

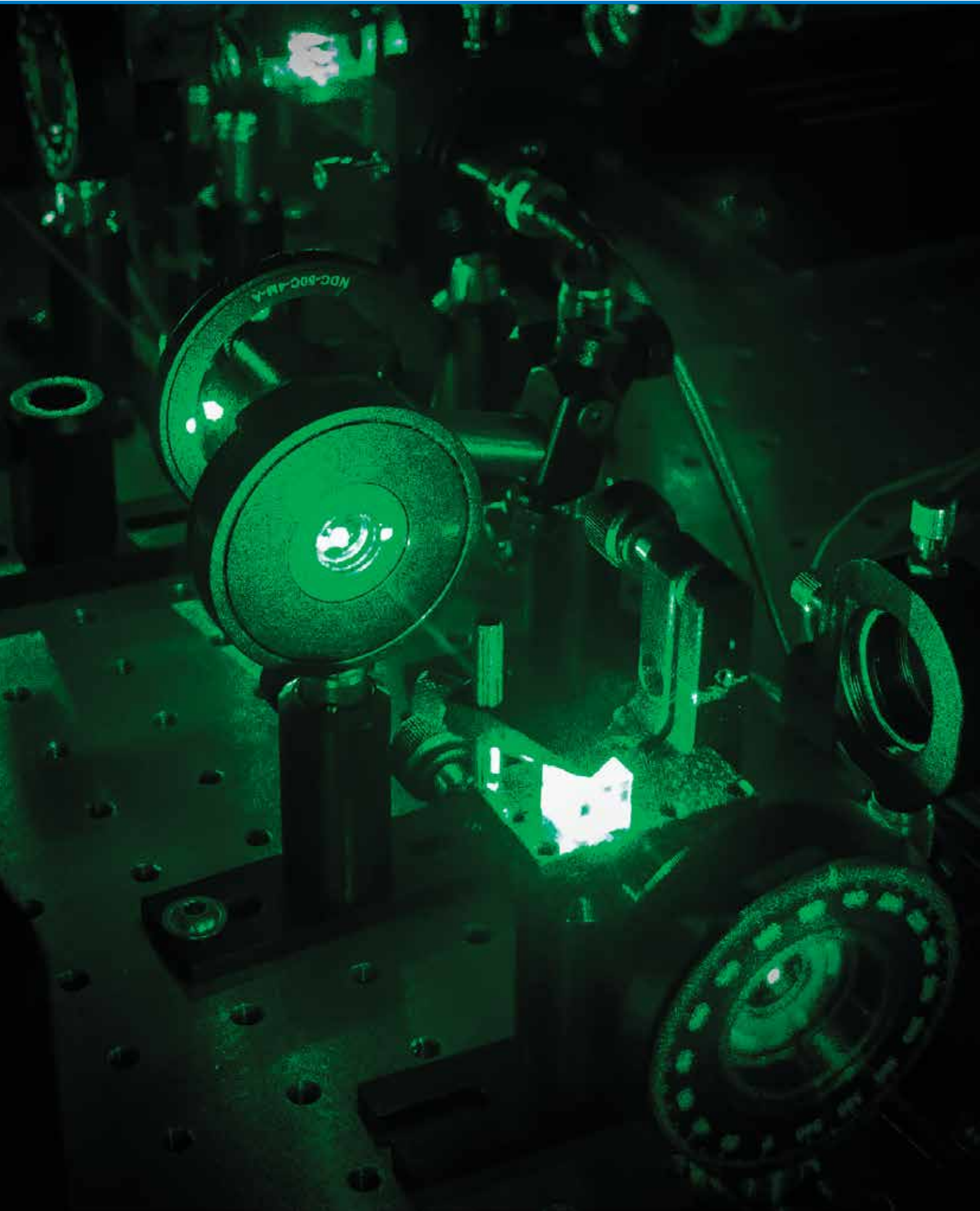
Evaluation of the research and professional activities of the Institutes of the CAS in the period 2010–2014



The Czech Academy
of Sciences

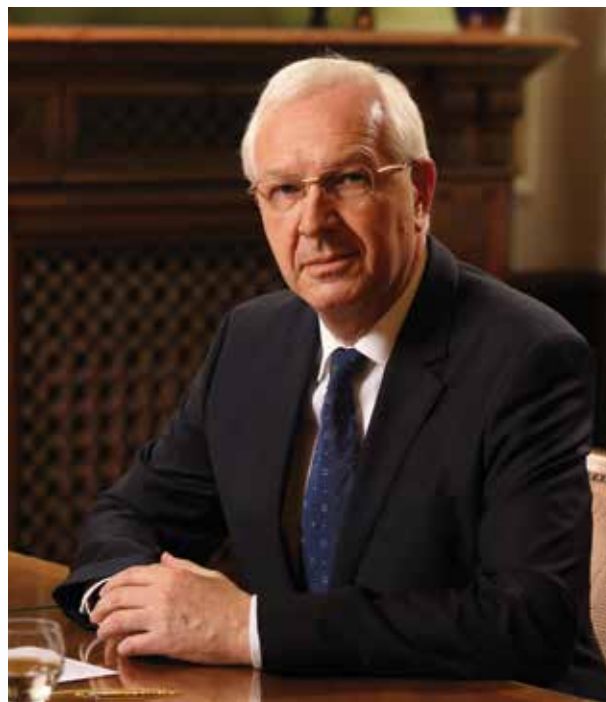


The Czech Academy
of Sciences



INTRODUCTORY WORD OF THE PRESIDENT

The successes achieved in the Czech Academy of Sciences undoubtedly bind us and the current Academy of Sciences must meet such an obligation if it is to maintain its name and position in the Czech and international scientific communities. It is clear that it will succeed only when it does not compromise on the quality of the scientific research. I am pleased to state that the results of the evaluation of the research and professional activities of our Institutes for the period 2010–2014 clearly show that we succeeded in meeting this demanding task. It has also turned out that the evaluation of science and research in the Czech Republic, based on the method of informed peer-review, which had been used already for a number of years by the Czech Academy of Sciences, is an effective counterweight to the to the official science-evaluation Methodology in the Czech Republic, so-called coffee-grinder. Naturally, not even the system of evaluation at the Czech Academy of Sciences is flawless, and it keeps being developed and improved. All of the experiences acquired in the course of this evaluation both by the members of the Academy Council or the Coordination Board of the Evaluation, and individual evaluation committees, including suggestions from the Institutes, the opinion of the Council for Sciences of the CAS as well as the critical observations of competent individuals, will serve to further improve the next evaluation – as in the case of all previous evaluations conducted by the Czech Academy of Sciences. I am convinced that thanks to this critical and responsible approach to its own work the scientific performance of the Czech Academy of Sciences and its Institutes provides good and stable basis for the advancement of science and research in the Czech Republic.



Prof. JIŘÍ DRAHOŠ
President of the Czech Academy of Sciences

EVALUATION OF THE RESEARCH AND PROFESSIONAL ACTIVITIES

One of the most important tasks of the leadership of the Czech Academy of Sciences (CAS for short) and its Institutes is a permanent emphasis on increasing the quality of the scientific and professional activities, further strengthening engagement of the Institutes in international scientific activities and meeting the other functions of the CAS given by the relevant legislative regulations. To meet this task, the leadership of the CAS has organized regular evaluations of its Institutes since the foundation of the CAS in 1993. These evaluations also serve for the determination of their institutional funding. The Academy Council of the CAS (Academy Council for short) decided to conduct the Evaluation of the research and professional activities of its Institutes for 2010-2014

(Evaluation for short) of the research and professional activities of its Institutes for 2010–2014 on 6 October 2014 after broader discussions, including discussion at the Council for Sciences of the CAS (Council for Sciences for short).

Objectives of the Evaluation

The Academy Council has set three main objectives of this evaluation:

1. To acquire qualitative and quantitative information about the position of science in the CAS in the period 2010–2014 in a national, European and global context.
2. To acquire information for strategic management of the CAS as a whole, including the funding of its Institutes as one aspect of this management.



Prof. EVA ZAŽÍMALOVÁ
Head of the Coordination Board of the Evaluation

“We at the Academy Council have earnestly discussed the question of what the sense and aim of the Evaluation is. We agreed that the primary aim is not a simple transfer of some grades to the funding of the Institutes. The aims of the just completed Evaluation are of two types – one towards the leadership of the CAS and the other towards the Institutes. The meaning of the Evaluation was to acquire information for the strategic management of the CAS, including knowledge of the quality and position of the scientific and other professional activities of the CAS in an international context and to provide independent feedback to the Institutes on the quality of their work down to the level of research teams. Work on the Evaluation was quite demanding and sometimes even exciting, mainly in establishing the evaluating bodies (Panels in Phase I, Commissions in Phase II of the Evaluation) and in organizing the visits at the Institutes, but I learned a lot – both about the work of the individual teams and Institutes and generally about working with people. I was pleased by the great willingness and commitment

in the preparation and organization of the Evaluation on the part of the working groups of the Academy Council and the Council for Sciences as well as the Head Office of the CAS. I would like to thank specifically Prof. Jana Musilová from Masaryk University for the enormous efforts in the preparation of the Evaluation and the employees of the Science Support Division of the Head Office of the CAS for the careful work in the preparation and organization of the entire logistics of such very complicated event. I honestly admit that I did not anticipate how precisely the Institutes would keep all the deadlines. Naturally, the responsibility for the organization of such a large exercise, including 52 scientific Institutes and their 377 scientific teams, and working with a total of almost 1500 experts (in the vast majority from abroad), is an enormous challenge and experience of itself.”

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3. To mediate an independent and comparable evaluation and feedback for the managements of the Institutes and their teams.

Evaluation Methodology

The adopted method of Evaluation was in accordance with Act No. 130/2002 Coll. on the Support of Research, Experimental Development and Innovations, specifically the provision of Article 7, Paragraph 7 of this Act: “The provider may adjust the amount of the support according to more detailed evaluation using internationally acknowledged methodologies, having published these along with the results of the more detailed evaluation and the rules of the adjustment of the support before its provision.” For the purposes of the evaluation, the classification into main fields, fields, subfields, and the characteristics of the fields were taken over from the Frascati Manual of the OECD and Journal Citation Reports (JCR), and corresponding panels and commissions were adjusted to the structure of the research at the CAS (see Tab. 1). In accord-

ance with the above-mentioned legislative framework, basic methodological conception adopted for the evaluation of the Institutes and their scientific teams was based on the following five principles:

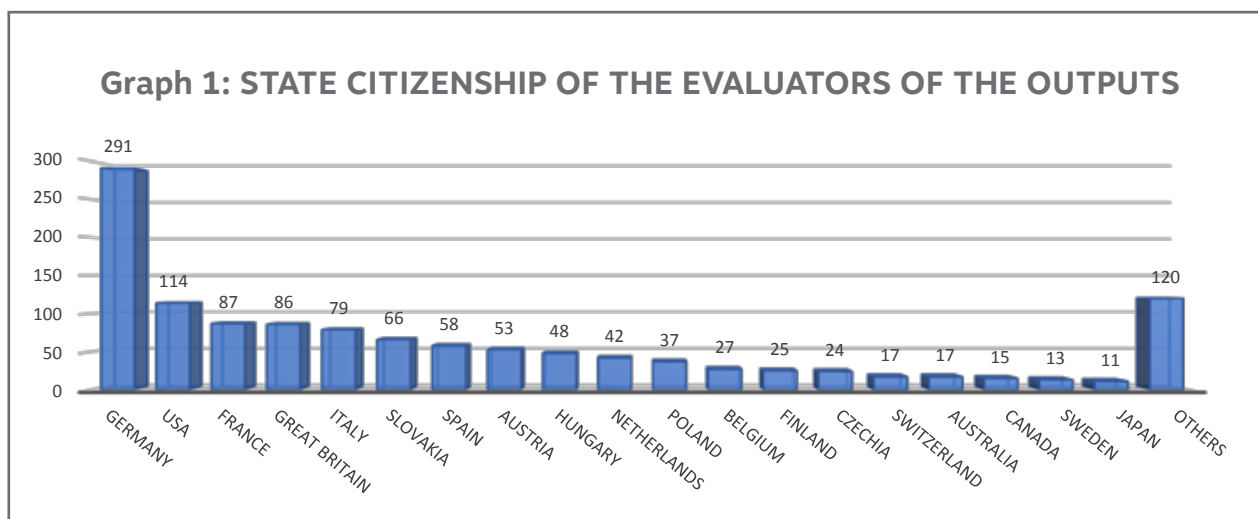
1. Informed peer-review,
2. Evaluation by individual fields, in order to respect their specifics,
3. Evaluation in two subsequent Phases,
4. Separation of Evaluation from funding,
5. Awareness of the Evaluation within the CAS and for the public.

Organization of the Evaluation

For the management of the preparation of the evaluation, the Academy Council appointed a nine-member working group. Together with the working group of the Council for Science they prepared the document “Basic Principles of the Evaluation of the Research and Professional Activities of the Institutes of the Czech Academy of Sciences for 2010–2014” (hereinafter “Basic Principles”), approved by the Academy Council, together with the timetable and detailed description of the evaluation procedure. For oversight of the course of the Evaluation, the Academy Council appointed on 4 November 2014 the Coordination Board of the Evaluation chaired by prof. Eva Zažímalová, the members of which were three vice-presidents of the CAS and three representatives of the Council for Sciences. The evaluation was carried out first for 52 research-oriented Institutes and then for two Institutes focused on the infrastructure of research and development. For the evaluation of the research-oriented Institutes, the Academy Council on 20 January 2015 appointed 13 field panels for the Phase I and 13 field commissions for the Phase II. In the Phase I of the Evaluation, 148 renowned foreign experts in positions as members of the field panels and 1,230 evaluators of the outputs from 50 countries (including 24 evaluators from the CR) took part. In the Phase II of the Evaluation, 117 members of field commissions

Tab. 1: List of field panels and field commissions

Panel/ Commission	Main Field
1	Mathematics
2	Computer and information sciences
3	Physical sciences
4	Chemical sciences
5	Earth and related environmental sciences
6	Biochemistry and molecular cell biology, biophysics, virology...
7	Biol. sciences including biotechnology and agricultural sciences
8	Engineering and technology
9	Medical and health sciences
10	Social sciences
11	History and archaeology
12	Languages and literature
13	Humanities excluding 11 and 12 above



from 17 countries (including 25 experts from the CR) took part. Each commission was comprised of a foreign Head, a Deputy Head who knew the Czech language and other, predominantly foreign, renowned experts. The fraction of members of field commissions from the Czech Republic was usually in the range of 20-30 %. For the Evaluation of two infrastructure-oriented Institutes the Academy Council appointed two evaluation commissions, one for each of them. These commissions had a total of 14 members, with at most one-third of them being employees of the CAS. The Institutes were informed about the preparations and course of the Evaluation at the sessions of the Academy Assembly of the CAS, meetings of the directors of the Institutes with members of the Academy Council, consultation days for the preparation of the applications for Evaluation, and the internal web portal of the CAS.

Materials for the Evaluation

1. Evaluation of research-oriented Institutes

In accordance with the Basic Principles, the Institutes prepared electronic applications for the Evaluation according to a unified structure:

Part 1: General data concerning the Institute and the individual teams.

Part 2: Materials for Phase I of the Evaluation prepared for each scientific team of the Institute.

Part 3: Materials for Phase II of the Evaluation prepared:

- a) For the Institute as a whole;
- b) For each scientific team of the Institute.

The materials for the Evaluation were uploaded into the electronic information system in the period from 1 January to 30 April 2015. Separate deadlines were set for the submission of the materials for the Phases I and II. The aim was to give the Institutes as much time as possible for the preparation of the documents, but to collect all necessary materials for the field panels before start of their work on 1 April 2015. The lists of the researchers were submitted by 31 January 2015, the data on the scientific teams and their selected outputs for the Phase I of the Evaluation by 19 February 2015 and a brief commentary on the submitted outputs by 15 March 2015. In the period 10–20 March 2015, the Institutes had the opportunity to check the bibliometric data prepared by the Library of the CAS. Justified comments were then incorporated into an amended version of the bibliometric materials by 31 March 2015. The Institutes provided access to the full texts of the outputs by 31 March 2015. In the exceptional cases, when it was not possible to provide the evaluators with access to the full text of the output (typically mono-

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graphs) electronically, the Institutes submitted physical prints or copies of these outputs. This option was utilized by eight Institutes with a total of 54 outputs. The remaining materials for the Phase II, including the written applications of the Institutes for the Evaluation, were submitted by 30 April 2015. Besides the mentioned written applications, all of the other materials were collected only in electronic form.

2. Evaluation of the infrastructure-oriented Institutes

Based on the “Methodological Instructions for Preparation of the Materials of the Institutes of the CAS for the Evaluation of the Professional Activities of the Infrastructure Institutes of the CAS for the Period 2010–2014” approved by the Academy Council on 14 July 2015, the infrastructure-orient-

ed Institutes of the CAS – Library of the CAS, and the Centre for Administration and Operations of the CAS – prepared by 23 November 2015 the materials, structured as follows:

The materials for the whole Institute as well as for each team:

- A) Quality and results of the main and other activities of the Institute and its teams according to the founding deed.
- B) Participation in the support of the activities of the CAS and its Institutes.
- C) Quality of the management of the Institute (management with material and human resources – based on their own SWOT analysis).
- D) Measures adopted in response to the results of the previous evaluation.

“We started to prepare the evaluation already in the spring of 2013 based on experience from the previous evaluation and our knowledge of the method of the evaluation of universities and research organizations in Great Britain, France and Italy. In all of these cases, the primary units of the evaluation are teams and the main method is informed peer-review, i.e. evaluation of the teams from various perspectives by foreign experts taking into account the quantitative scientometric indicators. Our Evaluation had two phases. In the first, the foreign experts assessed 5,594 outputs, of which 4,553 were articles in impacted journals, which was a quarter of all the articles in impacted journals produced by the Institutes of the CAS in the evaluated period. The limitation to this number of assessed outputs stemmed from the need to assure at least two qualified foreign evaluators for each output. The result for each team is a performance quality profile. This phase was similar to Italian and British methodology. The directors of the Institutes have in addition access to information on the classification of the individual outputs into the quality levels including the verbal justification. In the Phase II, the commissions in 13 fields evaluated the teams from six points of view: quality of the outputs, their social impact, position in the international and national context, engagement of students in research, sustainability and plans for the future. The result of this phase, which included on-site visit of the commission in the Institutes of all the teams, are the final reports, in which the commissions in a verbal way evaluate the teams from the above mentioned points of view. Each final report contains also the statement of the director of the Institute on the evaluation of his teams and the Institute as a whole. This phase is very similar to the way that the state agency AERES in France assesses the teams from the universities and institutes of the CNRS. Neither the British nor the Italian methodology provides the information contained in the final reports and does not include visits of the commissions in the Institutes. We consider both these parts of the evaluation to be important and therefore chose the combination of both approaches.”



Prof. JIŘÍ CHÝLA
Member of the Academy Council

E) Vision of the development of the Institute in 2016–2019.

The materials for the Institute or team provided the given area is relevant:

F) Evaluation of the position of the Institute in the national context.

G) Extent of foreign cooperation, including cooperation on foreign projects.

H) Participation in the national grant and programme projects, application and other activities.

I) Pedagogical activity.

J) Popularization activity.

The materials contained also questionnaires on the exploitation of professional and infrastructure services of both Institutes completed by the other In-

stitutes of the CAS and SWOT analyses of the whole Institute as well as of its teams.

Process of the Evaluation

1. Evaluation of the research-oriented Institutes

The Phase I of the Evaluation started on 1 April 2015. Its conduct was entrusted to 13 field panels, the Heads and members of which were appointed by the Academy Council. Within the Phase I, 5,594 outputs were assessed submitted by 377 scientific teams from 52 research Institutes (see Graph 2). Of the total number of outputs, 4,553 were articles in impacted periodicals, 446 monographs, 244 articles in specialized periodicals, 168 chapters in a monograph and 183 other types of outputs. Simultaneously, 163 outputs were submitted by more than one

