



Czech Republic – Evaluation and monitoring procedure

1. Ex-ante Impact Assessment	
1.1. Methodology and procedures conducted (if applicable)	
Not applicable or no information presently available.	
2. Procedure for selection of the research infrastructures to be included in the roadmap	
2.1. Objectives of the evaluation	
<p>The assessment is carried out on the basis of unified evaluation methodology providing the best possible foundation for the strategy decision making processes and contributing to increasing efficiency and investment planning on large research infrastructures on the national level of the Czech Republic and level of ERA.</p> <p>The evaluation methodology and the process itself has significant importance particularly for:</p> <ul style="list-style-type: none"> • Preparation of mid-term and long-term strategy outlook for defying RIs' policy; • Transition of RIs' projects from preparation to construction/implementation phase; • Preparation of state budget expenditures on R&D – chapter on RIs' financing; • Raising the European Structural and Investment Funds for RIs' investments funding. <p>The ex-ante evaluation methodology thus forms the general framework for obtaining expert basis for policy decision making on the RIs' funding in their transition from concepts/projects (≈ preparation phase) to their construction/implementation phase. In this regard, the ex-ante evaluation methodology aims to facilitate providing the funding for RI of the Czech Republic that meet the criteria of exceptional quality and socio-economic impact.</p>	
2.2. Eligibility conditions	
<p>All RI striving to receive public support or to be included into the Roadmap of the Czech Republic of Large Infrastructures for Research, Experimental Development and Innovation must comply with:</p> <ul style="list-style-type: none"> • The definition of a Research Infrastructures: "are unique facilities or virtual platforms providing the research community with resources and services required for cutting-edge research and development. Such RI may be "single-sited", "distributed" or "virtual", integrated in transnational networks and may have various legal forms. RI are established also to be used by other research organisations and other users under pre-defined and transparent terms. According to their nature RI may be grouped as follows: (1) "national RI" located in the Czech Republic, usually having an international impact (e.g. an international RI or its part or an organisation managing or otherwise providing the RI's operations); (2) "national node" of a distributed pan-European RI (firstly the Czech ESFRI RI node) or a part or an access point to international RI networks; (3) "Czech involvement (Czech part of a RI) in an international RI located in another state". • Other RI attributes that are integrated into the evaluation process and considered in the evaluation criteria. These attributes include especially the following: <ul style="list-style-type: none"> ▪ <i>Stable and efficient management</i> – RI must always have a sufficient, clear and transparent management structure. In the case that the RI forms a part of a research organisation, the RI's position within the hosting institution must be clearly defined and meet the requirements stated above. With the aim of guaranteeing an appropriate level of the RI's quality scientific board/ international advisory committee shall be established to deal with these tasks. It shall develop a self-assessment of the RI and provide the RI with expert recommendations. ▪ <i>Sustainable development strategy</i> – The RI has a clearly developed strategy including relevant balance sheets and studies: <ul style="list-style-type: none"> ➢ Technology development strategy, including short-term annual budgeting horizon as well as a long-term outlook – in general based on the lifespan of key instrumentation (e.g. 2-3 years for ICT, 5 years for standard R&D equipment) and conceptual outlook for technologies for 10 years. ➢ Human Resources development strategy, including clear and transparent employment strategy, defined career procedures (rules) targeted at the professional 	



- development of employees, and participation in scientific education.
- Feasibility strategy, including description of possible threats to the feasibility of RI (e.g. demanding upgrades of technologies, ethical and/or legal issues, which may seriously affect the RI's operation, etc.) and solutions how to face them efficiently.
- Cooperation strategy with the public (i.e. universities, public research institutes, other RI) and private R&D sector (i.e. private research organisations, industry, businesses) both on the Czech national and international level (ERA and worldwide).
- Analysis of the appropriateness of the RI for facing the societal and socio-economic challenges reflected by the respective R&D sector.
- *User access strategy* – Notwithstanding whether the RI operates in the national or international environment, it must have a clearly articulated and transparent strategy for providing access to the RI to various groups of users. A substantial part of RI's users shall come from the areas beyond the hosting institution. A RI shall have defined:
 - Open access strategy, including a clear definition of the RI's open access arrangements and methods for capacity allocation on the basis of scientific excellence of proposals.
 - Access strategy for other users, which use the RI's capacities for collaborative and/or contractual R&D beyond the open access mode;
 - Procedures dealing with protection of intellectual property rights, including strategy on dealing with the use of R&D results and open access to data issues.
- *Internal strategic research* – A RI – unlike other kinds of research entities, which devote most of their activities to their own internal research – focuses a substantial portion of its internal research on:
 - Research aiming at improvement of services to users.
 - Research serving to capacity development of the infrastructure itself.
 - Support to user research, including its direct involvement.

Collaborative and contractual research, within a limited scope.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

The evaluation of the different RI applications will be done based on the following criteria:

- *Socio-economic impact:*
 - RI are operated in direct response to socio-economic challenges.
 - Its role in the R&I ecosystem.
 - Impact and added value on ERA and other international macro-regional formations.
- *Uniqueness of technological facilities:*
 - The technological devices operated by a RI are of a high-tech and knowledge intensity and unique within the R&I ecosystem of the Czech Republic.
- *Management and sustainable development strategy:*
 - Governance structure clearly defining the responsibilities of the executive and supervisory bodies.
 - Management strategy.
 - Intellectual property rights strategy.
 - Human resources development strategy.
 - Long-term sustainable development strategy.
 - Public relations and marketing strategy.
- *Open access policy:*
 - Open access and transparency policy to its facilities for a broad range of potential users from the R&D community in accordance with international good practices.
 - The RI services are provided subject to applications evaluated by experts following the principles of relevance and excellence of the proposals.
- *R&D strategy:*
 - The RI is devoted, unlike the other kinds of research entities, to operate its facilities for the use by individual participants of the R&I ecosystem
 - A substantial part of its R&D activities focuses on R&D in order to improve its services and expertise for the users, further development of technologies and expertise of the research infrastructure, and to a limited extent on the collaborative and contractual R&D.
- *Cooperation with other research organisations, RI and industrial sector:*
 - Formal framework determining rules of cooperation developed with research organisations, RI and industry in the Czech Republic and abroad in the respective scientific field or



multidisciplinary R&D area.

- *Quality of R&D results achieved by using the RI:*
 - High-quality and adequate results from the point of view of “value for money”.
- *Potential for the development of new technologies:*

The research infrastructures are operated in high-tech and knowledge-intensive areas and used for the development of new advanced technologies.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

The evaluation was carried out by an International Evaluation Committee according to the research infrastructures evaluation methodology that had been inspired by ESFRI evaluation procedures and prepared within the framework of the Individual National Project named Effective System of Evaluation and Funding of Research, Development and Innovation (METODIKA¹²) financed by the ERDF.

The International Evaluation Committee is formed by:

- A Chairman
- Six Scientific Boards consisted of 3-5 members (one of them from CR to allow reflecting the knowledge of Czech research and innovation ecosystem and Czech research infrastructures landscape in the evaluation process) specialized on the R&D areas of:
 - 1) Physical Sciences
 - 2) Energy
 - 3) Environmental Sciences
 - 4) Biomedicine
 - 5) Social Sciences and Humanities
 - 6) ICT/e-infrastructure

The International Evaluation Committee members were appointed from a pool of experts with long-term experience with research infrastructures in their roles as users or research infrastructures policy-makers.

The evaluation is carried out in two stages and it is based on the principles of informed international peer-review combining the methods of panel and peer-review evaluation:

- *1st stage of assessment:* It is assured that proposals comply with the specific requirements of a RI (see eligibility conditions). It is exclusively carried out by the six Scientific Boards
- *2nd stage of assessment:* Detailed evaluation of the quality level of the RI characteristics. It includes:
 - International peer-review (2 or 3 reports per RI proposal) in order to obtain additional independent expert opinions beyond the assessment conducted by the respective 6 Scientific Boards of the International Evaluation Committee.
 - Interviews with the representatives of RI management aimed at enabling Scientific Board members to address questions on the operation of the RI and the delivery of services to external users.
- The outcomes and recommendations made by the International Evaluation Committee serve to the MEYS and Government of the Czech Republic as an independent expert basis for the informed policy decision making concerning:
 - Funding the Large Research Infrastructures of the Czech Republic in the course of the multiannual financial framework 2016–2022, combining the state budget expenditures of the Czech Republic on R&D with EU cohesion policy instruments (ESIF)
 - Declaring the political and financial commitment of the Czech Republic to the pan-European research infrastructures with Czech involvement and participation that is submitted for the future ESFRI Roadmap updates
 - Joining the emerging ERICs to be established within the ERA in the incoming years

¹ METODIKA Project: <http://metodika.reformy-msmt.cz/en/> [Last access: 07/2017].

² Only the 2014 Evaluation Methodology was prepared within the project. The 2017 Evaluation's methodology was based on the previous one, solely prepared by the MEYS.



The evaluators comment on individual areas in a verbal evaluation, which may include also recommendations addressed to the RI. For selected issues, there are appended evaluation points according to the stated scale. In the conclusion of each evaluation the evaluator / the committee evaluate the proposal according to an evaluation scale ranging from 1 to 5 points. The evaluation may use half-points, as well. This does not apply to the interval 0 – 1, where unsatisfactory proposals must be differentiated from the array of satisfactory proposals showing different quality levels.

The evaluation exercise primarily refers to the scientific quality of RIs' concepts/projects. Funding of the RIs' concepts/projects is proposed by the MEYS and consequently decided by the Government of the Czech Republic. In this perspective, the outcomes of the ex-ante RIs' concepts/projects evaluation serve as the expert basis for:

- 1) Political decision of the Government of the Czech Republic on public funding of new RIs' concepts/projects in the years 2018-2022, both by using the state budget expenditures on R&D and European Structural and Investment Funds.
- 2) Update of the "Roadmap of the Czech Republic of Large Infrastructures for Research, Experimental Development and Innovation for the years 2016-2022" to be made in 2018.

2.5. Proposals evaluated and selected (available statistics)

In the Czech Republic Roadmap for the years 2016–2022, the overall outcome of the research infrastructures assessment was the identification of 58 positively evaluated research infrastructures (including 42 research infrastructures of high-priority) recommended by the International Evaluation Committee for public funding and divided into 4 performance-related groups (A1, A2, A3 and A4) indicating the priority for public funding in direct proportion to the quality-differentiated output of the evaluation.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

The Resolutions of the Government of the Czech Republic on public funding of large research infrastructures in the years 2016+ stipulated that the continuation of public funding of large research infrastructures in the years 2020-2022 is subject to outcomes of **interim evaluation to be performed in 2017**. This assessment is carried out on the basis of unified evaluation methodology providing the best possible foundation for the strategy decision making process and contributing to increasing the efficiency and investment planning towards large research infrastructures on the national level of the Czech Republic and the level of ERA.

The **evaluation methodology** and the process itself has significant importance particularly for:

- Preparation of mid-term and long-term strategy outlook for defying RIs' policy;
- Transition of RIs' projects from preparation to implementation/construction phase;
- Assessment of quality, efficiency and benefits deriving from existing RI;
- Evaluation of needs for substantial technology upgrades to existing RI;
- Decision on prospective phasing-out and terminating operation of existing RI;
- Preparation of state budget expenditures on R&D – chapter on RI financing;
- Raising the European Structural and Investment Funds for RI' investments funding.

The evaluation methodology thus forms the general framework for obtaining an **expert basis for policy decision making on RI funding** in their individual phases of implementation as the highly systematic, high-quality and recurrent evaluation exercise enables timely estimates of needs and strategy investments in RI, upgrades thereof and adjustments of their operating costs according to the changing usage of their potential. The evaluation methodology aims to unify and strategically structure the RI landscape and facilitate providing the funding for RI of the Czech Republic that meet the criteria of exceptional quality and socio-economic impact.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

RI are approved by the Government for specific time period (it used to be 5 or 6 years but last



approval was for 4 years). The current national RI Roadmap is covering time period 2016-2022, but new update is planned for 2018.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Not applicable or no information presently available.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

The purpose of the entire evaluation procedure was to assess not only the already long-time operated facilities but also those newly built by using the ERDF within the OP RDI in the course of the period 2007–2015.

