

## Research assessment and evaluation in Russian fundamental science

The first round of evaluation of the effectiveness of academic institutions (research organizations of former State Academies of Sciences now subordinate to the Russian Federal Agency of Scientific Organizations) was conducted in 2017. This assessment was part of a national project to evaluate the performance of all Russian scientific organizations carrying out research, development and technological work. The authors participated in the adjustment of the methodology of the quantitative part of the assessment, the calculation of the indicators and the analysis of the results. The subject of this work is a review of the evolution of approaches to research assessment and evaluation in Russia in recent years, the analysis of the positive and negative aspects of the selected methods.

Increased interest in the scientometric evaluation of the effectiveness of research organizations in Russia is associated with global trends not only in this particular area but also in general approaches to public administration. It seems to us that the main prerequisites for these processes were:

- Implementation of a project approach to planning and managing basic scientific research in accordance with the Programs of fundamental scientific research of the State academies of sciences for 2008-2012 and 2013-2020.
- Transition to the service-oriented model of the public administration, which was expressed in the introduction of the concept of the state assignment in 2007, which led to a change in the funding model of scientific organizations from 2012.
- The reform of the state academies of sciences in 2013 with the reassignment of research organizations to a specially formed Federal agency of scientific organizations.

The basis for the approach to performance evaluation was laid in a number of legal documents adopted by the Russian government and the Ministry of Education and Science (MoES) in 2009<sup>1</sup>. These documents defined the approach to the evaluation of performance in such areas of the organization's activities as scientific potential and effectiveness, collaboration, commercialization, human resources and security. The evaluation was to be departmental in nature and rely heavily on quantitative indicators, representing an informed expertise. In 2010-2011, an attempt of assessment exercise was made based on the methods developed, but this attempt took place without significant consequences for the state scientific policy and the allocation of funding.

The second exercise was initiated after the meeting of the Council on Science and Education under the President of the Russian Federation on April 30, 2013, subsequent government decree and the orders Ministry of Education and Science<sup>2</sup> made significant changes in the rules and methodology of evaluation, content of data provided by organizations. A significant change was the non-departmental all-national nature of the assessment. A Federal system for monitoring of the effectiveness of scientific organizations performing scientific research, experimental design and technological work (<http://www.sciencemon.ru>) was also established, in which the data provided by scientific organizations since 2013 are accumulated.

In the federal monitoring system, 78 indicators are collected, combined into four main groups: the effectiveness and relevance of scientific research; development of human resources; integration into the

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<sup>1</sup> Decree of the Government of the Russian Federation of 08.04.2009 N 312 "On the assessment of the effectiveness...", Order of the Ministry of Education and Science of the Russian Federation of 10.10.2009 N 406 "On approval of the model clause on the commission for assessing the performance of scientific organizations..."

<sup>2</sup> Decree of the Government of the Russian Federation of 01.11.2013 N 979, Order of the Ministry of Education and Science of the Russian Federation of 05.03.2014 N 161, Order of the Ministry of Education and Science of the Russian Federation of March 5, 2014 No. 162

world scientific space, dissemination of scientific knowledge and increasing the prestige of science; resource support of the scientific organization. In the methodology developed for the MoES by a team of specialists from the Higher School of Economics (Fursov K., 2015), it is proposed to use only 19 indicators combined into 5 aggregated indicators - three main indicators and two additional indicators:

A – The number of books or scientific periodicals and papers indexed in Web of Science, Scopus or other specialized database (maximum value from one of the databases representative for an organization) per 100 researchers.

B – Number of IPRs registered in the Russian Federation or abroad as well as the number of issued design documentation per 100 researchers.

C – Income from all types of R&D, S&T services provided per total R&D personnel of an organization.

Organizations are compared within reference groups in accordance with the main research field and one of the three activity profiles - Knowledge generation (main indicator A), Technology development (main indicator B), Provision of S & T services (main indicator C). The authors of the methodology proposed a formal algorithm for classifying an organization to a reference group. According to the main rule, the final category for organization is assigned according to the comparison of the main indicator to the boundary values, derived from the mean value of the indicator in the reference group: 1st category (leading institutions) = median + 25%, 3rd category (losing research functions) = median - 25%, 2nd category (stable research organizations) = others.

The state shows the greatest interest in assessment of academic research institutes due to the fact that this segment of fundamental science in Russia is the largest recipient of targeted (non-competitive) budgetary funding for scientific research (Fig. 1). This funding constitute less than 15% of total 439.4 trillions of roubles of total budget expenditures on public science in 2015<sup>3</sup>.

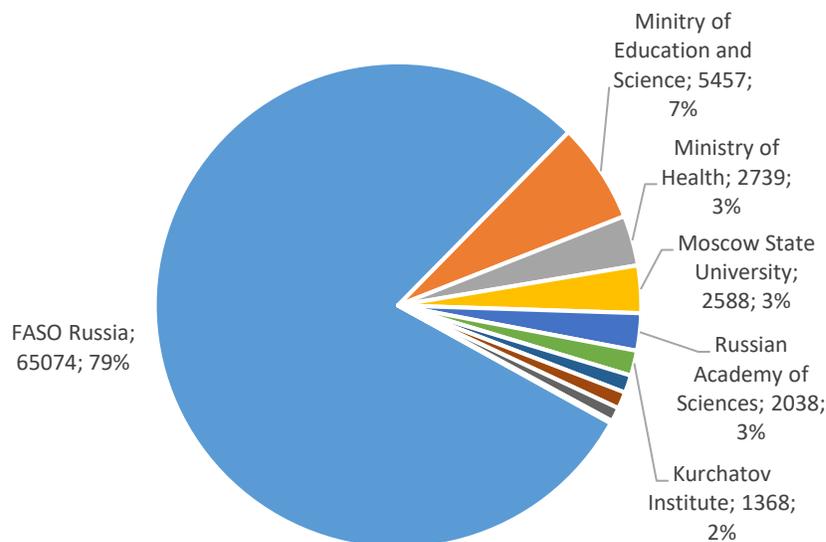


Fig.1. State assignment basic research funding in 2015, millions of roubles (Gusev & Ushakova, 2017)

<sup>3</sup> Indicators of Science: 2017 by Higher School of Economics. Available at: <https://www.hse.ru/data/2017/02/07/1167425345/%D0%98%D0%BD%D0%B4%D0%B8%D0%BA%D0%B0%D1%82%D0%BE%D1%80%D1%8B%20%D0%BD%D0%B0%D1%83%D0%BA%D0%B8%202017.pdf>

FASO of Russia performed a departmental assessment exercise in 2016-2017 with assignment of performance categories to subordinate organizations, and it is assumed that organizations that have received a third category can be reorganized or even dissolved. During this assessment the methodology developed by MoSE shows inconvenient results and some minor alterations to this methodology were implemented resulting in significant improvement of quality and stability. Expert round of assessment proves the sufficient quality of modified methodology.

In addition to the national and departmental assessment, state agencies also form an indicative ranking of scientific organizations on the criterion of publication activity on the basis of federal monitoring system data, which takes into account such parameters as the number of publications of the organization and the cumulative number of citations according to WoS CC, Scopus and Russian Science Citation Index (total and per researcher) as well as average impact factor of the journals<sup>4</sup>.

In 2018, in addition to the expert assessment of reports on basic research projects conducted by the Russian Academy of Sciences, FASO of Russia performed an evaluation of the quality of publications based on fractional authorship (Parfenova, Bezrodnova, Bogatov, & Lyagushkina, 2017) and journal quality based on the Quartile Score in case of WoS indexed journals, fact of indexing in Scopus database, listing in Russian High Attestation Commission special register.. It is assumed that henceforth monitoring of the quality of publications will be conducted on a permanent, quarterly basis.

Thus, we see that the Russian Government is increasingly trying to rely on quantitative methods of scientometric evaluation, and there is a tendency to reduce the variety of indicators used and the use of simplified or questionable bibliometric practices.

The main problem with the emerging approach to assessing research performance is, first of all, chaos and inconsistency. With a more detailed examination of even the most elaborate methodology of national assessment, one can identify some problems and shortcomings:

- Analysis shows low level of reliability of some indexes in use due to lack of detailed data.
- Publication indicators do not use fractional authorship while we can see increasing number of collaborative papers and have now “quality” measure.
- Use of indicators relative to number of researchers in organization can be significantly biased by incorrect count of researchers.
- Questionable character of determining of total number of publications as maximum from several sources.
- Low number of organizations in reference group can significantly distort overall category distribution.

Despite the effect of research assessment strategies on the development of national science and direct influence on funding amount, there is definite lack of broad discussion in the professional literature. There was a number of comments mainly bound to the general idea of admissibility of scientometric assessment in the lay press and scientific community websites but it was not anything comparable to the discussion connected to the Italian research assessment exercises VQR 2004–2010 and VQR 2011-2014 (Franceschini & Maisano, 2017). We suppose that professional scientometric discussion and involvement of the scientific community in the process of refinement of principles and methodologies of research assessment, alignment of basic principles and key performance indicators with those adopted in the EU countries is vital to the Russian science in general.

## References

Franceschini, F., & