

SLOVAK ACADEMY OF SCIENCES

Regular Assessment of the Research Institutes of the Slovak Academy of Sciences 2016 – 2021

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Foreword

The Slovak Academy of Sciences (SAS) is the largest non-university research organization in the Slovak Republic. SAS has the status of an external educational institution, based on the contract with the relevant university, providing education of masters students and training of PhD candidates for approximately 500 annually. In recent years the number of foreign students has been steadily growing; in 2022 it was 35 % of all PhD candidates who had received a fellowship from the sources of SAS. SAS has approximately 3 thousand employees and two thirds of them are researchers with the title of PhD/DSc.

The budget of SAS consists of three parts: the state budget, competitive sources, and private sources. The largest of these is constituted by the money from the relevant part of the state budget. The competitive resources come largely from the main grant agency, the Slovak Research and Development Agency, and SAS is usually able to obtain approximately 30 % of the annual budget of this agency. Horizon Europe is another source of competitive funds although the success rate of SAS is not very high. SAS is able to obtain approximately 7 – 10 % of SAS annual budget from this source. Formally, the next competitive funds are available from the Scientific Grant Agency. In fact, this agency is not an additional financial support of projects for the research group of SAS. The agency is just redistributed the part of SAS budget coming from the state budget based on the project proposals. The third source of financial resources is private funding, and this represents the smallest portion of the annual budget of SAS. Since 1st January 2022 SAS the legal status of SAS institutes was changed from direct state budgetary bodies to public research institutions with a higher level of self-governance, potentially enabling increased income from private sources.

Based on the content of the research, the Slovak Academy of Sciences consists of three sections. Section I deals with the sciences of non-living nature (15 independent institutes), Section II deals with the sciences of living nature and chemistry (13 independent institutes and centres), and Section III deals with the social sciences and humanities (17 independent institutes).

The research performance of the SAS needs to be evaluated every 5 - 6 years according to the law. The years 2012-2015 were the first period of the assessment, where only foreign researchers created evaluation panels. The main criterion was the comparison of the research performance of each institute with institutes of a similar research orientation in Europe. This approach was appreciated not only by political decision-makers but also by the Slovak society. This high-quality assessment was the main reason why the Presidium of SAS decided to carry out the assessment of the period 2016-2021 in the same way.

The assessment exercise was undertaken by the panellists in a spirit of contributing to the development and further improvement of research at the Slovak Academy of Sciences, with the aspiration that its work will lead to a positive development of the entire Slovak research eco-system, better international visibility of Slovak research, and its tighter integration with the European Research Area.

January 25, 2023

prof. RNDr. Pavol Šajgalík, DrSc. President of SAS

Part I: Overall Evaluation Report

1. Introduction

1.1. The Mission of the Slovak Academy of Sciences

The Slovak Academy of Sciences (SAS) is the top national scientific and research institution, which carries out research in natural, technical, medical, agricultural, and social sciences and humanities. The first mission of SAS is to carry out basic research at the frontiers of knowledge that leads to new discoveries and concepts. The second mission is to make the scientific infrastructure for technically demanding research available to all interested parties, be it universities or other organizations of research and development. The third mission is long-term strategic and applied research and development, whereby SAS intensively and effectively co-operates with the business sector, the public sector, and civil society to transfer knowledge into practice. During the assessment period SAS consisted of 45 research institutes and centers which were either state budgetary or state contributory organizations with the state institutional funding. From 1 January 2022 all 45 research institutes and centers were transformed to public research organizations, becoming owner of their intellectual properties and allowing them to cooperate better with different sectors of the society.

1.2. SAS in the Slovak Research Eco-System

In addition to the SAS research institutes, there are other players in the Slovak research ecosystem. Slovakia has a vast number of universities, 20 of which are public, 3 are state universities and about 10 private universities. Moreover, there are sectoral research organizations run mostly by related ministries and private R&D organizations. The main SAS competitors and collaborators, at the same time, are the research oriented public universities.

1.3. Funding and Research Performance

The state budget of SAS in 2016 was 60 000 000 \in , from which personal costs were 42 574 716 \in . The share of competitive financing of institutes (except of personal costs) from the SAS budget was 9 681 243 \in and overheads were 4 333 706 \in . The SAS state budget in 2021 increased to 83 600 429 \in , from which personal costs were 63 288 365 \in (including more than 20 % competitive attribution based on research performance). The 2021 share of competitive financing of institutes (excluding personal costs) from the SAS budget was 11 415 723 \in and overheads were 4 657 128 \in . On top of this institutional funding, SAS organizations receive annually from external sources approximately 13 million \in in national research grants, more than 2 million \in in international research grants, and approximately 4 million \in from various economical activities including contractual research. The largest national research grants come for the Slovak Research and Development Agency, which distributes about 35 million \in a year mostly in a general call for the projects and where SAS takes almost a 30 percent share. About 2 million \in is approximately the annual income of SAS from Horizon2020 projects.

In 2020, public plus private spending on R&D in Slovakia amounted to 0.91 % of GDP, whereas the average in the EU is 2.2 % of GDP. Moreover, the rest of the Visegrad countries, the Czech Republic (2 %), Poland (1.4 %) and Hungary (1.6 %) but also Austria (3.2 %), are ahead of SAS in this regard.

In terms of the number of Web of Science publications per researcher over 10 years, Slovakia falls only slightly behind the named countries. In terms of the number of citations Slovakia compares with Poland and Hungary but falls behind the Czech Republic and Austria. If ERC projects and Nature-index publications are taken as indicators of excellent science, Slovakia is falling behind.

When SAS is compared with the academies in the Visegrad countries, that is the Czech Academy of Sciences, the Hungarian Academy of Sciences, the Polish Academy of Sciences and moreover the Austrian Academy of Sciences, similar results are obtained. In the indicators of "standard science" given by Web of Science (WoS) papers and citations per researcher the results are comparable despite the fact that by far the best funded researchers are working in the Czech and Austrian academies. But in the indicator of excellence SAS falls behind.

If SAS is compared with the Slovak public universities with similar financial resources it can be shown that the major share of the WoS publications goes to SAS (23 %), Comenius University in Bratislava (22 %), Slovak Technical University in Bratislava (9 %), Technical University in Košice (8 %) and P. J. Šafárik University in Košice (7 %). For the WoS highly cited documents, the greater part of the share goes to SAS and Comenius University. SAS is also doing well in WoS papers and WoS citations per capita.

More detailed analysis of funding and scientific performance of Slovakia in comparison with selected countries, SAS in comparison with similar foreign research performing organizations, and SAS in comparison with selected Slovak research universities can be found at

https://www.sav.sk/uploads/dokumentySAV/sav2030/4_SAS-2022_analysis.pdf

In contrast to the previous assessment period (2012 - 2015), during this assessment period the funding of new research infrastructures by EU structural funds was much scarcer. For comparison in 2014 SAS and its organizations contracted structural funds projects valued at more than 500 million \in , whereas in 2021 actual structural contracts were only 62 million \in . Furthermore, the majority of these expenses will be realized after the assessment period in 2022 and 2023.

2. The Purpose and Process of the Assessment SAS

2.1. The Purpose of the Assessment

The regular evaluations of SAS Research Institutes were announced, initiated, and ensured by the SAS Presidium in accordance with the Act concerning the Slovak Academy of Sciences. The first evaluation was carried out as an internal process in 1992. Regular assessments of all Research Institutes were undertaken for the period 2003-2006. In the assessment for the period 2007-2011, the panels were composed of experts from neighbouring countries with one internationally recognized expert in every panel.

The first completely external, independent, and international evaluation of the research performance of the SAS Research Institutes was done for the period 2012-2015. The current assessment was undertaken by three Section-specific Panels of Experts, who used External Remote Experts in the case of gaps in their scientific expertise. Panels of Experts visited each Research Institute and interviewed key staff and early career researchers. The process was supervised by the Metapanel. The Metapanel took part in site visits, discussed with the Chairs of the Panels of Experts on each assessment report and at the end of process harmonized the scores proposed by the Panels of Experts over all three Sections.

In accordance with *Principles for the Regular Evaluation of SAS Research Institutes for the Period 2016 – 2021 (*Attachment 1), approved by the SAS Presidium and the SAS Assembly in November 2021, the evaluation process started in 2022. The purpose of this evaluation was to assess the quality of the research of each of the research institutes, the contribution to society, as well as the strategy and development potential of the institute, in order to obtain a professional, fair, and objective view of the state of the research performance of SAS.

The assessment aims to support SAS to increase the quality and impact of research and raise the research performance.

2.2. The Assessment Process and Methodology

The Presidium chose the Head Evaluator, the Metapanel chair, who invited the chairs of the 3 Section-specific Panels of Experts and two other Metapanel members (Chapter 6). The chairs of the Panels of Experts chose the members of their Panels.

The Metapanel chair alone and later together with all the members of the Metapanel met the SAS leadership in online meetings or personally in Bratislava in fact-finding meetings. In the meantime, with the support of the Metapanel, SAS composed a Questionnaire to be filled out by each Institute with their key figures and data pertinent for the evaluation (Attachment 2).

In accordance with the Principles for the Regular Evaluation of SAS Research Institutes for the Period 2016 – 2021, (Attachment 1) the evaluation was carried out in three main areas:

- Quality and performance;
- Contribution to society;
- Strategy and development potential.

The evaluation process included an expert assessment of the data provided in the evaluation questionnaire, which was divided into nine categories:

- 1) Scientific and application outputs of the Institutes;
- 2) Feedback on scientific outputs of the Institutes;
- 3) Scientific status of the Institutes in the international and national context;
- 4) Project structure, grants, and other resources;
- 5) Postgraduate studies and other educational activities;
- 6) Work environment and management: infrastructure, personal development, including postdoctoral support;
- Implementation of recommendations from the previous evaluation and of other development activities
- 8) Contribution to societal practice;
- 9) Popularization of results.

The Questionnaire entitled "Summary of the main activities of a Research Institute of the Slovak Academy of Sciences (SAS)" consists of four sections:

- 1. Basic information on the Institute
- 2. Partial Indicators of the Main Activities:
- 3. Implementation of the Recommendations from the Previous Evaluation Period
- 4. Research Strategy and Future Development of the Institute for the next five years

All completed Questionnaires of each Institute were submitted to the relevant Panel, who invited External Remote Experts to write an institute-specific evaluation report. This report was used for internal purposes of the Evaluation Panel, and it had a recommendatory nature to the Institute's Statutory Body.

The, Panel members, External Remote Experts and the Metapanel read all the Questionnaires. The method of assessment was peer review, supported by the data in the Questionnaires and bibliometric data collected by the Central Library of SAS. These documents are published on the following webpage:

https://www.sav.sk/?lang=en&doc=activity-evaluation-2016

The External Remote Experts prepared the External Remote Expert Assessment Report on SAS Research Institutes (Attachment 3). The Panel chair selected a reporter for every Institute or Centre from the Panel members, and she/he prepared the Panel member assessment report on the given SAS Research Institute and submitted this to the chair of the Panel and to the other panel members. At least 10 working days before the meeting with the scientific community of the Institute, the Evaluation Panel provided the Statutory Body of the Institute with its principal comments.

The Metapanel members were provided with all the reports. The Metapanel members attended the individual panel on-site visits and also discussed with PhD students and early career researchers particular topics such as knowledge transfer and legislative changes and their impact on collaborative research.

Each panel developed a Panel assessment report on each SAS research institute, containing scores in three subcategories and a final evaluation score. The Assessment report also contained general comments on the performance of the Institute for the

assessed period (2016-2021) as well as comments and recommendations for further improvement and development of the institute.

At the end of the process, the Metapanel held meetings where they harmonized the scores proposed by the Panels of Experts over all three Sections.

The results of this assessment will be used as a basis to guide the SAS Presidium's decisions on the funding of the Research Institutes.

3. Evaluation Targets and Scores

The peer review was based on the self-evaluation questionnaire of the assessed Institute, which contained information on the institute's performance in the years 2016 to 2021, which was supplemented with annexes and additional information on the publications and citations, as well as the interviews and discussion held on site with the leaderships, researchers, early career researchers and other academic staff of each institute.

In the assessment the SAS institute was compared with European standards in its discipline(s).

The Panel members and the External Remote Experts assessed:

- I. Scientific quality and productivity
- II. Societal, cultural, or economic impact
- III. Strategy and potential for development

and the overall assessment contained:

- i. General comments on the Institute's performance (2016-2021)
- ii. Comments and recommendations for the further improvement and development of the institute
- iii. Proposal of the overall institute rating:

A sub-score was given to each of these three targets of assessment. The sub-scores were summarized into an overall score.

The External Remote Expert Reports were used for the internal purposes of the Evaluation Panel. They had a recommendatory nature and were provided to the Institute's Statutory Body no later than 10 working days before the panel meeting with the academic community of the Institute.

4. Summary of Assessment Results

4.1. Definition and summary of scores

The Results of the Regular Evaluation of SAS Research Institutes comprised:

a) the evaluation of Institutes in three main spheres: Quality and performance; Contribution to society; and Potential for development; in seven categories: A, A/B, B, B/C, C, C/D and D;

b) overall ranking of Institutes in one of seven categories: A, A/B, B, B/C, C, C/D and D.

The Wording of the score, approved by the SAS Presidium, are as follows:

Category A The research is internationally leading within the European context. The institute has demonstrated important contributions to the field.

Category A/B Part of the research is internationally leading within the European context. Overall the research is visible in the European context. The institute has made valuable contributions in the field in Europe.

Category B The research is visible in the European context. The institute has made valuable contributions in the field in Europe

Category B/C Part of the research is visible in the European context. Overall the research is solid and has contributed to the understanding in the field in the European context.

Category C The research is solid and has contributed to the understanding in the field in the European context.

Category C/D Part of the research is solid and has contributed to the understanding in the field at the European context. But a significant part of the research is not solid or is repetitive, or is deficient in its scientific or technical approaches.

Category D The research is not solid or is repetitive, or it is deficient in its scientific or technical approaches.

Short formulation of the scores from A to D:

A is internationally leading;

A/B part is internationally leading, overall is visible in the European context;

B is visible at European context;

B/C part is visible in the European context, overall is solid;

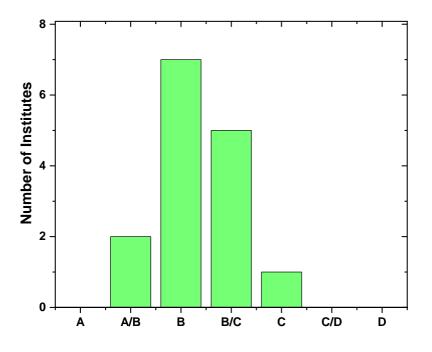
C is solid;

C/D is partly solid;

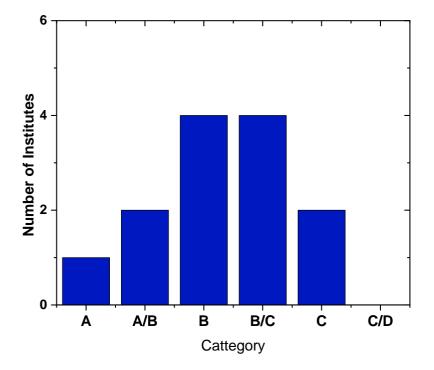
D is not solid;

4.2. Scores by Research Institutes and Centres

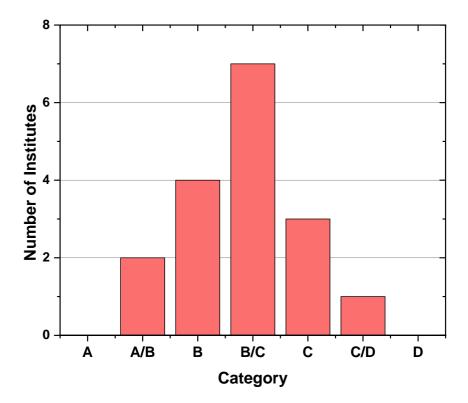
Section I. Physical, Space, Earth, and Engineering Sciences







Section III. Social Sciences, Humanities, Arts, and Culture



Tables of Scores of the Research Institutes in Sections I, II, and III

	-	-	-				
Research Institute	Scientific quality and productivity	Societal, cultural, or economic impact	Strategy and potential for development	Overall rating			
Earth and Space Sciences							
Astronomical Institute	В	В	В	В			
Institute of Hydrology	B/C	B/C	В	B/C			
Institute of Geography	B/C	B/C	B/C	B/C			
Earth Science Institute	В	B/C	В	В			
Mathematical and Physical Sciences							
Mathematical Institute	B/C	B/C	B/C	B/C			
Institute of Physics	В	В	B/C	В			
Institute of Experimental Physics	В	В	В	В			
Centre for Advanced Materials Application SAS	В	В	В	В			
Engineering Sciences							
Institute of Construction and Architecture	B/C	B/C	C	B/C			
Institute of Electrical Engineering	A/B	A/B	A/B	A/B			
Institute of Geotechnics	B/C	A/B	C	B/C			
Institute of Informatics	В	В	В	В			
Institute of Materials and Machine Mechanics	A/B	Α	A/B	A/B			
Institute of Materials Research	В	В	В	В			
Institute of Measurement Science	С	B/C	С	С			

Section 1 - Physical, Space, Earth, and Engineering Sciences

Research Institute	Scientific quality and productivity	Societal, cultural, or economic impact	Strategy and potential for development	Overall rating			
Medical Sciences							
Biomedical Research Center	A/B	Α	A/B	A/B			
Centre of Experimental Medicine	B/C	В	B/C	B/C			
Institute of Neuroimmunology	B/C	A/B	B/C	В			
Agricultural and Veterinary Sciences							
Institute of Forest Ecology	С	B/C	B/C	С			
Institute of Landscape Ecology	С	B/C	C/D	С			
Institute of Parasitology	С	В	B/C	B/C			
Plant Science and Biodiversity Center SAS	В	B/C	B/C	B/C			
Biological and Chemical Sciences							
Centre of Biosciences	С	В	B/C	B/C			
Institute of Chemistry	В	В	B/C	В			
Institute of Inorganic Chemistry	A/B	В	В	В			
Polymer Institute	Α	Α	A/B	Α			
Institute of Molecular Biology	В	A/B	В	В			
Institute of Zoology	A/B	Α	В	A/B			

Section 2 – Life, Chemical, Medical, and Environmental Sciences

Research Institute	Scientific quality and productivity	Societal, cultural, or economic impact	Strategy and potential for development	Overall rating		
Historical Sciences						
Institute of Archaeology	В	A/B	С	B/C		
Institute of Ethnology and Social Anthropology	A/B	A/B	В	A/B		
Institute of History	A/B	В	B/C	B		
Humanities and Social Science	-	-				
Center of Social and Psychological Sciences	В	В	С	B/C		
Institute for Research in Social Communication	A/B	Α	Α	A/B		
Institute for Sociology	В	В	Α	B		
Institute of Economic Research	C	В	С	B/C		
Institute of Philosophy	B/C	В	В	B/C		
Institute of Political Sciences	С	С	С	С		
Institute of State and Law	C	В	С	C		
Arts and Culture						
Art Research Centre of SAS	B/C	В	В	B/C		
Institute of Oriental Studies	С	B/C	D	C/D		
Institute of Musicology	B/C	В	D	B/C		
Institute of Slovak Literature	B/C	В	В	B		
Institute of World Literature	B/C	B/C	D	B/C		
Jan Stanislav Institute of Slavistics	В	С	D	C		
Ludovit Stur Institute of Linguistics	A/B	Α	С	B		

Section 3 – Social Sciences, Humanities, Arts, and Culture

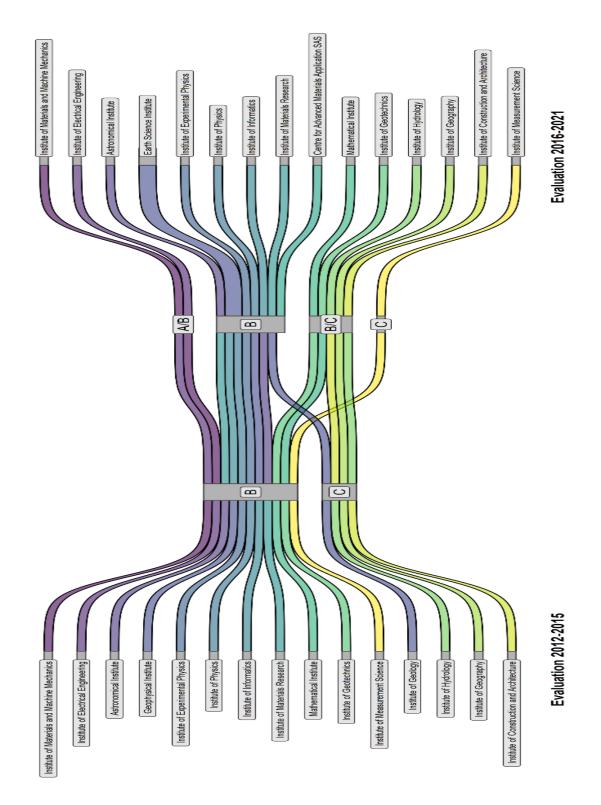
4.3. Scores in the assessment 2012-2015 and 2015-2021

The scores obtained by individual institutes in the assessment 2012-2015 and the current assessment 2026-2021 cannot be directly compared due to the following reasons:

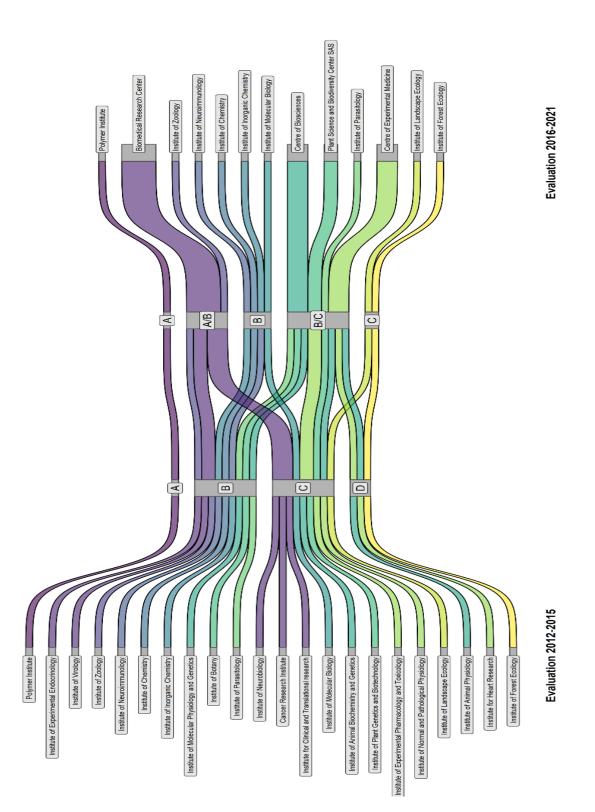
1) The score categories for the current assessment, defined by the Presidium, are different from those of the previous assessment;

After the previous assessment several institutes were merged, resulting in a lower number of institutes, as compared to those subject to the previous assessment, and
 while SAS institutes improved their performance after the previous assessment, so did their peer institutes in Europe, making the competition for excellence and impact harder at the European level than what it was at the time of the previous assessment.

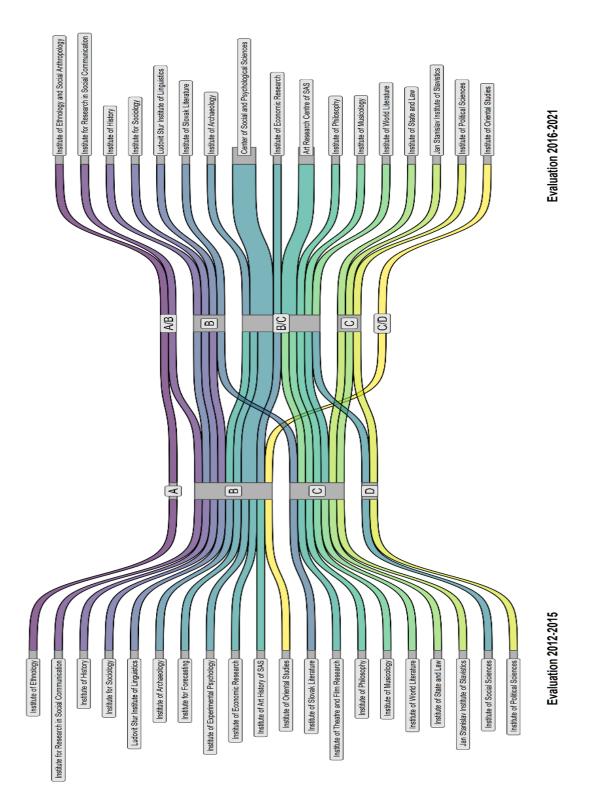
Nevertheless, it is interesting to have a look at the evolution of the scores per institute, taking the above disclaimers into consideration. The following graphs provide is a comparison of the SAS Institutes' scores from the assessments of the years 2012-2015 and 2016-2021 (graphs prepared by Prof. Kristian Vlahoviček, Panel II member).



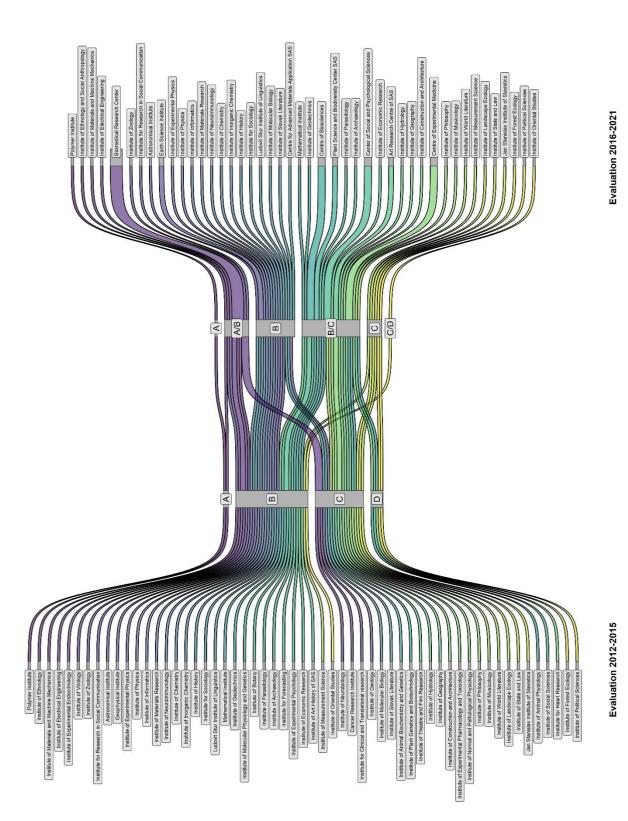
4.3.1. Scores of Section I institutes in the previous and current assessments



4.3.2. Scores of Section II institutes in the previous and current assessments



4.3.3. Scores of Section III institutes in the previous and current assessments



4.3.4. Scores of all institutes in the previous and current assessments

5. Recommendations

5.1. General Recommendations

5.1.1. Recommendations to the Ministry of Education, Science, Research and Sport

In terms of science and innovation policy and relevant funding, Slovakia continues to be at the tail end of European rankings. The National Strategy on Research, Development and Innovation 2030, which is still unpublished, is urgently needed to provide a framework for strategy development for all stakeholders, notably the universities and SAS. The Metapanel noted with satisfaction that SAS has been invited by the Ministry to actively participate in the development of that document.

The Ministry has initiated the design of the process to evaluate the performance of universities, but it seems to cover only part of the aspects of research and education. A comprehensive assessment of the national RDI system, carried out by independent international experts, and covering the performance of all relevant organizations should be undertaken in order to inform the development of the national strategy and the research and innovation organizations themselves. Such a strategy would also guide the universities and SAS towards a fruitful division of labour.

SAS has invited to its Scientific Council the rectors of its main partner universities, Comenius University, the Slovak University of Technology, the Pavol Jozef Safarik University and the Technical University of Kosice. This is the perfect forum to discuss common strategic issues, as well as a joint policy for scientific collaborations that currently are based mostly on individual initiatives. Joint appointments of researchers / professors and collaborative research between neighbouring disciplines in these parallel institutions should be enabled. This would strengthen the positions of both the universities and SAS in the area of European research and higher education.

Bilateral research funding programmes with leading European countries would also be welcome to develop Slovak research. It is time for the Slovak Republic to look further than the Visegrad countries, which have been the benchmark or preferred partners, and aim to establish bilateral programmes with research funding agencies of countries with mature RDI systems, such Denmark, Switzerland, the Netherlands, Belgium and Germany. Such programmes would not only stimulate cooperation with leading research systems, but also give Slovak research visibility and experience in obtaining competitive funding.

State-of-the-art research requires modern equipment, core facilities and databases. The Ministry is urged to advance the final approval and publication of the Action Plan of the National Roadmap for Research Infrastructure, to include in it a dedicated funding programme for research infrastructure, and complement it with funding opportunities to take advantage of the European Strategy Forum on Research Infrastructures (ESFRI).

Slovakia has a resource of talented youth, which, however, is not sufficiently motivated to embark on a research career. Higher education in general and science education in particular are to be considered a national resource and deserve to be funded through an improved grant scheme for early career scientists and junior groups. This challenge is increased by brain drain, with especially young researchers seeking better opportunities in countries with more mature Research, Development and Innovation (RDI) environments. The Slovak government has stated: "The biggest weakness of the current state of RDI is related to the long-standing insufficient and unsystematic financing of RDI, which has been influenced by inconsistent political decisions, brain drain and the outflow of experts, including researchers abroad". In fact, the Metapanel's recommendations are all geared towards improving the research environments at the level of SAS and at the level of its institutes, in order to retain researchers in Slovakia, to encourage young Slovak talent to embark on research careers, and to internationalize the Slovak researcher base.

5.1.2. Recommendations to SAS

The SAS functions in the Slovak research system. In evaluating the performance of its institutes, it is important to take this into account. The Slovak Republic is considered to be one of the 'emerging' countries in the latest European innovation scoreboard, with a research system considered slightly less attractive than that of countries like the Czech Republic, Greece, and Hungary, but more attractive than that of Croatia, Poland or Serbia. The gap to so-called 'leading' countries is, however, large. In these circumstances it is already a great achievement for SAS institutes to have maintained level of research identified in this assessment. To expect the institutes (and Slovak research-intensive

universities) to perform cutting-edge scientific and scholarly research is not realistic without changes on a national and structural level.

5.1.2.1. Interaction between SAS and the Universities

Current interactions between SAS and the universities are not institutional but personbased, and therefore the synergy of the collective intellectual capacity is under-used. The disconnect between the universities and SAS continues to harm the Slovak research and innovation system at large, since the benefits of synergies between research organizations, fundamental and translational research, scientific disciplines, and research infrastructures hosted by different organizations, cannot be capitalized on. SAS, together with its Scientific Council's university rector members, should develop a strategic framework for the interaction of SAS and the research-intensive universities in education, research, and innovation. This will allow SAS to achieve a healthy balance between collaboration and competition with the institutions of higher education.

One option to advance the implementation at the researcher-level of such a strategic framework could be joint appointments of professors and collaborative research projects. Another objective would be interaction between Bachelor and Masters education, on the one hand, and PhD and post-doctoral programmes, on the other. The guiding principle should be that students and early career researchers have access to the best available scientific knowledge. The disconnect makes it difficult for SAS to attract PhD candidates from Slovak universities and negatively impacts the career progression of researchers since it makes it difficult for them to gain teaching experience. There is a need for an evaluation of the outcomes and practices of doctoral training covering both SAS and the universities. Strategic cooperation between SAS and its partner universities will also render the universities more visible because of the enhanced research performance.

5.1.2.2. Institutional Strategy

There are great differences among the SAS institutes in their strategic outlooks, implementation of academic leadership, community building, PhD programmes, publication strategies, and relationship with other SAS institutes and the universities. SAS has developed its high-level Strategy 2030. In the absence of an Action Plan for the strategy, the institutes lack the incentive to follow a certain course or research policy, or to create common support structures or infrastructures. This allows some institutes to

function in an 'insular' way, fails to allow for the development of an environment in which new (digital) methods can easily be used, and gives research insufficient support to participate in international and EU-funded projects.

It is understood that the Presidium of SAS has no direct control over the institutes, which are autonomous units. Nevertheless, there should be a good equilibrium between academic autonomy at the institute-level and the ability of SAS to set and follow a common strategy. We recommend that the formal relationship between SAS and its institutes be strengthened in a way that will enable the formulation and implementation of a common strategy covering all institutes.

Such a SAS-level framework strategy, informed by the National Strategy on Research, Development and Innovation (still unpublished) is needed for the institutes to formulate their own strategies. At this moment the differences between the strategies of the institutes are striking, with some institutes having no strategy at all in the true sense of the word. The time is ripe since all SAS institutes have been transformed into public research institutions based on new legislation. It is highly recommended that SAS start a new process for the institutes to develop fresh strategies that take into account the results of the present assessment. The process should be participatory, involving from the very start all academic members of the institutes and the relevant stakeholders.

5.1.2.3. Inter-disciplinary Research to Mitigate Societal Challenges

In the absence of a common strategy, the institutes have no framework to develop interor trans-disciplinary research with other institutes of the same or other Sections. This is unfortunate since urgent scientific and societal problems can only be tackled in an interdisciplinary way, all scientific and scholarly disciplines being vital to developing new methodologies and approaches to solve the problems of the 21st century. We point to a number of research domains relevant for the Slovak Republic, such as digital transformation, a healthy society, food safety, the environment, energy transition and the mitigation of climate change, which need the natural sciences, engineering, law, the behavioural sciences, the social sciences and the humanities to work together. The above research themes can best be studied in trans-disciplinary centres, the staff of which is employed by the specific mono-disciplinary institutes. SAS lacks the financial resources to set up such trans-disciplinary centres. Therefore, it is recommended that SAS convince the Slovak government to use a fraction of the Covid recovery funds to invest in such research and innovation centres, which will not only bring together various disciplines, researchers of SAS and beyond, but also fundamental and applied research, and stimulate topical inter- and trans-disciplinary research in an unprecedented way in Slovakia. The mitigation of the Covid-19 pandemic, and especially the vaccine development, demonstrated the power of inter-disciplinary research, cross-border collaboration, open science and public-private partnership.

5.1.2.4. Brain Drain

Slovakia suffers from serious brain drain, especially among the younger generation. Brain drain can be seen as a symptom of a broad set of problems, including a low level of national funding for research. Though some individual SAS institutes have taken laudable actions to counter brain drain, and been successful in recruitments especially from the Balkans, India, and Ukraine, a more active recruitment policy of PhD candidates is needed, including possible experimental recruitment cooperation with institutes abroad. Bureaucratic procedures at universities should be simplified or eradicated, and narrowly defined PhD programmes at universities should become broader and much more flexible.

The PhD candidates at SAS have welcomed the introduction of the DoktoGrants-scheme, but post-docs have been disappointed that no such scheme exists for them. For fresh PhDs no incentives exist to come to work at an institute of SAS. If young researchers could start projects of their own and guide their own PhD candidate – even when a senior researcher has to be the formal supervisor – this would make it more attractive for early career researchers to work at SAS. This would also be a signal of emerging intellectual independence by demonstrating the capacity for supervision, which is much valued in high-profile calls such as the ERC Starting Grant programme.

SAS offers post-doctoral grants from the 3-year SASPRO2 programme co-funded by the European Commission. It is recommended that SAS ensure the continuation of such a programme after the end of SASPRO2.

SAS has recently established with its own resources the IMPULZ programme to recruit internationally recognized young Principal Investigators from abroad to establish their

own groups at its institutes. This is a laudable initiative, a true investment in the Slovak research system.

5.1.2.5. Research Infrastructure

It is recommended that SAS develop a strategy and action plan for research infrastructure at the academy-level, taking into account the National Roadmap for Research Infrastructures published in 2021, and the National Action Plan for the implementation of the National Roadmap, once it is published. It is expected that the National Action Plan will include a dedicated funding programme for investments in equipment and covering running costs. The SAS strategy should aim 1) to foster interdisciplinary exchanges and collaboration among SAS institutes, 2) to increase national and international visibility and collaboration, 3) to respond to recent digital and computational developments (which are especially needed in the Social Sciences and Humanities), and 4) to sustain mixed methods in research. SAS should agree with the rectors of its partner universities on mutual access for their researchers to large- and medium-scale research infrastructures, based on jointly agreed rules and fees.

In order to achieve strategic aims specifically in the Humanities and Social Sciences, we propose the establishment of a new academy-wide centre, which could potentially be named the *Centre for Digital and Computational Social Science and Humanities*. It could take the form of a laboratory, a hub, or a platform, and promote further collaboration with, for example, the environmental sciences and other STEM subjects. SAS needs to recognize and respond to the increased importance of new quantitative methods as well as methods resulting from the digitalization in disciplines covered by Section III institutes. The centre would complement and complete (and not replace) traditional research infrastructures in arts and humanities including libraries and archives, by data modelling, digitalization, data mining and analysis, virtual models, database design and professional data sharing.

Currently, all these digital methods are scattered throughout the institutes. For instance, there is ongoing research on artificial intelligence in philosophy, history and arts, corpus linguistics, and digitization in musicology. Although a number of institutions in Europe have adopted this kind of a research strategy and opened similar centres, there is no institutional strategy in place in Slovakia. The *Centre in Digital and Quantitative Social*

Science and Humanities would be the forerunner in Slovakia, increasing SAS' visibility internationally.

5.1.2.6. Access to Publication Databases and Publishing Practices, and Outreach

Some institutes mentioned restrictions on accessing journals and databases and that financing is required for access, demonstrating a disparity between institutes in their access to discipline-specific electronic resources. An update on database access based on disciplinary needs is recommended. A financial incentive for foreign language publication should be established separately or be built into the performance evaluation regarding both the individual researchers and the institutes.

Public outreach includes science education, dialogue with society and policy-makers, which help build trust in science. Thereby science improves its own reputation and, in return, informed citizens are better prepared to cope with the increasing social and planetary problems. We recommend that institutes or groups of them develop outreach action plans, with the directors taking the leading role.

5.1.2.7. Central Support Unit

One of the greatest needs of all Sections is research support. SAS has recently established an office for such support, focusing on Horizon Europe programmes such as the ERC. It is recommended that SAS expand its service portfolio to organising workshops on application processes, professional advice and help in applying for domestic and international research funds, joining or leading international consortia, and translation and proofreading services in order to stimulate international publications. The office should build functional links to the EU National Contact Point (NCP) of Slovakia to promote and support applications to EU Framework programmes, as well as to the Expert Panel of EU programmes, together with the newly established Slovak Centre for Scientific and Technical Information. In the field of HR-management the office would help institutes accommodate visiting researchers.

5.1.2.8. Gender, Diversity and Career-age Gap

In spite of the laudable recent initiative on gender equality, the implementation of the SAS plan could be boosted especially in the top ranks and decision-making bodies. Progress across the academy should be annually monitored with an eye towards the targets, and this information should be disseminated. Issues that need particular attention are equality in recruitment, career progression, leadership, the equitable and transparent spread of workload, and practices to make family life and a scientific career more compatible, including challenges of maternity leave. Support of international researchers and their integration could be enhanced for instance by a dedicated orientation course, the creation of a network of international researchers at SAS and beyond, and by offering free language courses.

Age gaps are beginning to emerge in some institutes, signalling problems for the future. Since the full potential of PhD supervisors in SAS is under-used, more PhD candidates could be recruited through more national and international open calls than has been the case until now.

5.1.2.9. Research Integrity

Several researchers at different levels were observed not to know the mechanisms that are in place to deal with integrity and ethics, including potential conflicts of interest, harassment, discrimination, and breach of work contract. Additionally, some concerns were expressed due to the lack of a clear path for complaints to be heard and dealt with in an anonymous manner. The ethical committee of SAS should enlarge its scope to deal with the above issues using an independent adjudicator or an ombudsperson. The staff should get a clear overview of procedures and information with regard to research integrity. Early career researchers tend to be most vulnerable to the above threats, and therefore special attention should be given to them concerning the abovementioned issues, as well as providing them support in issues concerning mental health and wellbeing.

5.1.2.10. Methodology of Regular Assessments of SAS

Across Europe the need is felt to reform research assessment practices by moving the main focus from quantitative towards qualitative indicators and from past performance to

future plans. The assessment of research, researchers, and research institutions should recognise the diverse outputs, practices and activities that maximise the quality and impact of research. This requires basing assessment primarily on qualitative judgement, supported by the responsible use of quantitative indicators. It is recommended that SAS adopt updated methods of evaluation. The panel recommends that SAS learn from best practices in Europe and join the Coalition for Advancing Research Assessment (CoARA), which has been newly established by the European Commission.

5.1.3. Recommendations to the Institutes

The Panels were impressed by the progress that most institutes have made during the evaluation period. Recommendations from the Regular Assessment 2021-2015 have been implemented both at the academy level and by individual institutes, and these have led to very positive results with regard to the quality and impact of research. The Panels look back to open, honest, and fruitful conversations with leadership and members of the institutes. The Panels admired the energy and dedication of the members of the institutes to do their research and communicate about it to both the academic community and the general public. The SAS research community does its important work, although its national research environment does not belong to the most developed in Europe. To reach scientific and scholarly excellence, members of the SAS institutes have to overcome more hurdles and challenges than their peers in many other European countries, a fact which makes their accomplishments even more impressive. All in all, SAS is on a dynamic track towards research excellence and impact.

5.1.3.1 Scientific Priorities and Collaborative Platforms

Institutes should formulate their scientific priorities, harmonized with SAS' institutional strategy (once it is in place) without compromising academic freedom, and they should further adjust their internal organisation to reflect these priorities. Instead of trying to cover the entire breadth of their fields, as many of the institutes aim to, they should identify their strengths and potential and consider concentrating on a "flagship" programme or a few of them, the choice of which could be informed by a national strategy (once in place), and realized together with partners from universities and beyond.

Platforms or centres could be put in place, where SAS institutes could find partners in similar scientific directions, for instance, for the above-mentioned flagship programmes. Collaborations between institutes should be encouraged since this would provide an added value to a restructuring effect. Centres and networks are means to achieve these goals. Synergies in environmental sciences, materials science, and other strategic technological fields, and humanities and social sciences appear to be under-used.

5.1.3.2. Sub-critical Institutes and Mini-departments

One feature, especially of the Humanities and Social Sciences institutes is the modest or even small size of many of them, and the splitting of many institutes into mini-departments sometimes of only one or two researchers. At the same time many institutes of a subcritical mass have the ambition to cover the entire field of their discipline.

For many reasons this is not sustainable. Very small institutes depend on only a very few researchers for the work and are therefore vulnerable in cases of capacity loss. Collaboration between researchers of different institutes is not encouraged, even when the disciplines are related or even the same. Healthy debates on the future of the institute are not possible because of scarcity of researchers and lack of diversity. Mini-departments encourage isolated individual research, which is not fostered by a healthy academic environment, and small institutes tend to have a lesser say in Section- or SAS-wide debates.

This makes a convincing case for creating larger institutes or centres. Centres should be re-designed into truly new academic communities, not to become an umbrella under which old institutes continue to exist without anything changing in practice. Bringing together small institutes is a delicate process, which sometimes needs outside help. It should not be the aim to abolish relevant disciplines or to make relevant disciplines less visible, but to stimulate cross-disciplinary cooperation, share and use best practices, and create a larger and more vibrant academic community including a more empowering environment for younger researchers. Merging small institutes can be done only by bringing them together physically. The larger merged units should share a single location in Bratislava or elsewhere.

Four institutes have been deemed to be unviable as stand-alone units: the Jan Stanislav Institute of Slavistics, the Institute of World Literature, the Institute of Musicology and the Institute of Orientalism. This is not because the research of the individual scholars is not up to standards or unimportant, but the institutes are too small to thrive, or the individual researchers have too little in common to make a vibrant academic community.

It is recommended that SAS create a new institute, the Institute for World Literature and Arts, in which the Institutes of Slovak Literature, World Literature and Musicology join forces with the Art Research Centre and the relevant scholars of the Jan Stanislav Institute of Slavistics and the Institute of Orientalism. Other scholars from the latter two institutes could find their academic home in the Ludovit Stur Institute of Linguistics or the Institute of History.

The Institute for Social Communication could consider merging with the Institute of Ethnology and Social Anthropology, making these two strong institutes even more successful.

5.1.3.3. International Advisory Boards

SAS established an international advisory board to monitor the implementation of the recommendations of the last assessment. All institutes also established advisory boards, some of which have had a truly positive impact on development though their strategic advice and monitoring of the implementation of the recommendations of the last assessments. The advisory boards especially of several small institutes appear to include close colleagues. Only boards with high-profile critical friends are useful. Especially in the case of Section III institutes, a Section-level advisory board could make more sense than institute-specific ones, or at least a Humanities-level plus a Social Sciences-level advisory board. It is clear that it is difficult to attract high-profile experts unless the unit's ambition level and critical mass are high. It is recommended that SAS develop a Terms of Reference document applicable for the advisory boards of all institutes. The primary task of the boards should be to support the institutes in their strategic planning and monitor and help with the implementation of the recommendations of this Assessment.

5.2. Recommendations on Training and Empowerment of Early Career Researchers

Training and supporting the next generation of researchers and innovators is essential for future-proof Research, Development and Innovation (RDI), and thereby for economic growth and well-being of any country. SAS is in a key position to ensure that this becomes a reality in Slovakia. The European innovation scoreboard shows an alarming decline in the number of PhD graduates in Slovakia since 2015. Therefore, measures to attract and support early career researchers (PhD candidates, post-docs and junior group leaders), is both vital and urgent.

The panel members were very impressed by the engagement and enthusiasm of the early career researchers of SAS whom they interviewed. However, attention could be paid to forming a more involved intellectual community of young researchers, building on the recently established Young Academy of SAS. Early career researchers expressed feeling well-motivated and were generally satisfied with their current conditions. There is a unique opportunity to maximise the collective future potential of SAS by investing in their support and career development. When policies and activities are harmonised across all institutes, everyone will profit from the same opportunities.

5.2.1. Training of PhD Candidates and Post-docs

Since the last assessment SAS has adopted guidelines for quality assurance of PhD training and standards for supervision. Their implementation is the responsibility of the institutes. Nevertheless, training and mentoring appear to continue to depend largely on the relationship between the PhD candidate and the supervisor. In addition to the training that the institutes provide, SAS organises courses and webinars on soft skills, also offering grants to PhD candidates for training in proposal-writing. Many of the PhD candidates who were interviewed were unaware of these, and attendance has dropped after the pandemic from 25-30% to some 10%,

It is recommended that SAS take a systematic academy-level approach to attract the PhD candidates to follow 1) structured orientation courses for all in-coming PhD candidates; 2) training courses in scientific writing, grant-proposal writing, and poster presentation; 3) discipline-specific journal clubs and workshops, 4) and especially for post-docs, support

in career planning, coaching in leadership skills, and identification of European funding opportunities.

There are big differences between the PhD programmes across institutes. In at least some of the institutes the programmes, including compulsory classes, would need reviewing and eventual restructuring. This should be done in collaboration with SAS and university researchers and should also involve early career researchers in the process. The number of foreign PhD candidates has increased over the last six years. Offering training programmes also in English would enhance internationalization of the base of young researchers in Slovakia. SAS has established a collaboration with the doctoral school of the University of Vienna, which provides excellent opportunities to improve training programmes.

PhD candidates at SAS are enrolled in specific study programmes at SAS' partner universities that award the degrees. SAS personnel seem to have limited possibilities to teach in the universities and to supervise. To enable full knowledge transfer between SAS and its partner universities, possibilities could be explored for part-time employment of SAS staff in universities, which would also facilitate access to diploma and Masters students to rejuvenate and increase the inflow of PhD candidates to SAS.

5.2.2. Quality and Intensity of PhD Supervision

PhD candidates currently undergo a review of their progress once a year with their supervisor. Each PhD candidate with their supervisor should be supported by an independent PhD committee consisting of researchers from the same field from other SAS institutes and/or universities. Each PhD candidate should have a primary and a secondary supervisor. It is recommended that SAS establish a process of quarterly progress reports, submitted by the PhD candidates, setting clear objectives for the next reporting period, including comments by both supervisors. It is also recommended that SAS establish a mandatory training course for new supervisors, and a refresher course for experienced ones covering rules and regulations, how to deal with difficult situations, and where to turn for support and well-being services for students who may be struggling. The above practices and services will also help to decrease the number of drop-outs of PhD candidates.

5.2.3. Funding Supplements

Grants for PhD candidates are announced on the SAS web page, and information about them is sent to all PhD candidates by email. Nevertheless, awareness about opportunities for salary supplements, additional funding for research expenses or stays abroad differs greatly among the institutes. Learning about such opportunities currently depends on individual motivation, and on supervisors bringing these to the attention of the PhD candidates. SAS should ensure that all early career researchers pay attention to the available funding supplements.

5.2.4. Sustainability of Research Careers

This topic was of substantial concern across institutes, although some institutes have better systems for career progression than others. A structured career path for researchers (similar to tenure track) should be defined. Transparent and equal recruitment processes should be ensured by using independent evaluation panels for promotion through the entire career progression pathway.

SAS has implemented a performance-based approach to salary-levels based on the scores that the institutes received in the last evaluation. However, the renumeration scheme for PhD candidates and post-docs needs to be reformed. The post-doctoral net salaries are lower than the PhD stipends, due to the fact that the post-doctoral salaries are subject to, for example, pension and health insurance deductions and income tax, and this can discourage new PhDs from pursuing a research career.

5.2.5. Representation of Early Career Researchers

It is important to ensure that young scholars can have their views heard in decisionmaking bodies at SAS- and institute-levels, and much improvement can result from such mutual interactions. While SAS has a Youth Council, the members are only involved in public engagement activities for SAS and are allowed to sit in the Accommodation Committee. It is recommended that the institutes include an early career representative in their executive bodies and that SAS ensure a seat for a representative of the Youth Council in its decision-making bodies.

5.2.6 Communication

To support implementation of the above recommendations, it is recommended that SAS create in collaboration with the Youth Council a newsletter where the training courses, funding / supplement opportunities, and networking events are clearly and transparently communicated to the early career researchers across the institutes.

5.3. Knowledge Transfer

Research in Europe is financed mostly by public funds, and therefore research findings are a public good. Researcher communities, not every individual researcher, thus have a responsibility to give back to society. Research impact on society is defined as having a beneficial effect on society, culture, health, economy, public policy or services, the environment, and quality of life. Therefore, all scientific and scholarly disciplines can have and have had research impact. Valorization is defined as activities that render research results accessible to and usable by the society and the economy.

Technology transfer and valorization activities of SAS have been long-standing already since the '80s, and there have been several successful examples throughout the years. For example, a biomedical patent has been licensed to a US company. Later, a spinoff company was formed, to which the patent owned by the SAS institute was licensed. Patenting activity has also been high for instance in Polymer institute. Licensing activities are reported to be rather successful in expected royalties, but the legal burden still seems to lie with the institute itself instead of a central support unit. Knowledge transfer covers in addition to technological solutions social innovations emerging from the humanities and social sciences.

5.3.1. Legislative Changes and their Impact

Compared to the findings of the previous Regular Assessment of SAS, there has been a significant improvement in the awareness of valorization issues. This has been enabled by the changed legislative framework that moved the SAS organizations as of January 1, 2022, from direct budgetary/contributory bodies to public bodies with a higher level of self-governance. The increased degree of autonomy has empowered SAS and its institutes to manage their tangible and intangible assets. These changes greatly improved the environment for valorization by enabling the building of a centralized Technology Transfer

Office (TTO). A TTO typically coordinates the valorization process by providing strategic, financial, administrative, and legal support to researchers.

The steps that SAS has taken so far are still very early ones. The central TTO staff is composed of three members with natural science education, two economists (one of them educated in mass media communication and the other in pedagogy), and one part-time patent attorney who gives legal advice and deals with intellectual property protection, commercialization, marketing, popularization, public relations, and education. So far, no lawyer is available.

As the number of valorization cases grows, the demand for support will increase, and the support should also become more professional and holistic to cover both the scientific and scholarly reach of the institutes of the three Sections of SAS. Most institutes lack a clear, coherent, and transparent policy for handling Intellectual Property Rights (IPR). The TTO should hire a lawyer to provide legal support. Part-time liaison personnel (who are scientifically educated) could be employed at the institutes to support the TTO in obtaining crucial information on emerging innovations. It is important to operationalize the valorization procedures at the level of SAS to support the valorization processes of the institutes.

5.3.2. Incentivisation

The importance of monetary awards regarding shares in successful IP-based deals is recognized in the internal SAS rules, but many institutes and researchers seem not to be aware of their existence. These rules should be clearly communicated to all researchers. A non-monetary award system for achievements, such as innovation or valorization prize(s), could be put in place and disseminated and popularized within institutes, SAS, and in the public media. Incentivisation can also be realized in the context of career development. The researchers working on collaborative projects with industry or other societal partners have similar rules of advancement through the ranks as the ones focusing solely on basic research. A distinction in career paths could be thought about to define how researchers successful in valorization should be acknowledged in recruitments and promotions.

5.3.3. Collaborative Research

At most institutes contract and collaborative research does occur to various degrees. Currently, clients are targeted passively by advertising the institute's competences on the web, by expecting to be approached by industry or other societal partners on an *ad hoc* basis, or by maintaining long-standing collaborations. Also, there seems to be little planning regarding the overall industry- or society-related income. The systematic seeking of relevant companies and societal partners, previous and new ones, to attract more business collaboration, should be initiated by the TTO.

5.3.4. Central support

A central office for technology transfer, valorization and project proposal support has recently been established at the level of SAS. Only in a handful of institutes is this information known to the researchers. So far, no concrete examples of project proposal support are evident. The transparency of processes at the level of the central TTO seems to be considered but is still at an early stage of development. The accessibility, quality, and responsiveness of the central TTO should be further improved. Information about the services should be communicated to the researchers in workshops. Support for different commercialization options (spinoff creation, licensing, collaborative research) should be further structured, and enough staff with relevant competences should be allocated to the office by SAS. Proof of concept-funding could be introduced to help technologies to mature faster. A provision for venture capital support should be considered to be added to the TTO's service portfolio.

It is of prime importance to enlarge the services to cover social innovations as well by adding HSS expertise to the team, and by designating the central office the "Knowledge Transfer Office" rather than the "Technology Transfer Office".

Mentoring schemes with entrepreneurs in residence and alumni who have established a company, institutional networks, inter-institute collaboration, and sharing of projects with participants from different departments/institutes are, as of yet, lacking. There seem to be few systematic goals in the valorization processes, and institutes are in a reactive mode vis-à-vis external requests. Goal-setting in valorization, and monitoring of the achievement of the goals should be supported by the central TTO.

The TTO should organize innovation-relevant educational events, seminars to present successful valorization cases, and pitching competitions for innovators. It could organize study visits to the European Patent Office (EPO) and the EU Immaterial Property Office EUIPO. SAS could consider seeking membership in relevant organizations such as the European Association of Research & Technology Organizations (EARTO, the European Association of Research Managers and Administrators (EARMA) and the European Alliance for Social Sciences and Humanities (EASSH).

5.3.5. Observations from the European Innovation Scoreboard

Value creation is at the heart of valorization activities. It denotes a process where the benefits for a given set of stakeholders are articulated, created, and captured throughout the valorization process. A coherent innovation support environment is needed to enable such processes. The European innovation scoreboard is an annual analysis of the valorization performance of the EU member states and beyond. It helps the countries to assess their strengths and weaknesses, and identify their challenges. According to the scoreboard of 2022, the overall innovation index of Slovakia has only slightly increased since 2015. The indexes in information technology, IPR, and sales impacts are stagnating, and the human resources are drastically decreasing. While the number of product and process innovators has increased by 15 %, the patent and design applications demonstrating IPR activity have decreased by 3.7 %. This decrease can be connected to the decrease of sales of innovative products by more than 36 %.

The only significantly and coherently improved indexes in the Slovakia's innovation scoreboard results can be attributed to research organizations: the numbers of 1) international scientific co-publications, 2) most cited publications, and 3) foreign doctoral students. As a prominent deliverer of fundamental research results, SAS has contributed significantly to this success. However, the linkages between academia and industry do not function optimally in the country.

SAS has a great potential to create value from its research results to the economy and society by collaboration and knowledge transfer with industry, public administration and society.

6. Competencies and Profiles of the Panellists

6.1. Composition of the Panels

The Metapanel in charge of steering the evaluation process was composed of the chairs of the three Section panels, an Expert on PhD training and young researchers' career issues, an Expert on knowledge transfer to the benefit of society, and the chair. The Section Panels were composed of researchers whose scientific knowledge was relevant for those institutes they evaluated. The panellists had experience in the evaluation of the research performance of research organizations and national research and innovation systems, and they were familiar with the research environments and systems of the European Union's Widening countries. Attention was given to their diversity in order to increase collective intelligence. Therefore, eight of the eighteen panellists were from Widening countries (Croatia, Estonia, Hungary, Slovenia and Czech Republic) and the others from Belgium, Finland, Germany, Ireland, Italy, Switzerland, The Netherlands and the UK. Seven panellists were female and four represented the younger generation of researchers. Five panellists, the Metapanel chair and two Section Panel chairs and members, had participated in SAS' Regular Evaluation 2012-2015. The experts' biographies are in part 8.2. The investigation of conflict of interest identified two cases, the mitigation of which are explained in the concerned panellists' biographies. The criteria of conflict of interest were adopted from rules of Horizon2020.

<u>Metapanel</u>

Professor Marja Makarow, chair
Dr Gemma Modinos, member
Dr. Špela Stres, member
Prof. Helmuth Weissert, Panel I chair:
Prof. Toivo Maimets, Panel II chair
Prof. Wim van den Doel, Panel III chair

Panels of Experts

Panel I

Prof. Helmuth Weissert, chair

Prof. Bart De Moor, member Prof. Jaroslav Fabián, member Prof. Valeria Nicolosi, member Prof. Martin Pohl, member

Panel II

Prof. Toivo Maimets, chair Prof Jaak Järv, member Prof Taina Pihlajaniemi, member Prof. Imre Vass, member Prof. Kristian Vlahoviček, member

Panel III

Prof. Wim van den Doel, chair Prof. Özen Nergis Dolcerocca, member Prof. Ortwin de Graef, member Prof. Balázs Kiss, member Prof. Markéta Křížová, member

6.2. Panellists' Biographies

Metapanel

Marja Makarow

Marja Makarow is the President of Academia Europaea and a Board member of the European Innovation Council EIC. She is Professor Emerita of Molecular Biology of the University of Helsinki and former Director of Biocenter Finland (2016-2021, Vice-President of the Finnish Research Council - Academy of Finland (2012-2016), Chief Executive of the European Science Foundation ESF in Strasbourg France (2008-2012), and Vice-Rector for Research of the University of Helsinki 2003-2007). She is a cell biologist and has discovered molecular mechanisms of folding and intracellular transport of glycoproteins. She established and chaired Finland's largest PhD programme in molecular life sciences where she supported some 50 PhD candidates and supervised personally 19 PhD candidates to their degrees. She is a former member of the Governing Board of the European Institute for Innovation and Technology EIT and the Chair of the Technology Academy Finland that awards the global Millennium Technology Prize for ground-breaking innovations. In Finland, she chaired the Founding Boards of Tampere University and the Institute for Molecular Medicine FIMM, and was Vice-Chair of the Founding Board of Aalto University. She is/was member of the Boards and International Advisory Boards of a number of top universities of Europe. She served as Scientific Delegate of Finland in the Council of the European Molecular Biology Laboratory EMBL and as the President of the European molecular Biology Conference EMBC. She has carried out evaluations of Principal Investigator grants (e.g. as ERC Starting Grants Panel Chair), of centres of excellence, international research, innovation and infrastructure programmes, of the performance of universities and research institutes, and of funding organisations and national research and innovation systems. Marja Makarow has advised the Finnish government in the Prime Minister's Research and Innovation Council, and the EU Commissionaires in the European Research Area Board. She is Chevalier de l'Ordre de Légion d'Honneur, France, and Commander of the Order of the White Rose, Finland. Marja Makarow chaired the international Regular Assessment of the Research Institutes of SAS 2012-2015, and thereafter the SAS International Advisory Board. She served as

Chair of the Metapanel in the SAS Regular Assessment of the Research Institutes of SAS 2016-2020.

Gemma Modinos

Gemma Modinos is Reader in Neuroscience & Mental Health in the Department of Psychosis Studies at the Institute of Psychiatry, Psychology & Neuroscience of King's College London (KCL) and former Chair of the Young Academy of Europe (YAE). She accomplished her BSc in Psychology at the Autonomous University of Barcelona, followed by an MSc in Applied Neurosciences at the University of Barcelona. She completed her PhD in Neuroscience at the University of Groningen, The Netherlands. She then moved to the Department of Psychosis Studies at the Institute of Psychiatry, Psychology & Neuroscience of King's College London as a post-doc. In 2013, Gemma Modinos received a prestigious NARSAD Young Investigator Award (USA) to examine the relationship between neurophysiology and neurochemistry in people at increased risk of developing a psychotic disorder such as schizophrenia. In 2016, she was awarded a King's Prize Fellowship, followed by a Wellcome Trust & Royal Society Sir Henry Dale Fellowship that allowed her to establish her own laboratory and launch an independent career. She is currently also Visiting Scholar in the Department of Neuroscience of the University of Pittsburgh (USA), and Group Leader at the KCL MRC Centre for Neurodevelopmental Disorders. Dr. Modinos is a UK Academy of Medical Sciences' SUSTAIN alumna, and was the first female to win a Rising Star Award by the Schizophrenia International Research Society (2019). She was also Future Leader at the 2017 Science and Technology in Society (STS) Forum in Kyoto (Japan), and the 2020 winner of the British Association of Psychopharmacology Senior Non-Clinical Psychopharmacology Award. She served in the Executive Board of the Schizophrenia International Research Society (2020-2022) and is former Chair of its Membership Committee. In 2022 she was elected as member of the Expert Group on Higher Education, Research and Culture in European Societies of the Academia Europaea, and has been actively involved in the European research assessment reform as member of the European Commission's Core Group. Gemma Modinos served in the SAS Regular Assessment of the Research Institutes of SAS 2016-2020 as expert in issues concerning early career researchers.

<u>Špela Stres</u>

Špela Stres is Research Councillor to the Director of the Jožef Stefan Institute in Slovenia. She is a Member of the Board of the European Innovation Council EIC and of the Highlevel Expert Group on the Economic and Societal Impact of Research and Innovation (ESIR) for the European Commission's DG R&I, the Chair of the "EIC Marketplace" Working group for the EISMEA, the National Delegate to the CERN KT Forum and ERA Subgroup for Valorization. She is the President of the I.FAST Steering Board and the SI-TT Association of Technology Transfer Professionals in Slovenia. With her expertise and experience in Physics (PhD) from the University of Ljubljana, a Master's Degree in Law in Intellectual Property from the University of Turin and the World Intellectual Property Office (Geneva), an Executive MBA from Cotrugli Business School (Lichtenstein) and a Patent Attorney Exam, along with her affiliation with industry and work in the international environment (Deutsches Elektronen Synchroton, CERN/JUAS), she contributes to the overall development of technology transfer in Slovenia and beyond. She was the Head of the Center for Technology Transfer and Innovation at the Jožef Stefan Institute (2011-2022), the Vice-president of the ASTP-Protod and the National Coordinator of the Enterprise Europe Network (2013-2021). She is a Member of the PATLIB Network and EARTO working groups (Impact, Legal, Task Force), and the LES Benelux, ASTP, EARMA and SATENA Academic society. She teaches innovation and research management, intellectual property rights, commercialization of inventions and collaborations between industry and academia. The latter was put in practice with the supervision of the creation of several spin-out companies in material science and ICT. She has received the following Slovenian distinctions: Recognition of Merit, Prometheus of Science and the HiPEAC 2018 Technology Transfer Award. She served in the SAS Regular Assessment of the Research Institutes of SAS 2016-2020 as expert of knowledge transfer.

Panel I (Physical, Space, Earth and Engineering Sciences)

Helmut Weissert

Helmut Weissert is Professor Emeritus at the Department of Earth Sciences, ETH Zürich. After studies at ETH and post-doctoral years in California and Basel (Switzerland), he

returned to his Alma Mater in 1983. His research focus is on earth and climate history, paleoceanography and the evolution of the global carbon cycle through geological time as well as on mass-extinctions in earth history. For more than 30 years he was engaged in the International Ocean Drilling Program and in 2001-2004 was a Member of the Science Planning Committee of one of its programmes (IODP). Helmut Weissert was a Visiting Professor at Fribourg University, the University of Milan and Kanazawa University (Japan), and a Visiting Lecturer at Università degli Studi di Napoli, Eötvös University in Budapest, at KIGAM in South Korea and China University of Geosciences. He has published more than 150 papers on aspects of climate and ocean history, covering the time window from the Holocene to the beginning of the Mesozoic with the mass-extinction at the Permian-Triassic boundary. He established C-isotope geochemistry as a major tool in Mesozoic ocean history. Helmut Weissert (co)-edited several books and is the author of a textbook on Alpine Geology (Der Ozean im Gebirge). He has supervised 16 PhD's and served as co-supervisor for PhD's in France, Italy, England, Netherlands and Germany. For excellence in teaching at ETH he received the "Golden Owl-Award" twice. Helmut Weissert was a Member (2011-2016) and the Vice-President (2014-2016) of the Council of the Swiss Academy of Sciences and currently chairs its Commission on International Research Networks. He was a Member of the Council of the European Union of Geosciences from 2015-2019, and the President of its Division "Sedimentology, Stratigraphy, Paleontology" until 2019. Helmut Weissert was a member of numerous advisory committees of universities and geoscience organizations. He was engaged in several projects at the interface of art and science, including a Landart project in Arosa (2016, Switzerland); he gave invited lectures at the Literaturfestival Berlin and Zürich (2016, 2017 with Raoul Schrott, author) and has (co)-authored books on art and science. One of them, poems by the Indian-Canadian Author Jaspreet Singh (How to Hold a Pebble, 2022), is dedicated to Helmut Weissert. He was elected "Distinguished Lecturer" of the European Consortium of Ocean Drilling in 2011 and the International Association of Sedimentologists in 2014-2015. In honour of his work, a major C-cycle anomaly in Cretaceous Earth History is named after him ("Weissert Event"). He is an awardee of the Jean-Baptiste Lamarck Medal from the European Geosciences Union and the Capellini Medal of the Italian Geological Society. He is an Honorary Member of the Swiss Academy of Sciences. Helmut Weissert served as Member of Panel I in the international Regular Assessment of the Research Institutes of SAS 2012-2015, and thereafter as a Member of the SAS International Advisory Board.

Bart De Moor

Bart De Moor is full Professor at the Department of Electrical Engineering of KU Leuven, Belgium. He received his PhD in 1983 and was a Research Associate at Stanford University from 1988-1989. His fields of research are in mathematical engineering, including numerical linear algebra and algebraic geometry, system theory and control, numerical optimization, machine learning and data science, with many projects in industry and biomedicine. He has guided more than 85 PhD students and co-authored more than 400 scientific papers and 11 books. He is an ERC Advanced Grant awardee. His scientific work was recognized with many international awards and led to the creation of 10 spinoff companies. Bart De Moor has served as Chair/Member of numerous international scientific boards, funding agencies, and science policy assessment committees across Europe. He was a Panel Member of the ERC, and Member of the European Statistics Governance Advisory Board. He was/is Member/Chair of several scientific institutes, including the Flanders Biotech Institute (VIB) and research funding agencies. Since 2019, he is one of the architects and coordinators of the Artificial Intelligence programme that involves all 5 universities and 4 strategic research institutes in Flanders. He has been the Chairman of the Capricorn Digital Growth Fund (venture capital) since 2018, of Health-House (a high-tech biomedicine science outreach centre) since 2015, of Alamire Foundation (digital humanities, polyphonic music) since 2016 and was the co-founder of the children's science centre Technopolis in 1999. Bart De Moor served three times between 1991 and 2008 as Head of Cabinet of Ministers of Science and Socio-Economic Policy in Belgium/Flanders and was Vice-Rector of International Policy of KU Leuven from 2009-2012. An elected member of the Royal Academy since 2004, he received in 2010 the Science Excellence Award from King Albert II of Belgium and in 2020 was nominated by King Filip Commander of the Order of Leopold I.

Jaroslav Fabián

Jaroslav Fabián is Professor of Theoretical Physics at the University of Regensburg in Germany. He received his Diploma from Comenius University Bratislava and his PhD (1997) from the State University of New York in Stony Brook. He was Research Associate at the University of Maryland in College Park (1997-2000) and a Distinguished Post-

doctoral Fellow at the Max-Planck Institute for Complex Systems in Dresden (2000-2001). In 2001 he joined the Faculty of Physics of the Karl Franz University of Graz, where he also received his Habilitation in 2004, becoming an Associate Professor. From 2004 he has been a professor in Regensburg. His main research activities are in the fields of 2D materials, spintronics, magnetism, heterostructures, and superconductivity. In 2005-2017 he was on the Executive Board of the German Science Foundation Center for Collaborative Research on spin phenomena in reduced dimensions and since 2020 on the Steering Committee of the German Science Foundation Priority Program on 2D materials. Jaroslav Fabián is a recipient of a Fulbright fellowship, Science without borders award from the Brazilian government, and a Goodwill Envoy award from the Slovak government. Conflict of Interest: Jaroslav Fabián is on the International Advisory Boards of the Institute of Physics and the Institute of Electrical Engineering of SAS, and therefore he did not participate in the evaluation of these two institutes.

Valeria Nicolosi

Valeria Nicolosi is Chair of Nanomaterials and Advanced Microscopy at the School of Chemistry in Trinity College Dublin (TCD). She received her BSc in chemistry from the University of Catania, Italy, and her Ph.D. in physics from TCD in 2006. She moved to the University of Oxford in 2008 as a Marie Curie Fellow. In 2008 she was awarded a Royal Academy of Engineering/EPSRC Fellowship. In 2012 she returned to TCD as Research Professor. In 2016 she was promoted to Chair of Nanomaterials and Advanced Microscopy as the first woman to have reached the position of Chair in the School of Chemistry. Valeria Nicolosi is a 6-fold ERC awardee: Starting Grant in 2011, followed by 3 Proof of Concept grants to bring results of frontier research closer to the market, a Consolidator Grant in 2016, followed by a further Proof of Concept grant in 2019. She has published more than 220 papers and aspects of her research have been licenced to companies like Thomas Swann, Samsung, Intel, Lego, etc. In 2018, 2019 and 2020 she was recognized as one of the world's most influential researchers of the past decade, demonstrated by the production of multiple highly-cited papers that rank in the top 1% by citations in Web of Science. Valeria Nicolosi served as an Advisory Board member of the Pilot European Innovation Council EIC from 2019 to 2021. She is a member of Academia Europaea. As a recognition of her achievements, in 2021 Valeria Nicolosi was conferred

the honorary decoration of "Cavaliere" in the Order "Stella d'Italia" by the President of the Italian Republic.

Martin Pohl

Martin Pohl is Professor Emeritus and Honorary Professor at the University of Geneva. He is a particle and astroparticle physicist. He has served as Head of the Physics Department and Director of the Department of Nuclear and Particle Physics at the University of Geneva. He was a Member and later Chair of the Executive Board of the Swiss Institute of Particle Physics CHIPP, a Member of the Committee of the Swiss Physical Society, and a Member and Vice-Chairman of the Swiss Commission for Space Research. He was the Swiss Delegate to the OECD commission establishing guidelines for the evaluation of large research infrastructures. He is currently a Member of the Commission for Research Networks of the Swiss Academy of Sciences. His research activities included leading roles in experimental neutrino physics at CERN (Geneva, Switzerland), experiments at electron-positron colliders at DESY (Hamburg, Germany) and CERN (Geneva, Switzerland) research centres as well as muon physics at the Paul Scherrer Institute (Villigen, Switzerland). From 1998 onwards he led the Swiss contingent in the collaboration constructing and operating the Alpha Magnetic Spectrometer, a cosmic ray observatory installed aboard of the International Space Station since 2011. The experiment has collected and analysed in excess of 200 billion cosmic rays since its launch, the largest sample ever accumulated. He also contributed to the construction of the Hitomi satellite experiment for the Japanese space agency JAXA and the POLAR and DAMPE experiments for the Chinese space agency. Martin Pohl has authored two textbooks on particle physics and is main author of an online introductory course on the same subject. His latest co-authored book is an introduction to the physics of cosmic rays.

Panel II (Life, Chemical, Medical and Environmental Sciences)

Toivo Maimets

Toivo Maimets is Professor of Cell Biology and former Vice-rector for Research and Institutional Development at the University of Tartu, Estonia. He has also served as a

Dean of the Faculty and Director of the Institute of Molecular and Cell Biology. From 2003-2005 he was the Minister of Education and Research in the Estonian government. He is a former Member of the European Commission Research, Innovation and Science Highlevel Expert Group (RISE), the European Molecular Biology Conference (former President), Science Europe (former Board Member) and the former Vice-President of the UNESCO International Bioethics Committee. He is a Member of the Committee of Advanced Therapies at the European Medicines Agency, the European and American Associations for Cancer Research, and Academia Europaea. He has been actively involved in numerous institutional and research evaluations for the European Commission, the European Science Foundation, UNESCO, COST, and the Estonian government. He was the Chair of the Estonian Research Foundation and is presently a Board Member of the Estonian Research Council and Chair of the Estonian government's Scientific Advisory Board. His research involves the characterization of intracellular signal transduction pathways responsible for cell cycle regulation, the molecular mechanisms governing cell developmental potency, and their role in human tumorigenesis. He chaired Panel II of the international Regular Assessment of the Research Institutes of SAS 2012-2015, and thereafter served as SAS's International Advisory Board Member. Conflict of Interest: Toivo Maimets is partner with one of the SAS Biomedical Research Centre's scientists in a joint project, and therefore he did not participate in the evaluation of this institute. University of Tartu is a member of Alliance4Life consortium, which connects 12 top biomedical research institutions from EU-13 countries (<u>https://alliance4life.ceitec.cz/</u>). The consortium is running a Horizon2020 project "Alliance4Life_ACTIONS 2021-2024", which focuses on raising the institutional profiles of Alliance4Life's members to attract and retain international talents and to provide the right operational framework conditions including improved research management. One of the partners is SAS Biomedical Centre (BMC). As Toivo Maimets represents the University of Tartu in this consortium, he declared conflict of interests and was not involved in discussions on BMC during the evaluation. At the final meeting of his Panel, Toivo Maimets left the room when the final scores were discussed and decided for the SAS BMC.

<u>Jaak Järv</u>

Jaak Järv is Professor of Organic Chemistry at the University of Tartu, Estonia. His research fields are organic synthesis, physical organic chemistry, chemical kinetics,

physical biochemistry, bioactive compounds design, and biomimetics. He has served as the Secretary General of the Estonian Academy of Sciences. From 1972 to 1983 he was Senior Lecturer and Associate Professor at University of Tartu. He was post-doc at Stockholm University, Sweden and from 1995-1996 Visiting Professor at University of Uppsala, Sweden. From 1983-1991 he was the Deputy Vice-Rector for Research of the University of Tartu. He has supervised 33 PhD theses and is the co-author of 7 international patents. He has served as Principal Investigator in 21 national scientific projects and contracts, 2 EU TEMPUS projects, 2 EU INCO-COPERNICUS projects and 3 COST actions. Jaak Järv is the editor and author of educational computer programs in Estonian, and the co-author of a digital high school course Organic Compounds. He is Doctor of Philosophy Honoris Causa of Kuopio University Finland, and Uppsala University Sweden, and a Member of the Estonian Academy of Sciences and of Academia Europaea. In 1987 and 2000 he obtained the Estonian Science Award, in 1998 the Paul Kogerman Medal, in 2009 the White Star Order Class III (National Decoration) and the Medal of the Estonian Academy of Sciences, and in 2020 the Distinguished Service Badge of Tartu University.

Taina Pihlajaniemi

Taina Pihlajaniemi is Professor of Medical Biochemistry and Vice-Rector for Research at the University of Oulu, Finland. She graduated as a Medical Licentiate and a Doctor of Medicine and Surgery at the University of Oulu. She is one of the leading scientists in the field of matrix biology. She has headed three Academy of Finland Centres of Excellence and is co-founder of FibroGen Inc., a currently US-based biopharmaceutical company focusing on fibrosis and other medically critical targets. Taina Pihlajaniemi has served in numerous science policy tasks in Finland such as the Science and Innovation Council chaired by the Prime Minister, the Research Council for Health and the Research Infrastructure Working Group at the Academy of Finland, the national Biotechnology Working Groups, the CSC - Centre for Scientific Computing, and the Business Finland Advisory Board for Health and Wellbeing. Currently she heads the Finnish National Steering Group of Open Science and Research. She was director of the Biocenter Oulu, and together with the other Finnish biocenters established Biocenter Finland, a distributed national research infrastructure network of six universities, and was its Founding Director. She was the Director of the Finnish node of ESFRI Infrafrontier's EMMA operation in

Finland. She has been a member of the ESFRI (European Strategy Forum on Research Infrastructure) Working/Thematic Group for the Biological and Medical Sciences, at the time of the preparation of the first European Research Infrastructure Roadmap and the first two updates. She has served in several other international evaluation boards, such as a European Research Council's (ERC) Evaluation Panel, and several Evaluation Panels on research strategy, and scientific advisory boards across Europe. Taina Pihlajaniemi is a member of Academia Europaea.

Imre Vass

Imre Vass is Director of the Institute of Plant Biology in Biological Research Centre, Szeged, Hungary. He graduated as a physicist from the József Attila University, Szeged, Hungary, obtained his PhD in biophysics in 1984, and joined the Biological Research Centre in Szeged in 1987. He spent over six years as post-doctoral scientist and Visiting Professor in RIKEN, Tokyo, Japan, Stockholm University, Sweden, the École Normale Superieure, Paris, France, the Demokritos Institute, Athens, Greece, and UTS Sydney and ANU, Canberra, Australia. His multi-disciplinary research interests include lightdependent reactions of photosynthesis, the adaptation of plants and microalgae to environmental stress factors, the application of remote sensing methods for plant phenotyping, and the molecular background of coral bleaching. He has been actively involved in research and institutional evaluations for the European Commission, the European Science Foundation, the Bulgarian and Slovak Academies of Sciences, the Romanian Ministry of Education and Research, as well as international and Hungarian granting agencies. He was a Member of Panel II in the International Regular Assessment of the Research Institutes of SAS 2012-2015.

Kristian Vlahoviček

Kristian Vlahoviček is a tenured Professor and Bioinformatics Group Leader at the University of Zagreb, Croatia. He obtained his PhD in computational biology and bioinformatics, won the EMBO Young Investigators Programme installation grant and has been running his research group in Croatia. His group develops computational tools and uses machine learning techniques to tackle open questions in developmental genomics and metagenomics. Dr. Vlahoviček undertook a 10-year stay at the International Center for Genetic Engineering in Trieste, Italy, and a 4-year Adjunct Professorship at the University of Oslo, Norway. He was Visiting Professor at the University of Skövde, Sweden. He has served as reviewer of funding bodies and programmes of, for example, the European Science Foundation, EC FP7, EC Horizon2020, EC Horizon Europe, and national research funding agencies across Europe. He reviewed applications for Croatian pre-accession and accession structural funds. He is a strong proponent of science reforms in Croatia and evidence-based policy making. He served in the Steering Committee of Croatia's science funding body "Unity through Knowledge Fund", and has participated in several strategy-drafting panels at his university and at the national level. He also served as a Member of the Steering Committee of the Ruder Bošković Institute, and the Head of the Division of Biology of the Faculty of Science at the University of Zagreb. Kristian Vlahoviček served as an expert for the World Bank regional R&D strategy for innovation, and as data provider for Croatia's Smart Specialisation Strategy. Presently, he serves as Expert on the World Bank team performing the Public Expenditure Review in Science Technology and Innovation for the Republic of Croatia. He is founder and owner of Exaltum, a research-intensive company focused on knowledge management and the author of the Croatian Scientific Landscape project.

Panel III (Social Sciences, Humanities, Arts and Culture)

Wim van den Doel

Wim van den Doel has been the Dean of the Leiden-Delft-Erasmus Universities alliance since February 2022. He received his PhD at Leiden University in 1994 and has published mainly on the history of the Dutch East Indies. Among his books are *Afscheid van Indië*. *De val van het Nederlandse imperium in Azië* (Amsterdam: Prometheus, 2000) and *Zo ver de wereld strekt. De geschiedenis van Nederland overzee vanaf 1800* (Amsterdam: Bert Bakker, 2011). In 2021 he published a biography of Christiaan Snouck Hurgronje, one of the first Western scholars to visit Mecca and one of the most important colonial administrators of his time: Snouck. Het volkomen geleerdenleven van Christiaan Snouck *Hurgronje* (Amsterdam: Prometheus, 2021). From 2007 to 2017 he was the Dean of the Faculty of Humanities of Leiden University and from 2017 to 2020 a Member of the Executive Board of the Dutch Research Council, Chair of the domain Social Sciences and Humanities and responsible for National Research Agenda. He was a Member of the Steering Group and Executive Council of the Europaeum from 2008 to 2022. In 2022 he became a Trustee of this organization of 18 leading European universities. From 2013 to 2016 he was the Chair of the Steering Group of the SSH Community of the League of European Research Universities (LERU) and from 2014 to 2022 the Chair of the Board of the Roosevelt Institute for America Studies (Middelburg). From 2022 he has been the Chair of the NL Space Campus in Noordwijk, The Netherlands.

Özen Nergis Dolcerocca

Özen Nergis Dolcerocca is an Associate Professor of Literature at the University of Bologna. She received her PhD degree in Comparative Literature from New York University in 2016. She is the author of two books and eighteen scholarly articles and three book chapters, including *The Oxford Handbook of Decadence*, and the guest editor of the special issue in the journal *Middle Eastern Literatures*. She has delivered over thirty conference papers and talks internationally. She is an awardee of the ERC project "Modernizing Empires: Enlightenment, Nationalist Vanguards and Non-Western Literary Modernities". Her research focuses on literary theory, comparative literature, modernism, nineteenth-century cultural history, narratology, and digital humanities. Özen Dolcerocca is a Member of the Young Academy of Europe (YAE) and currently serves as a Delegate for Scholars Residing outside the United States and Canada and as Executive Council Member of the West Asian Languages, Literatures, and Cultures Forum at the Modern Literature Association. She is part of the Astrid Lindgren Memorial Award, Nominating Body Committee Member in Turkey. She chaired the Committee of Judges for the American Comparative Literature Association's Owen Aldridge Prize Committee (2019-2021). She has chaired the Department of Comparative Literature at Koc University (KU) in Turkey (2019-2021) and set up the Master's program of the Department in collaboration with the Council of Higher Education (2021). She has served as a Member of the Quality Commission Initiative at KU and as Chair of Research Assessment in the Humanities (2017). She is in her university Senator-elect, Co-Advocacy Chair (2012), President-elect of the Graduate Student Government and Graduate Curriculum Committee Member, and Member of the Committee on Discipline at New York University (2013). She is the

recipient of KU's Outstanding Faculty Award (2020) and the Dean's Outstanding Teaching Award, New York University (2013).

Ortwin de Graef

Ortwin de Graef is Professor of English Literature at KU Leuven. He is the author of two books on Paul de Man and has published widely on Romantic and post-Romantic writing ranging from Wordsworth, Tennyson, Browning, Arnold and George Eliot through Joseph Conrad, Isaac Rosenberg, Virginia Woolf and Pearl S. Buck to Hafid Bouazza, David Grossman, Alan Warner and A. L. Kennedy (90 articles and chapters in books, 9 (co-)edited volumes, 2 monographs and 1 co-authored textbook). His principal research interests are the Very-Long-Nineteenth-Century ideologies of sympathy, science and the State reflected and refracted through the transmission technologies of the literary. He has supervised 15 PhD degrees to completion and 6 post-doctoral projects and was cograntee for 3 national research projects and 1 European project. He is the co-founder of the KU Leuven Centre for Health Humanities. He is a Member of the editorial board of Open Humanities Press (since 2007) and Leuven University Press (since 2012, Chair since 2015), and a Member of the Advisory Board for Victoriographies (Edinburgh UP) since 2010, Partial Answers (Johns Hopkins UP) since 2012, Interférences Littéraires and Journal of Literary Studies / Tydskrif vir Literatuurwetenskap (since 2020). He has served as Academic Referee for books and book proposals for Cambridge University Press, Edinburgh University Press and Universitaire Stichting, and for articles in numerous journals. Ortwin de Graef has served as Member of the KU Leuven Research Council (2005-10), Vice-Dean of Research at the KU Leuven Arts Faculty (2010-19), Member of the Expert Panel on International Cooperation of the Flemish Fund for Scientific Research (2011-18), and Board member of the European Consortium for Humanities Institutes and Centres (2016-22). He is currently a Member of the Authoritative Panel for the Flemish academic bibliographic database for the social sciences and humanities of the Flemish Inter-university Council (since 2009), the Chair of the KU Leuven Task Force on young researchers' careers (since 2011), a Member of the LERU Social Sciences, Humanities and the Arts Policy Group (since 2013), the Director of the KU Leuven Doctoral School Humanities & Social Sciences (since 2018), and a Member of the LERU Doctoral Studies Policy Group (since 2020). He was the Chair of the Research Assessment Committee for the Amsterdam Institute for Humanities Research (2018), a Member of the Research

Assessment Panel for Master Historical, Literary & Cultural Studies (research) Radboud University Nijmegen (2021), and a Member of the Research Assessment Panel of the Research Group Rapid Social and Cultural Transformation: Online & Offline, Department of Culture Studies, Tilburg School of Humanities and Digital Sciences (2022).

<u>Balázs Kiss</u>

Balázs Kiss is a Senior Research Fellow at the Institute for Political Science, which belongs to the Centre for Social Sciences in Budapest, Hungary. He graduated as an economist and has a PhD in economic sciences from the Hungarian Academy of Sciences. First, he taught world economics, mainly development studies and was a Visiting Fellow at the Institute of Development Studies at the University of Sussex in 1985-86. Then he joined the Philosophy Department of the Karl Marx (now Corvinus) University of Budapest. For a while he was the Head of the Department. Since 1993 he has worked at the Institute for Political Sciences. He was the Head of Social Sciences Unit at European Science Foundation in Strasbourg from 2007 to 2010. He was the Hungarian member of COST for years and also that of the Standing Committee for Social Sciences of the European Science Foundation. Currently, he is National Expert for social sciences and humanities in the Hungarian delegation to the Horizon Europe Cluster 2 – Culture, Creativity and Inclusive Society. Balázs Kiss was a Panel Member of the International Regular Assessment of the Research Institutes of SAS 2012-2015.

Markéta Křížová

Markéta Křížová is a Professor of Ibero-American Studies and Vice-Rector for International Relations at the Charles University in the Czech Republic. She has also served as a Vice-Dean of the Faculty of Arts of the same University. She is the Vice-President of the Steering Committee of the European University Foundation. Her research involves the history of overseas expansion, migrations and cultural transfers, the history of modern slavery, as well as intellectual history (including the history of museums and history of racial thought). She has published four individual and two coauthored monographs on these subjects, and ca. 100 articles and chapters in collective volumes. She was principal applicant or co-applicant for four granted national research projects and participant in several granted European projects. She also cooperates with the Náprstek Museum of Asian, African, and American cultures (curating exhibitions, consultations on the new permanent exhibition, acquisitions). She chairs the PhD programme in Ibero-American Studies and has supervised 9 PhD candidates to completion. She was from 2012-2021 a Member and from 2016-27 the Chair of the Evaluation Committee "History-Ethnology" of the Grant Agency of Charles University. From 2019-2021 she was a Member of the consortium MOVES (Migration and Modernity: Historical and Cultural Challenges), the European Joint Doctorate funded within Horizon2020, and from 2020-2022 she participated in the project TEH 21 (Teaching European History in the 21st Century), funded within Erasmus+ KA2).

7. Acknowledgements

The Metapanel wishes to thank the SAS Presidium for providing all necessary information on the Slovak research system and on SAS, and for their commitment to this assessment. The Research Institutes are thanked for the key information they provided in their Questionnaires and for the open discussions during the site visits.

The support the Panels got during the entire evaluation process from SAS staff was outstanding. This assessment would not have been possible without the dedication and hard work of the Panels' Experts and the External Remote Experts.

8. Attachments

8.1. Principles of Regular Evaluation of SAS Research Institutes for the Period 2016 – 2021

The full wording as per the changes made by the Amendment no. 1.

The Regular Evaluation of SAS Research Institutes (hereinafter referred to as "Institutes") is announced and implemented by the Presidium of the Slovak Academy of Sciences (hereinafter referred to as "P SAS") pursuant to the provisions of § 10 par. 5 letter d) of Act no. 133/2002 Coll. on the Slovak Academy of Sciences (hereinafter referred to as the "Act on SAS").

Article I Conditions for the Regular Evaluation of SAS Research Institutes

1. The evaluation process of Institutes for 2016 - 2021 will begin with the endorsement of the Principles of Regular Evaluation of SAS Research Institutes (hereinafter referred to as the "Principles of Evaluation") by the SAS Assembly and with publishing the time schedule by the President of the SAS on the basis of the resolution of P SAS.

2. In accordance with § 15 par. 5 of the Act on SAS, the result of the evaluation will be one of the supporting materials for the decision-making process of the SAS regarding the institutional funding provided to the Institutes.

3. The method of evaluating Institutes is based on the peer review principle combined with scientometric and other data.

4. The evaluation will be performed by foreign evaluators. P SAS will appoint the Head Evaluator, who, after consultation with P SAS, appoints the Chairs of the Evaluation Panels for the three scientific sections of the SAS. In the next step, at least two other experts in the research area of scientific sections will be selected per a proposal of the Chairs of the Evaluation Panels. The Head Evaluator is not a member of the Evaluation Panels. Each Evaluation Panel for the Scientific Section will have at least three members and the total number of members should be odd. The Head Evaluator is advised by the so-called Metapanel. The Metapanel consists of the Head Evaluator, the Chairs of the Evaluation Panels, or other experts, who are appointed by the Head Evaluator after consultation with P SAS. The activities of the Evaluation Panels and Metapanel are governed by a statute and rules of procedure approved by the P SAS.

5. In order to coordinate the evaluation process of Institutes, P SAS will establish an SAS Accreditation Committee. Its activities will be governed by a statute and rules of procedure approved by the P SAS.

6. Before the start of the evaluation process, all evaluators will sign a declaration stating that they have no conflicts of interest and binding them to confidentiality.

Article II Indicators in the Regular Evaluation of SAS Research Institutes

1. The evaluation will be carried out in three main areas:

- Quality and performance;
- Contribution to society;

• Strategy and development potential.

The evaluation process includes an expert assessment of the data provided in the evaluation questionnaire, which are divided into nine categories:

- 1) Scientific and application outputs of Institutes;
- 2) Feedback on scientific outputs of Institutes;
- 3) Scientific status of Institutes in the international and national context;
- 4) Project structure, grants and other resources;
- 5) Postgraduate studies and other educational activities;

6) Work environment and management: infrastructure, personal development, including postdoctoral support

7) Implementation of recommendations from the previous evaluation and of other development activities

8) Contribution to societal practice; 9) Popularization of results.

2. The evaluation will be the result of the expert opinion carried out in three main areas (Article II.1) in accordance with the information provided:

a) In the evaluation questionnaire and the annexes provided by the SAS Central

- Library;
- b) On the Institutes' websites;
- c) During a meeting with the Institutes'academic community.

3. The evaluation questionnaire will be prepared by the SAS Accreditation Commission and approved by the P SAS

Article III Procedure for the Regular Evaluation of the SAS Research Institutes

- 1. For regular evaluation, the Institute will submit the completed evaluation questionnaire in English and the annexes provided by the SAS Central Library. If the Institute consists of organizational units that are part of it for at least half of the evaluated period, one evaluation questionnaire for the entire Institute is completed.
- 2. Another supporting material for the evaluation of Institutes can be an evaluation by a designated expert, which will be requested by the Evaluation Panel. The SAS Accreditation Committee will publish a list of Institutes for which the Evaluation Panels have appointed experts. If the Evaluation Panel does not consider it necessary to appoint an expert / experts for the evaluation of the Institute's activities, the Institute's Statutory Body has the right to request the panel through the SAS Accreditation Committee to appoint an expert / experts within 7 working days of the publication of the list. In this case, the Evaluation Panel is obliged to comply with this requirement and to designate a suitable expert (s). The expert (s) shall provide the evaluations report within one month following the receipt of the Institute's evaluation questionnaire. This report will be used for internal purposes of the Evaluation Panel, will be of a recommendatory nature and will be provided to the Institute's Statutory Body no later than 10 working days before the meeting with the academic community of the Institute.
- 3. After studying the evaluation material, the Evaluation Panels will meet the academic community of the Institutes and get acquainted with the activities, working conditions and scientific results of the Institutes. At least 10 working days before the meeting, the Evaluation Panel shall provide the Statutory Body of the Institute with its principal

comments. The form and venue of the meeting with the academic community will be decided by the Vice-Chairperson of the appropriate scientific section, in agreement with the Statutory Bodies of the individual Institutes and the Evaluation Panel. At the meeting, the Evaluation Panel is accompanied by the Chair of the SAS Accreditation Committee and the Vice-Chair of the appropriate scientific section or by the nominated members of P SAS. Members of the Metapanel, other members of the P SAS and the SAS Assembly can take part at the meeting with the Institute.

4. The Evaluation Panel will draft an overall evaluation of the Institutes in three areas: quality and performance, contribution to society, strategy and development potential. The evaluation shall contain a qualitative statement about the Institute's scientific results for the relevant period in relation to international standards. The methodology and the content of evaluation is in the competence of the Evaluation Panel, while the Evaluation Panel is governed by its statute and rules of procedure.

Article IV Results of the Regular Evaluation of the SAS Research Institutes

- 1. The results of regular evaluation will comprise:
 - a) Evaluation of Institutes by the Evaluation Panels in three main areas Quality and performance; Contribution to society; and Strategy and development potential within seven categories: A, A/B, B, B/C, C, C/D, D,
 - b) Overall ranking of Institutes by the Evaluation Panels within seven categories: A, A/B, B, B/C, C, C/D, D. The verbal expression of the individual categories will be proposed by the Evaluation Panel before the start of the evaluation process and approved by the P SAS.
- 2. The overall evaluation of Institutes issued by the Evaluation Panels shall include recommendations to address weaknesses and to increase the level of scientific research until the next regular evaluation.
- 3. The Head Evaluator shall submit the evaluation materials of each Institute to the SAS Accreditation Committee pursuant to paragraph 1.
- 4. The SAS Accreditation Committee will draft recommendation on the implementation of the results of regular evaluation for P SAS. In case of any discrepancy, the Evaluation Panel will be consulted.
- 5. P SAS will inform the Institutes about the results of evaluation in writing. This communication shall include an evaluation material prepared by the Evaluation Panel, including any received expert opinions.
- 6. Institutes may appeal against the decision of P SAS regarding the results of evaluation within 21 calendar days from the date of notification of the written decision. P SAS will forward this appeal to the SAS Accreditation Committee. The appeal hearing by the SAS Accreditation Committee will involve the Institute's Statutory Body (or their representative) and Chair of the Institute's Scientific Council (or their representative). The Evaluation Panel shall adopt an opinion on the content of the appeal. The SAS Accreditation Committee will subsequently adopt a draft decision on the appeal and forward it to the P SAS for a final decision. The final hearing by P SAS will involve the Institute's Statutory Body (or their representative).

- 7. After the end of all appeal proceedings, the P SAS will issue a final decision regarding the accreditation of all evaluated Institutes.
- 8. By resolution, P SAS will decide on the implementation of the results of the regular evaluation in accordance with the Principles of Evaluation and Principles of Budgeting of Budgetary and Contributory Organizations of the Slovak Academy of Sciences.

Article V Transitional and Closing Provisions

- 1. Activities of the SAS Accreditation Committee and Evaluation Panels are governed by the statutes and rules of procedure, which are approved by the P SAS.
- 2. Costs linked to the preparation and conduct of the evaluation of Institutes are part of the budget of the SAS.
- 3. Activities of Evaluation Panels' members and experts are remunerated according to the applicable European standards in the form of a mandatory contract. Panel members and experts are entitled to a refund of travel allowances and accommodation during the on-site visits.
- 4. Activities of the SAS Accreditation Committee and Evaluation Panels are administered by the SAS Office and the relevant SAS scientific sections according to the approved schedule of regular evaluation of the SAS Institutes.
- 5. The draft Principles of Regular Evaluation of SAS Research Institutes were approved by the P SAS on 12th September 2019. The SAS Assembly approved the Principles of Regular Evaluation of SAS Research in accordance with the provisions of § 8 par. 7, letter g) of the SAS Act at the meeting on 8th October 2019.
- 6. These principles take effect on the day following the day of their publication on the SAS website.
- 7. The draft Amendment no. 1 to the Principles of Regular Evaluation of SAS Research Institutes for the period 2016 2021 was approved by P SAS on 14 October 2021.

The Amendment no. 1 to the Principles of Regular Evaluation of the SAS Research Institutes for the period 2016 - 2021 was approved by the Assembly of the SAS on 9 November 2021. The Amendment no. 1 to the Principles of Regular Evaluation of the SAS Research Institutes for the period 2016 - 2021 enters into force on the day following the day of its publication on the SAS website.

In Bratislava, on 22nd November 2021.

Prof. Pavol Šajgalík SAS President Dr. Katarína Gmucová SAS Assembly Chairperson

8.2 Questionnaire

Summary of the main activities of a research institute of the Slovak Academy of Sciences

Period: January 1, 2016 - December 31, 2021

<u>1. Basic information on the institute:</u>

- 1.1. Legal name and address
- 12. URL of the institute web site

13. Executive body of the institute and its composition

Directorate	Name	rear of pirth	Years in the position, from - to
Director			
Deputy director			
Scientific secretary			

Add more rows for any changes during the evaluation period

1.4. Head of the Scientific Board

1.4.1 Composition of the International Advisory Board

15. Basic information on the research personnel

1.5.1. Fulltime equivalent work capacity of all employees (FTE all), FTE of employees with university degrees engaged in research projects (FTE researchers)

2016		2017		2018		2019		2020		2021		2016-202	1
FTE all	FTE researchers	average FTE all per year	average FTE researchers per year										

1.5.2. If applicable, add also a short information on the merger of the institute in the evaluation period. You can also add rows in the above table corresponding to the founding institutes

1.6. Basic information on the funding of the institute

•	U i		0		0		
Salary budget	2016	2017	2018	2019	2020	2021	aver age
Institutional salary budget [millions of EUR]							
Other salary budget [millions of EUR]							
Total salary budget [millions of EUR]	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Non-salary budget [millions of EUR]							

1.6.1. Institutional salary budget, other salary budget¹, non-salary budget²

- **1.7.** Mission Statement of the Institute as presented in the Foundation Charter indicating the years when it was adopted and revised
- 18. Summary of R&D activity pursued by the institute during the evaluation period in both national and international contexts. Describe the scientific importance and societal impact of each important result/discovery. Explain on general level

- the information should be understandable for a non-specialist (recommended 5 pages, max. 10 pages for larger institutes with more than 50 average FTE researchers per year as per Table 1.5.1.)

2. Partial indicators of main activities:

21. Research output

2.1.1. Principal types of research output of the institute: basic research/applied research, international/regional (in percentage)

2.1.2 List of selected publications documenting the most important results of basic research. The total number of publications should not exceed the number of average FTE researchers per year. The principal research outputs (max. 10% of the total number of selected publications, including Digital Object Identifier – DOI if available) should be underlined. Authors from the evaluated organizations should be underlined.

2.1.3 List of monographs/books published abroad

2.1.4. List of monographs/books published in Slovakia

2.1.5. List of other scientific outputs specifically important for the institute, max. 10 items for institute with less than 50 average FTE researchers per year, 20 for institutes with 50 – 100 average FTE researchers per year and so on

2.1.6. List of patents, patent applications, and other intellectual property rights registered abroad

2.1.7. List of patents, patent applications, and other intellectual property rights registered in Slovakia

2.1.8. Narrative on the most important research outputs of the institute – especially focused on their importance for society (3-5 pages)

¹Salary budget originating outside the regular budgetary resources of the organization, e.g. from the project funding.

² Includes Goods and Services and PhD fellowships

2.1.9. Table of research outputs

Papers from international collaborations in large-scale scientific projects (Dwarf team, ALICE Collaboration, ATLAS collaboration, CD Collaboration, H1 Collaboration, HADES Collaboration, and STAR Collaboration) have to be listed separately

	20	16		20)17		20)18		20	19		20	20		20	21			total		
Scientific publications	number	No. / FTE researches	No. / one million total salary budget	number	No. / FTE researches	No. / one million total salary budget	number	No. / FTE researches	No. / one million total salary budget	number	No. / FTE researches	No. / one million total salary budget	number	No. / FTE researches	No. / one million total salary budget	number	No. / FTE researches	No. /1 million total salary budget	number	averaged number per year	av. No. / FTE researches	av. No. / one million total salary budget
Scientific monographs and monographic studies in journals and proceedings published abroad (AAA, ABA)																						
Scientific monographs and monographic studies in journals and proceedings published in Slovakia <i>(AAB, ABB)</i>																						
Chapters in scientific monographs published abroad (ABC)																						
Chapters in scientific monographs published in Slovakia (ABD)																						
Scientific papers published in journals registered in Current Contents Connect (ADCA, ADCB, ADDA, ADDB)																						
Scientific papers published in journals registered in Web of Science Core Collection and SCOPUS not listed above (ADMA, ADMB, ADNA, ADNB)																						
Scientific papers published in other foreign journals (not listed above) (ADEA, ADEB)																						
Scientific papers published in other domestic journals (not listed above) (ADFA, ADFB)																						
Scientific papers published in foreign peer- reviewed proceedings (AECA)																						
Scientific papers published in domestic peer- reviewed proceedings (AEDA)																						
Published papers (full text) from foreign scientific conferences (AFA, AFC)																						
Published papers (full text) from domestic scientific conferences (AFB, AFD)																						

22 Measures of research outputs (citations, etc.)

2.2.1. Table with citations per annum (without self-citations)

Citations of papers from international collaborations in large-scale scientific projects (Dwarf team, ALICE Collaboration, ATLAS collaboration, CD Collaboration, H1 Collaboration, HADES Collaboration, and STAR Collaboration) are listed separately

	2015		2016		2017		2018		2019		2020		to		
Citations, reviews	number	No. / FTE researchers	radmun	No. / FTE researchers	number	averaged number per year	av. No. / FTE researchers								
Citations in Web of Science Core Collection (1.1, 2.1)													0		
Citations in SCOPUS (1.2, 2.2) if not listed above													0		
Citations in other citation indexes and databases (not listed above) (3.2,4.2)													0		
Other citations (not listed above) (3.1, 4.1)													0		
Reviews (5,6)													0		

- 2.2.2. List of 10 most-cited publications published any time with the address of the institute, with number of citations in the assessment period (2015 2020)
- 2.2.3. List of 10 most-cited publications published any time with the address of the institute, with number of citations obtained until 2020
- 2.2.4. List of 10 most-cited publications published <u>during</u> the evaluation period (2016-2021) with the address of the Institute, with number of citations obtained until 2021
- 2.2.5. List of most-cited authors from the Institute (at most 10 % of average FTE researchers per year) and their number of citations in the assessment period (2015–2020). The cited papers must bear the address of the institute
- 2.2.6. List of most-cited authors from the Institute (at most 10 % of average FTE researchers per year) and their number of citations obtained until 2020. The cited papers must bear the address of the Institute
- 2.2.7. List of most-cited authors from the Institute (at most 10 % of average FTE researchers per year) and their number of citations obtained until 2021 of their papers published <u>during</u> the evaluation period (2016–2021). The cited papers must bear the address of the Institute
- 23. Research status of the institute in international and national context
 - International/European position of the institute
 - 2.3.1. List of the most important research activities demonstrating the international relevance of the research performed by the institute, incl. major projects (details of projects should be supplied under Indicator 2.4). Max. 10 items for institute with less than 50 average FTE researchers per year, max. 20 for institutes with 50 100 average FTE researchers per year and so on
 - 2.3.2. List of international conferences (co)organised by the institute
 - 2.3.3. List of edited proceedings from international scientific conferences
 - 2.3.4. List of journals edited/published by the institute and information on their indexing in WOS, SCOPUS, other database or no database, incl. impact factor and other metrics of journals in each year of the assessment period
 - National position of the institute
 - 2.3.5. List of selected activities of national importance
 - 2.3.6. List of journals (published only in the Slovak language) edited/published by the institute and information on their indexing in WOS, SCOPUS, other database or no database, incl. impact factor and other metrics of journals in each year of the assessment period
 - Position of individual researchers in the international context
 - 2.3.7. List of invited/keynote presentations at international conferences, as documented by programme or invitation letter
 - 2.3.8. List of researchers who served as members of the organising and/or programme committees
 - **2.3.9.** List of researchers who received an international scientific award

- Position of individual researchers in the national context
 - 2.3.10. List of invited/keynote presentations at national conferences, as documented by programme or invitation letter
 - 2.3.11. List of researchers who served as members of organising and programme committees of national conferences
 - 2.3.12. List of researchers who received a national scientific award

24. Research grants and other funding resources

(List type of project, title, grant number, duration, total funding and funding for the institute, responsible person in the institute and his/her status in the project, e.g. coordinator "C", work package leader "W", investigator "I". Add information on the projects which are interdisciplinary, and also on the joint projects with several participating SAS institutes)

- International projects
 - 2.4.1. List of major projects of Framework Programmes of the EU (which pillar), NATO, COST, etc.