As a result, the 2014 assessment can be viewed and considered a comprehensive ex-ante evaluation of the research infrastructures of the Czech Republic before the beginning of the new multiannual financial framework 2016–2022. In the future, the 2014 ex-ante evaluation will be transformed into continuous interim assessment (monitoring) of Large Research Infrastructures, which will be financially supported by the MEYS, in charge of the concept of RI' public funding and of supervising the entire RI' evaluation process. Then, interim evaluations will focus particularly on the progress of the RI implementation according to the evaluated RI proposal.

The methodology used for the interim evaluation (monitoring) of Large Research Infrastructures is similar to the ex-ante evaluation framework introducing the panel assessment with the involvement of foreign experts. The evaluation is conducted in multi-year periods.

The general intent of the MEYS is to create a stable pool of experts involved in the research infrastructures evaluation over a longer period so that the Scientific Boards are aware of the previous development of Large Research Infrastructures and thus able to observe how their previous recommendations were reflected in the operation of the facilities.

The interim assessment (monitoring) of Large Research Infrastructures was conducted in 2017. Another comprehensive evaluation of the research infrastructures of the Czech Republic is anticipated for 2021 before the launch of the follow-up funding period 2023–2029.

Regarding the documentation submitted for the assessment, each individual RI shall submit to the MEYS the filled "**Evaluation form**" and "**RI's advisory board assessment form**" in the defined timeframe. Expert assessment of documentation reflecting the implementation state of RI follow and is carried out by the respective Scientific Panel of International Evaluation Committee that has the main responsibility for fulfilling the assessment tasks. The overall documentation that the Scientific Panels of International Evaluation Committee is provided, consists of:

- "**Evaluation form**" prepared by management of a RI and describing the RI implementation state according to the specific evaluation criteria stipulated by the MEYS within the interim evaluation methodology and "Evaluation form" itself;
- "**RI's advisory board assessment form**" – Every RI shall have established a scientific board/international advisory committee formed by external experts providing the RI with recommendations on short-term and long-term strategy development based on actual detailed knowledge of the RI. It is assumed that the scientific board/international advisory committee meets at least once a year. The outputs of such an exercise represent an additional expert insight in the RI's state-of-play and they should just be of consultative relevance.
- **Three external peer-reviews** elaborated per each "Evaluation form" (by reviewers contracted by the MEYS). The principal purpose of external peer-review is to obtain additional expert opinions beyond the assessment performed by the Scientific Panels of International Evaluation Committee. Outcomes of the external peer-review serve as an input for the evaluation but should just be of consultative relevance.

Moreover, with the aim of informing the International Evaluation Committee on the results of the latest RIs' assessment, which took place in 2014, the Scientific Panels are provided with the



"Consensus reports" including the "Evaluation forms, which represent the overall outcomes recorded by the International Evaluation Committee assessing the RI of the Czech Republic in 2014. This documentation is of consultative relevance only, but may help the reviewers to assess the progress made by each RI since the last evaluation performed on a very similar basis in 2014.

In order to enable the Scientific Panels of International Evaluation Committee to ask additional questions on the RI's management (that might not be clearly described in the documentation for evaluation) personal **interview** with representatives of the RI is arranged by the MEYS as a part of the evaluation process. An interview of the Scientific Panel with representatives of a RI (3 at the most) lasts up to **60 minutes**. The topics to be addressed by the Scientific Panel of the International Evaluation Committee during the interview are communicated to the representatives of the RI in advance, 7 calendar days before the interview at the latest.

Summary decision of each Scientific Panel of the International Evaluation Committee is the result of the assessment process, which combines the results of 3 individual, but mutually inter-connected assessment procedures, but still leaving the main responsibility for the overall evaluation results on the Scientific Panel of International Evaluation Committee:

1. **Evaluation of documentation** on the RI's implementation state-of-play provided by the RI within the "Evaluation form" and "RI's advisory board assessment form" – to be conducted by the respective Scientific Panel of International Evaluation Committee;
2. **External peer-review** of documentation on the RI's implementation state-of-play provided by the RI within the "Evaluation form" – to be conducted by 3 reviewers, who are contracted by the MEYS;
3. **Personal interview** with the RI's representatives – to be held by respective Scientific Panel of the International Evaluation Committee.

The summary decision of each Scientific Panel of the International Evaluation Committee shall be based on a synthesis of the outputs of above-mentioned assessment processes as well as on deliberations of the International Evaluation Committee Scientific Panels. Final conclusions are filled in the "**Consensus report**" stating the final overall evaluation results.

Should be the Scientific Board of International Evaluation Committee willing to visit a RI, which evaluation was accompanied by serious doubts and/or queries, the MEYS (in cooperation with the respective RI) arrange the "on-site-visit" of the RI. The "on-site-visit" of a RI may form a part of a RI's assessment procedure only if it is explicitly requested by the Scientific Board of International Evaluation Committee.

The "Evaluation form", which includes a set of defined questions, requires the management of a RI to describe the implementation state of RI from the point of view of the following aspects:

- Description of the RI
- Importance of the RI;
- Cooperation of the RI;
- Use and outputs of the RI including its importance for development of new technologies;
- Benchmarking of the RI;
- Feasibility of the RI;
- Costs and budget of the RI;
- Portfolio of indicators of the RI;
- Other relevant information on the RI.

Members of the International Evaluation Committee comment on individual evaluation criteria by means of **verbal evaluation** that may include **recommendations** addressed to the RI for its future development. For selected issues, there might be appended **evaluation points**. In conclusion, Scientific Panel of the International Evaluation Committee fills all the verbal evaluations (including the recommendations) and evaluation points in the "**Consensus report**" and mark the RI according to the overall evaluation scale indicating the science-based priority for public funding in direct proportion to the quality-differentiated output of the evaluation.



An expected final output of the interim RI' evaluation consists in a set of recommended RI assessed by the International Evaluation Committee as facilities showing a high-quality in the Czech national, European and worldwide perspective in accordance with specific qualitative criteria stipulated by the interim evaluation methodology. These RI are submitted for the approval of the Government of the Czech Republic for public funding in the years 2020-2022.

Based on the outputs of the evaluation, the International Evaluation Committee divides all evaluated RI in **6 performance-related groups** indicating the science-based priority for public funding. This division is made in accordance with a predefined overall evaluation scale. Then, at the end of each evaluation the evaluators rate the proposal according to a scale ranging from 1 to 5 points with the following meaning:

- 0 The respective entity does not meet the general characteristics and criteria of a RI anymore.
- 1 The RI does not attain the level required for provision of relevant services at the national or international level and it lacks sufficient potential to become an important element in the future development of research and innovation environment of the Czech Republic.
- 2 The RI's quality and potential enables it to contribute to provision of services in the given sphere. However, the RI has only minor user community, limited importance and thus also limited relevance for the future development of research and innovation environment of the Czech Republic.
- 3 The RI's quality and potential enable good quality services to be provided in the given sphere. The RI shows significant usage possibilities and is relevant for the future development of research and innovation environment of the Czech Republic. Nevertheless, the RI is not a crucial one for strengthening the competitiveness of the Czech Republic.
- 4 The RI shows very high quality and high potential, but doesn't reach the top-class standards of international excellence with respect to the uniqueness, originality, importance and impact on the user community. However, the RI is still highly relevant for the future development of research and innovation environment of the Czech Republic, substantially contributing to strengthen the competitiveness of the Czech Republic.
- 5 The RI is of excellent quality compared to the leading actors worldwide with respect to its uniqueness, originality, importance and impact on the user community. The RI is highly relevant for the future development of research and innovation environment of the Czech Republic as well as inevitable for strengthening the competitiveness of the Czech Republic.

The evaluation exercise primarily refers to the scientific quality of RI, defined particularly as a combination of the quality of scientific outputs produced in cooperation with RI and the quality of the strategic approaches of RI.

The funding of RI is proposed by the MEYS and consequently decided by the Government of the Czech Republic. In this perspective, outcomes of the RIs' interim evaluation serve as the expert basis for:

- Political decision of the Government of the Czech Republic on the public funding "bonus" for the RI assessed as of excellent and/or very high quality in the years 2018-2019.
- Political decision of the Government of the Czech Republic on the RI public funding in the years 2020-2022, both by using the state budget expenditures on R&D and ESIF.
- Update of the "Roadmap of the Czech Republic of Large Infrastructures for Research, Experimental Development and Innovation for the years 2016-2022" to be made in 2018.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

After the RI implementation ends or after the financing period approved by the Government elapses the RI shall be assessed in an ex-post evaluation.