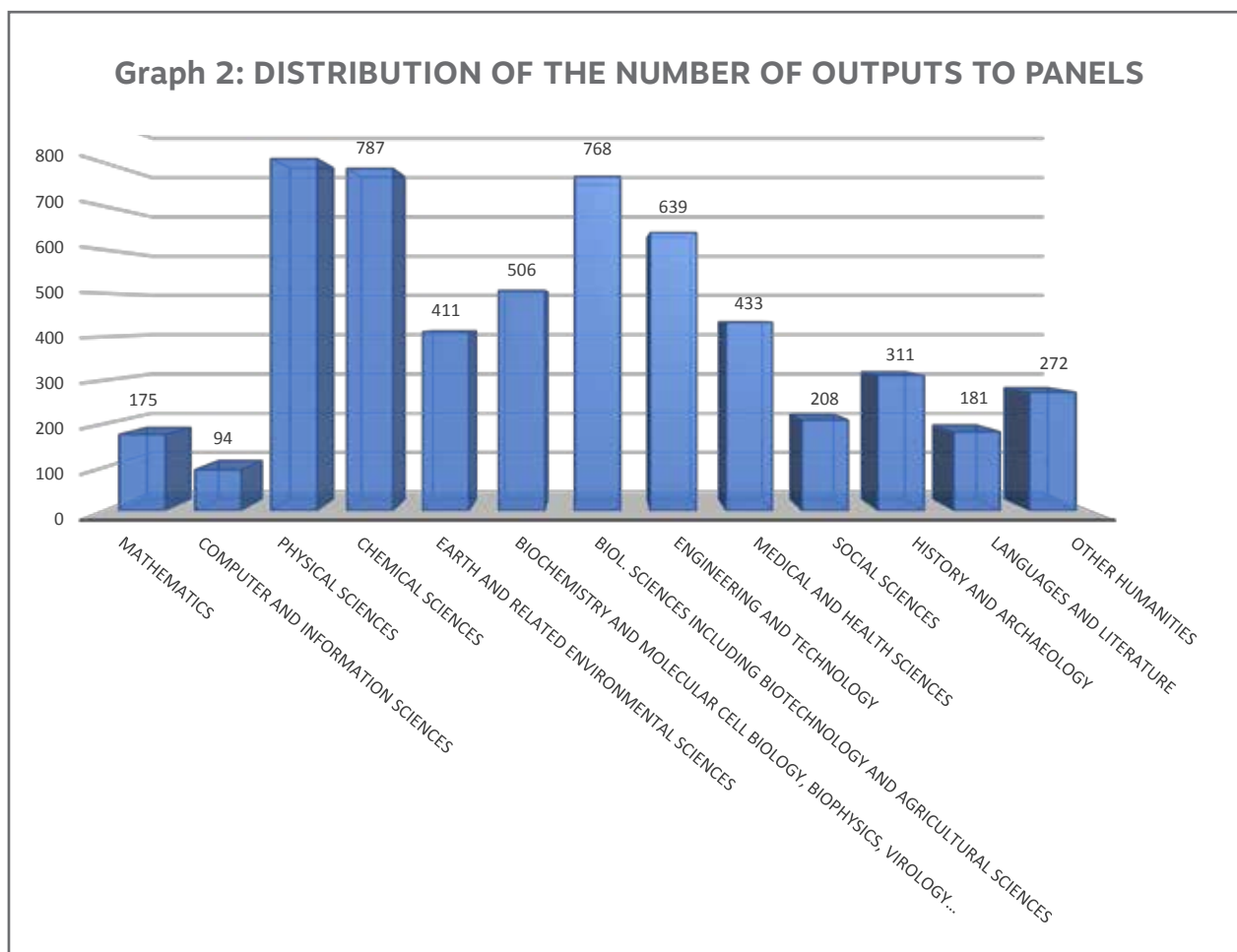


“At the beginning of 2013, a hope began to fade within the CAS that the primitive governmental evaluation (coffee-grinder) would be replaced in the foreseeable future by the promised modern evaluation of research organizations. An evaluation, which would provide the necessary feedback both for the effective management of the CAS as a whole and for the leadership of their Institutes. It became ever clearer that the CAS would have to organize also the next evaluation itself. I am very glad that I was invited into the preparatory team of the evaluation and could influence its content. I have looked back at one of the first working texts from August 2013, which begins with the slogan: ‘Let’s learn from the inadequacies of the past evaluations and fill in what was missing in the past.’ It was obvious to us then that the new evaluation had to come from the rich experience from the previous evaluations of the CAS, good and bad, and from good foreign practice, which is being rapidly developed. We set as the main objectives of the evaluation:

- (i) To acquire information for the strategic management of the CAS as a whole,
- ii) To facilitate an independent and comparable evaluation and feedback for the management of the Institutes,
- (iii) To meet the obligations of a responsible manager to the citizens, taxpayers and the government,
- (iv) To provide an example to other sectors of research in the Czech Republic and
- (v) To demonstrate credibly the excellence of the CAS within the Czech Republic.

I think these objectives were achieved. Additionally, we managed to empirically refute claims widespread in the Czech Republic that the evaluation would be expensive, corrupt and useless. This holds despite the fact that not everything was always perfect. Global experience proves that no evaluation can be perfect. Nowhere in the world are academics excited that they are to be evaluated. But somewhere, including the CAS, they have fortunately understood that this may be helpful and it is moreover their obligation to the public and taxpayers.”

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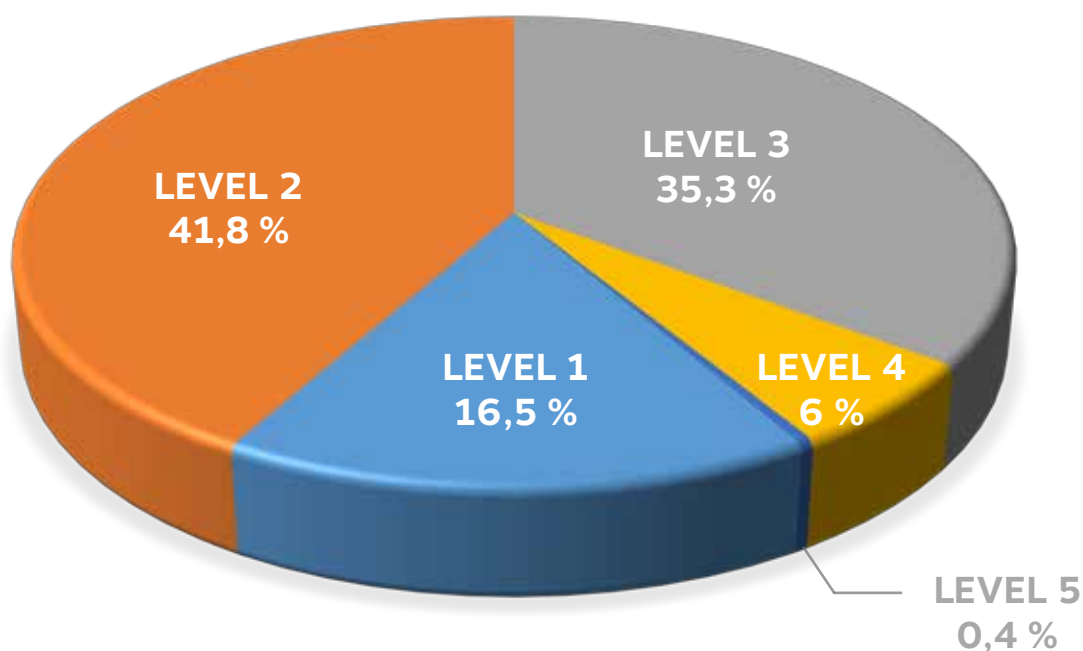


team, of which 151 outputs were by two teams and 12 outputs by three teams.

According to the approved timetable, the Phase I of the Evaluation was to have been completed by the end of June 2015. Based on the justified requests from Heads of several field panels, the Academy Council agreed on 9 June 2015 to postpone the completion of the first phase to 15 July 2015. The evaluation of all of the outputs was completed by the original deadline of 30 June 2015 by five panels, the rest of the panels used the extended deadline for the Phase I to 15 July 2015. 5,580 out of the 5,594 outputs, i.e. 99.7 % of the total were evaluated. Fourteen outputs remained unevaluated, of which 11 in Commission 3, two in Commission 6 and one in Commission 7. In total, 18,076 requests for assessment were sent to the

evaluators, of which, 9,750 were elaborated, 8,050 were rejected, 215 requests remained unanswered and in 61 cases the assessment was promised but not delivered. More than two evaluators were addressed with 3,324 outputs. The vast majority of the evaluators were from abroad. The evaluation of the outputs submitted in Czech or in Slovak languages with which foreign evaluators had language problems was carried out by 24 evaluators from the Czech Republic. A total of 501 such outputs were submitted for evaluation from the 27 Institutes. Of the evaluated outputs, 921 outputs (16.5 %) were assigned quality level 1 (“world-leading”), 2,334 outputs (41.8 %) level 2 (“internationally excellent”), 1,967 outputs (35.3 %) level 3 (“internationally recognized”), 336 outputs (6.0 %) level 4 (“nationally recognized”) and 22 outputs (0.4 %) level 5 (“below the standard of nationally recognized

**Graph 3: RESULTS OF THE EVALUATION
OF THE OUTPUTS OF THE SCIENTIFIC TEAMS**



work or work which does not meet the definition of research for the purposes of this assessment”), see Graph 3. To 1,699 outputs, the two evaluators assigned the same quality level. For 3,881 outputs, where the evaluators differed in the assigned levels, the responsible member of the panel had to recommend the level to the Head of the panel, who made the final decision. In such cases, three assessments were obtained for 365 outputs, two for 2,347 outputs, one for 861 outputs and for 408 outputs no assessment was obtained. In the latter case almost all of these outputs were, however, assessed and graded by the responsible member of the panel and finally by its Head. In 485 cases, the Head of the panel assigned to the output different quality level than that recommended by the responsible panel member. The results of the evaluation of the outputs were subsequently used for the preparation of qualitative profiles of the teams and Institutes, which were part of the materials for the

field commissions in the Phase II of the Evaluation. The qualitative profiles were prepared in advance before the start of the Phase II of the Evaluation by experts from the Library of the Academy; the directors of the Institutes were acquainted with them and could remark on them.

Before the beginning of the Phase II of the Evaluation, all of its participants were acquainted in detail with the individual activities and tasks. The commissions had the task to evaluate 9–48 teams from 4–13 Institutes (see Graph 4). After agreement with the Heads, Deputy Heads and the members of the commissions as well as the directors of the Institutes, detailed timetables of the on-site visits of the Institutes were set up. In accordance with the Basic Principles and to ensure transparency and comparability of the evaluation of all Institutes, the representatives of the Academy Council and observers representing the evaluated Institute participated in

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the work of the field commissions in the Phase II. The observers – representatives of the Academy Council were approved by the Academy Council on 9 June 2015. If the appointed member of the Academy Council could not attend some of the meetings in person, another member of the Academy Council or of the Council for Science, named in the list of alternates issued by the President of the CAS, took his/her place. In accordance with the decision of the Academy Council on 12 May 2015 the observers representing the evaluated Institute, or their alternates, were appointed by their directors by 31 August 2015.

The on-site evaluation was always attended by the Head and Deputy Head of the commission and further by at least as many members of the commission to represent the majority of commission members and including those members of the commission

who were professionally closest to evaluated Institute. From the course of the on-site visit, brief minutes was prepared, complemented with an attendance list of the participants of the on-site evaluation. In the Phase II of the Evaluation, the Institutes and their scientific teams were assessed according to the following points of view:

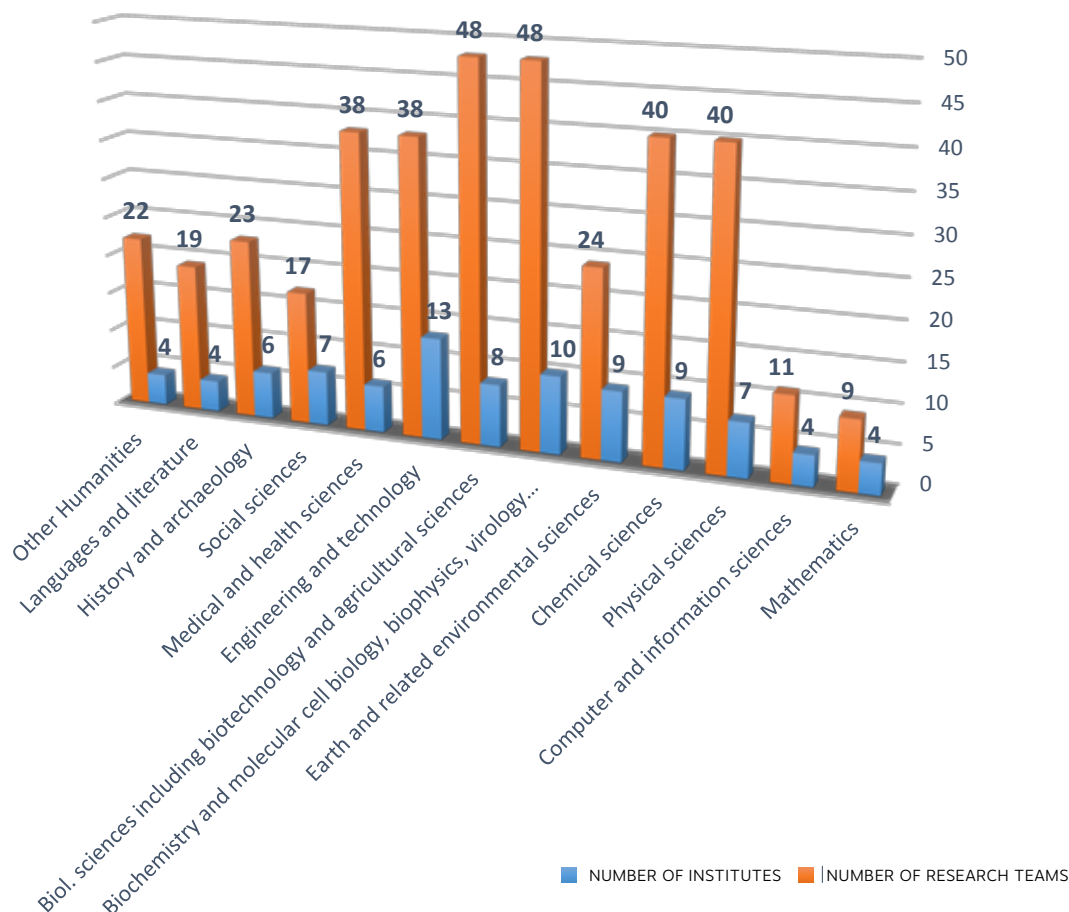
- a) Quality of the results and share of the team in their acquisition,
- b) Societal (social, economic and cultural) relevance (educational activity, research for practical purposes, outreach and editorial activities, services of research),
- c) Engagement of students in research,
- d) Position in the international and national context (scientific reputation and visibility on the international scale, ability to attract foreign research employees, position in the national context),

“Demanding evaluation methodology and a tight time schedule was a major challenge for the development of an information system, especially in the case of Phase I of the evaluation, which was entirely dependent on it. For Phase I it was necessary to prepare the platform for effective communication with several thousand foreign experts and among the members of the field panels, who had to communicate and collaborate without having ever met. The information system was conceived as multi-user with access for the leadership of the evaluated Institutes, for communication with all of the evaluators in Phases I and II, but also for the leadership of the CAS, the Coordination Board of the Evaluation and the administrative team. Great emphasis was placed on clarity, reliability and user friendliness. And because the individual functionalities of the system were developed gradually, ahead of their deployment it was always necessary to perform a thorough test. The effective sharing of data with ASEP, the data base of research outputs of the Institutes of the CAS, , the direct and highly safeguarded connection with the repository of full electronic texts of the evaluated scientific outputs accessible to the evaluators and easy access of the evaluators to the detailed bibliometric and scientometric data on the outputs represent significant added value of the information system established for the evaluation. Commendation for the team, which had responsibility for the development and operation of the information system, is the fact that for the entire time of its active utilization not a single failure was recorded.”



Ing. LEOŠ HORNÍČEK
Director of the Head Office of the CAS

Graph 4: NUMBER OF TEAMS AND INSTITUTES EVALUATED BY THE COMMISSIONS



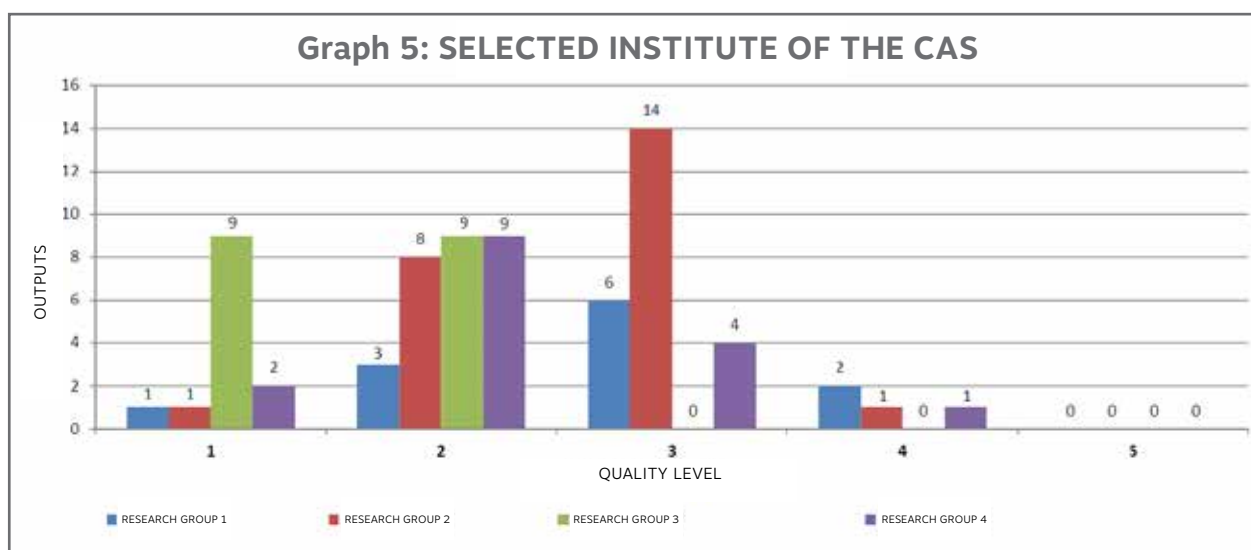
- e) Vitality, sustainability and perspective (financial aspects, managerial guidance, human resources, grant and project activity),
- f) Strategies and plans for the future.

By 31 December 2015, the commissions submitted the results of their evaluations in the form of Final Reports. In the case of two commissions, the deadline was shifted after an agreement with the Coordination Board to 15 January 2016. Subsequently, the directors of the Institutes were acquainted with the Final Reports, and by 22 January 2016 expressed their opinion on them. The directors raised objections to 47 reports and asked the Coordination Board for their re-evaluation,

whereas 44 Final Reports were accepted without objections. In all cases, the Coordination Board found the objections of the directors to be justified and asked the corresponding commission to respond to them. In 11 cases, the commissions insisted on the original versions of the Final Reports, whereas 36 reports were amended. On all amended reports the directors of the Institutes submitted by 29 February (exceptionally until 9 March) 2016 their final positions. The documents from the Evaluation are accessible at the website <http://www.avcr.cz/en/about-us/evaluations-of-cas-institutes>.

2. Evaluation of the infrastructure-oriented Institutes of the CAS

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Distribution of outputs submitted by the scientific teams of a randomly selected Institute into qualitative grades.

The complete materials were made accessible to the evaluation commissions on 1 December 2015 through the information system. The on-site visits took place on 11 January 2016 in the Library of the Academy and on 13 January 2016 in the Centre for Administration and Operations. The on-site visits included the

presentations of the Institute and its teams by the director and heads of the teams.

The evaluation commissions assessed the Institutes and their teams from the following points of view:

“In all areas of human activity, it should be true that the one who wishes to do one’s job on the best level should have an interest in its qualified and objective assessment. It cannot be any different even in science. Despite this clear thesis, the method of the evaluation of science based on quantitative criteria, taken as a sign of quality, has been used and ‘perfected’ for over ten years in our country. The Czech Academy of Sciences is the first and so-far the only Czech scientific institution that is not afraid of a real evaluation. On the contrary, it regularly organizes them with the seriously meant aim of obtaining objective information and recommendations on quality of the research conducted in its Institutes. The evaluation for 2010–2014, based inter alia on the experience from past evaluations, was conducted by impartial international commissions on the basis on five principles: two phases, informed peer-review, respecting field specifics, separation of the evaluation from funding and transparency. It showed (not unexpectedly) that although there are still things to improve, the CAS is the leading scientific institution in the CR. It was correct and logical that the factual preparation of the evaluation was initiated by the Council of Sciences as the conceptual body of the CAS in the issues of the preparation of its science policy. Participation in this preparation allowed me not only to help in a good cause but also to banish the despair from the so far vain “battle” against the wind-mills of the current official evaluation Methodology.”



Prof. JANA MUSILOVÁ
Masaryk University in Brno, member of the
Council of Sciences of the CAS

1. Quality and amount of results and their reception.
2. Quality, extent and necessity of the provided infrastructure services, the reception of these services by the scientific community.
3. Position of the Institute in the national and international context.
4. Perspective of the Institute and its teams, the potential for involvement in new infrastructure activities and increasing the level of the existing activities

For each point of view, the commissions classified the Institute and its teams in one of the five levels: 1 – outstanding, 2 – very good, 3 – standard, 4 – with exception, 5 – unsatisfactory.

Final reports on the evaluation of the two infrastructure-oriented Institutes were submitted by the Heads of the commissions by 12 February 2016. Both of these Institutes were as whole assigned level 1. Their directors responded to the results of the evaluation by 29 February 2016.

Conclusion

Despite the complexity and logistical demands of this Evaluation, it was possible, with small exceptions, to carry it out according to the set timetable and rules. The results from the Phase I and Phase II of the Evaluation have been submitted to the Academy Council, which will take them into account by 16 December 2016 in determining the institutional funding of the Institutes, and possibly recommending organizational changes at the Institutes. The total costs for the Evaluation reached CZK 25 million, which amounts to mere 0.1% of the total institutional funding of the CAS in the period of evaluation.

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