Add information on your activities in international networks

- National projects, incl. international projects with only national funding
 - 2.4.2. List of ERA-NET projects funded from SAS budget
 - 2.4.3. List of projects of the Slovak Research and Development Agency, APVV
 - 2.4.4. List of projects of the Scientific Grant Agency of the Slovak Academy of Sciences and the Ministry of Education, VEGA (for funding specify only total sum obtained from all VEGA grants in particular year)
 - 2.4.5. List of projects supported by EU Structural Funds
 - 2.4.6. List of other projects funded from national resources
 - 2.4.7. List of projects funded from private funds
 - 2.4.8. List of projects funded from other competitive funds
- 25. PhD studies and educational activities
 - 2.5.1. List of accredited programmes of doctoral studies, period of validity, source of funding
 - 2.5.2. Summary table on doctoral studies (number of internal/external PhD students at the end of the year; number of foreign PhD students, number of students who successfully completed their theses during the year, number of PhD students who quit the programme during the year)

PhD study	20	16		20	17		20	18		20	19		20	20		20	21	
Number of potential PhD supervisors																		
PhD students	number, end of year	defended thesis	students quitted	number, end of year	defended thesis	students quitted	number, end of yea	defended thesis	students quitted	number, end of year	defended thesis	students quitted	number, end of year	defended thesis	students quitted	number, end of year	defended thesis	students quitted
Internal total																		
from which foreign citizens																		
External																		
Other supervised by the research employees of the institute																		

2.5.3. PhD carrier path – Information on the next career steps of the PhD graduates who received their degree from the institute

Teaching	2016	2017	2018	2019	2020	2021
Lectures (hours/year) [*]						
Practicum courses (hours/year) [*]						
Supervised diploma and bachelor thesis (in total)						
Members in PhD committees (in total)						
Members in DrSc. committees (in total)						
Members in university/faculty councils (in total)						
Members in habilitation/inauguration committees (in total)						

2.5.4. Summary table on educational activities

- 2.5.5. List of published university textbooks
- 2.5.6. Number of published academic course books
- 2.5.7. List of joint research laboratories/facilities with universities
- 2.5.8. Supplementary information and/or comments on doctoral studies and educational activities focused on what changes have occurred since the last evaluation in 2016

26. Societal impact

2.6.1. The most important case studies of the research with direct societal impact, max. 4 for institute with up to 50 average FTE researchers per year, 8 for institutes with 50 – 100 average FTE researchers per year and so on. Structure: Summary of the impact; Underpinning research; References to the research;

Details of the impact; Sources to corroborate the impact. One page per one case study

- 2.6.2. List of the most important studies and/or other activities commissioned for the decision-making authorities, the government and NGOs, international and foreign institutes (title, name of institution, contract value, purpose (max 20 words))
- 2.6.3. List of contracts and research projects with industrial and other commercial partners, incl. revenues (study title, name of institution, contract value, country of partner, purpose (max 20 words))
- 2.6.4.1 List of intangible fixed assets (internally registered IP (confidential know- how), patent applications, patents granted, trademarks registered) denoting background IPR
- 2.6.4.2 List of licences sold abroad and in Slovakia, incl. revenues (background IPR identification, name of institution, contract value, country of partner, purpose (max 20 words))

2.6.5. Summary of relevant activities, max. 300 words (describe the pipeline of valorization in terms of Number of disclosure, Number of registered IP internally, number of CCR/LIC contracts and their respective summary values, the support you are receiving in specific points internally at the institute, at SAS, externally – also the limitations and drawbacks.

27. Popularisation of Science (outreach activities)

2.7.1. List of the most important popularisation activities, max. 20 items

Outreach activities	2016	2017	2018	2019	2020	2021	total
Articles in press media/internet popularising results of science, in particular those achieved by the Organization							0
Appearances in telecommunication media popularising results of science, in particular those achieved by the Organization							0
Public popularisation lectures							0

2.7.2. Table of outreach activities according to institute annual reports

28. Background and management. Infrastructure and human resources, incl. support and incentives for young researchers

2.8.1. Summary table of personnel

	De	gree/rank			Researc	h positio	ו
	DrSc./DSc	CSc./PhD.	professor	docent/ assoc. prof.	Ι.	II.a.	II.b.
Male							
Female							

2.8.1.1. Professional qualification structure (as of 31 December 2021)

I. – director of research with a degree of doctor of science/DrSc.

II.a – Senior researcher

II.b – PhD holder/Postdoc

2.8.1.2. Age and gender structure of researchers	(as of 31 December 2021)

Age structure of researchers	< 31		31-35	1	36-40		41-45		46-50		51-55		56-60		61-65		> 65	
	А	В	А	В	Α	В	Α	В	Α	В	Α	В	Α	В	Α	В	А	В
Male																		
Female																		

A number, B – FTE

- 2.8.2. Postdoctoral fellowships (list of positions with holder name, starting date, duration. Add brief information about each fellow's career path before and after receiving PhD degree, etc.)
 - 2.8.2.1. MoRePro and SASPRO fellowships
 - 2.8.2.2. Stefan Schwarz fellowships
 - 2.8.2.3. Postdoctoral positions from other resources (specify)
- **2.8.3.** Important research infrastructure introduced during the evaluation period with the information about the sources of funding (max. 2 pages)
- 29. Supplementary information and/or comments on all items 2.1 2.8 (max. 2 pages in total for the whole section)

<u>3. Implementation of the recommendations from the previous evaluation period</u>

<u>4.</u> <u>Research strategy and future development of the institute</u> <u>for the next five years</u> (Recommended 3 pages, max. 5 pages)

Research strategy of the institute in the national and international contexts, objectives, and methods (including the information on when the strategy was adopted).

8.3. Assessment Report on Individual SAS Research Institute

Period January 1, 2016 – December 31, 2021

The Regular Evaluation of SAS Research Institutes is announced and implemented by the Presidium of the Slovak Academy of Sciences pursuant to the provisions of § 10 par. 5 letter d) of Act no. 133/2002 Coll. on the Slovak Academy of Sciences. The process was approved by the SAS Assembly on November 21, 2021. The member of the panel of evaluators/invited external remote expert issues his or her report with the following evaluation and proposal for the rating of the Institute.

Name and address of SAS Institute	
On-site visit date	

Scientific quality and productivity

Comments, including strengths and weaknesses	Rating*	
recommended number of characters with spaces: up to 4000)		

Societal, cultural, or economic impact

Comments, including strengths and weaknesses	Rating*
recommended number of characters with spaces: up to 4000)	

• Strategy and potential for development

Comments	Rating*
(recommended number of characters with spaces: up to 4000)	

*Rating on a scale from A to D, where A is internationally leading; A/B part is internationally leading, overall is visible at the European context; B is visible at European context; B/C part is visible at the European context, overall is solid; C is solid; C/D is partly solid; D is not solid;

OVERALL ASSESSMENT

General comments on the Institute performance (2016-2021)

Comments and recommendations for further improvement and development of the institute

Proposal of overall institute rating:

Date,

Evaluator signature

8.4. Site Visit Schedule

Timetable on site visits, Section I

Institute	Date of visit	Time	Place
Mathematical Institute http://www.mat.savba.sk/	October 17	8.30-10.15	Stefanikova 49, Institute's meeting room
Institute of Geography http://www.geography.sav.sk	October 17	10.30-12.00	Stefanikova 49, Institute's meeting room
Earth Science Institute of the SAS http://www.geo.sav.sk	October 17	13.30-15.30	Dúbravská 9, SAS meeting room
Institute of Hydrology http://www.uh.sav.sk/en-gb/	October 17	15.30-17.00	Dúbravská 9, SAS meeting room
Institute of Materials and Machine Mechanics http://www.umms.sav.sk	October 18	8.30-10.15	Dúbravská 9, Institute's meeting room
Centre for Advanced Materials Application SAS http://www.cemea.sav.sk	October 18	10.15-12.00	Dúbravská 9, Mat and Mech Institute's meeting room
Institute of Informatics http://www.ui.sav.sk	October 18	13.15-15.00	Dúbravská 9, Institute's meeting room
Institute of Construction and Architecture http://www.ustarch.sav.sk	October 18	15.15-16.45	Dúbravská 9, Institute's meeting room
Institute of Measurement Science http://www.um.sav.sk	October 19	8.30-10.15	Dúbravská 9, Institute's meeting room
Institute of Electrical Engineering http://www.elu.sav.sk	October 19	10.30-12.30	Dúbravská 9, Institute's meeting room
Institute of Physics http://www.fu.sav.sk	October 19	13.15-15.15	Dúbravská 9, Institute's meeting room
Institute of Experimental Physics* http://uef.saske.sk/	October 20	9.00-11.00	Watsonova 47, Kosice Institute meeting room AULA
Institute of Geotechnics http://ugt.saske.sk/	October 20/	11.00-12.45	Watsonova 45, Kosice Institute meeting room AULA
Institute of Materials Research* https://websrv.saske.sk/imr/en/	October 20/	14.00-16.00	Watsonova 47, Kosice Institute's meeting room AULA
Astronomical Institute* Tatranská Lomnica https://www.astro.sk/	October 21	9.00-10.30	Institute's meeting room
Final panel meetingOctober 21, 16.30 – 19.30 hHotel LoftOctober 22, 8.30 – 12.30 h			

Timetable on site visits, Section II

Institute	Date of visit	Time	Place
Centre of Biosciences http://www.cbv.sav.sk/	September 19	9.00 -11.30	Dúbravská cesta 9 Institute's meeting room
Institute of Zoology <u>http://zoo.sav.sk</u>	September 19	12.45 -14.45	Dúbravská cesta 9 Institute's meeting room
Institute of Inorganic Chemistry http://www.uach.sav.sk/	September 19	15.00 -17.00	Dúbravská cesta 9 Institute Mat and Mech. meeting room
Institute of Parasitology http://pau.saske.sk/	September 20	10.30 -12.30	Inst. Forest Ecology meeting room, Zvolen
Institute of Forest Ecology https://www.ife.sk	September 20	14.00 -16.30	Institute meeting room, Zvolen
Centre of Experimental Medicine http://www.cem.sav.sk/	September 21	9.00 -12.00	Dúbravská cesta 9 Institute meeting room
Biomedical Research Center http://www.bmc.sav.sk	September 21	13.30 -17.00	Dúbravská cesta 9 Virology Inst. meeting room
Institute of Landscape Ecology <u>http://uke.sav.sk</u>	September 22	9.00 -11.00	Stefanikova 3, Institute meeting room
Plant Science and Biodiversity Center <u>https://cbrb.sav.sk</u>	September 22	12.30 -15.00	Dúbravská cesta 9 Institute meeting room
Institute of Neuroimmunology <u>http://www.niu.sav.sk</u>	September 22	15.15 -17.15	Dúbravská cesta 9 Institute meeting room
Chemistry Institute <u>http://chem.sk</u>	September 23	8.30 -11.00	Dúbravská cesta 9 SAS meeting room
Institute of Molecular Biology http://www.imb.savba.sk/	September 23	11.00 -13.00	Dúbravská cesta 9 SAS meeting room
Polymer Institute <u>www.polymer.sav.sk</u>	September 23	14.15 -16.15	Dúbravská cesta 9 Institute meeting room
Final Panel meeting Hotel LOFT	September 24, 9.00 -13.00		

Timetable on site visits, Section III

Institute	Date of visit	Time	Place	
Jan Stanislav Institute of Slavistics http://www.slavu.sav.sk/	November 7	9.00-10.30	Dúbravská cesta 9, Slovak Lit. Institute meeting room	
Ludovit Stur Institute of Linguistics http://www.juls.savba.sk	November 7	10.45-12.15	Dúbravská cesta 9, Slovak Lit. Institute meeting room	
Institute of Slovak Literature http://www.uslit.sav.sk/	November 7	13.30-15.00	Dúbravská cesta 9, Institutes meeting room	
Institute of World Literature http://www.usvl.sav.sk	November 7	15.15-16.45	Dúbravská cesta 9, Institutes meeting room	
Art Research Centre http://cvu.sav.sk	November 8	9.00-10.30	Dúbravská cesta 9, Slovak Lit. Institute meeting room	
Institute of Musicology http://www.uhv.sav.sk	November 8	10.45-12.15	Dúbravská 9, Slovak Lit. Institute meeting room	
Institute for Research in Social Communication http://www.uvsk.sav.sk/	November 8	13.30-15.00	Dúbravská cesta 9, Slovak Lit. Institute meeting room	
Institute of Political Sciences http://www.upv.sav.sk	November 8	15.15-16.45	Dúbravská cesta 9, Slovak Lit. Institute meeting room	
Institute of Philosophy http://www.klemens.sav.sk/fiusav/	November 9	8.30-10.00	Klemensova 19, Institute meeting room,	
Institute of Ethnology and Social Anthropology https://uesa.sav.sk/	November 9	10.15-11.45	Klemensova 19, Institute meeting room,	
Centre of Social and Psychological Sciences http://www.cspv.sav.sk	November 9	13.00-15.00	Štefánikova 3 MKC SAS meeting room	
Institute of Economic Research http://www.ekonom.sav.sk	November 9	15.15-17.00	Štefánikova 3 MKC SAS meeting room	
Institute of History http://www.history.sav.sk	November 10	9.00 – 11.15	Klemensova 19, Institutes meeting room	
Institute of Archaeology http://www.archeol.sav.sk/	November 10	14.00 – 16.00	Nitra, Institute meeting room	
Institute for Sociology http://www.sociologia.sav.sk	November 11	9.00-10.30	Klemensova 19, Institutes meeting room	
Institute of State and Law https://usap.sav.sk	November 11	10.45-12.15	Klemensova 19, Institutes meeting room	
Institute of Oriental Studies http://orient.sav.sk	November 11	13.45-15.15	Klemensova 19, Institutes meeting room	
Final panel meeting, hotel LOFT		November 11, November 12,		