability of skilled people for R&D&I	ZETA	2017	2025	0.29		0.15	250
Total				12.16		7.30	1589

Source: MIT

¹⁵The extent of the links to RIS3 expresses an informed estimate of the proportion of financial support from departmental programmes that is earmarked for implementing the strategic objectives of the RIS3 strategy.

¹⁶ For the purposes of the National RIS3 Strategy, applied outputs mean the following results: P – patent; G – prototype, functional sample; Z – pilot operation, proven technology; R – software; F – industrial and utility model.

Table 12 – Indicative allocations of financial resources in departmental programmes

Financial period: 2021-2027							
RIS3 Strategic objective	Programme (MA)	Start year	End year	State budget (CZK billion)	Extent of links to RIS3 ¹⁷ (%)	Programme amount earmarked for RIS3 (CZK billion)	Planned applied outputs ¹⁸ (min. number)
A. Increasing the innovation performance of companies D. Increasing the use of new technologies and digitalisation	TREND (MIT)	2020	2027	9.19	100%	9.19	924
A. Increasing the innovation performance of companies D. Increasing the use of new technologies and digitalisation	The Country for the Future (MIT)	2020	2027	5.45		5.45	150
A. Increasing the innovation performance of companies B. Improving the quality of public research	Security Research Programme of the Czech Republic 2015–2022 (Ministry of the Interior of the Czech Republic)	2015	2022	0.30		0.30	65
A. Increasing the innovation performance of companies B. Improving the quality of public research	Programme to Support Medical Applied Research and Development in 2015–2022 (Ministry of Health of the Czech Republic)	2015	2022	1.40		1.40	100
B. Improving the quality of public research	Applied Research Programme of the Ministry of Agriculture for 2017-2025 AGRI (Ministry of Agriculture)	2017	2025	2.37		2.37	200
A. Increasing the innovation performance of companies D. Increasing the use of new technologies and digitalisation	Programme to support applied research, experimental development and innovation in the field of transport TRANSPORT 2020+ (Ministry of Transport)	2020	2026	1.95	85%	1.66	110 ¹⁹
A. Increasing the innovation performance of companies	Programme of applied research, experimental development and innovation in the field of the	2020	2026	3.58	100%	3.58	50 ²⁰

¹⁷The extent of the links to RIS3 expresses an informed estimate of the proportion of financial support from departmental programmes that is earmarked for implementing the strategic objectives of the RIS3 strategy.

¹⁸ For the purposes of the National RIS3 Strategy, applied outputs mean the following results: P – patent; G – prototype, functional sample; Z – pilot operation, proven technology; R – software; F – industrial and utility model.

¹⁹Results: P – patent; G – prototype, functional sample; Z – pilot operation, proven technology; R – software; F – industrial and utility model; S – specialised public database.

²⁰Results: P – patent; G – prototype, functional sample; Z – pilot operation, proven technology; R – software; F – industrial and utility model; S – specialised public database.

B. Improving the quality of public research	environment – Environment for Life (Ministry of the Environment)						
A. Increasing the innovation performance of companies B. Improving the quality of public research D. Increasing the use of new technologies and digitalisation	Security Research Programme of the Czech Republic 2021–2026: development, testing and evaluation of new security technologies (SECTECH) (Ministry of the Interior of the Czech Republic)	2021	2026	0.50	100%	0.50	20 ²¹
Total				24.74		24.45	1719

Source: MIT

²¹Results: P - patent; G - prototype, working sample; Z - semi-operation, proven technology; R - software; F - industrial and utility model; N_{met} – methodology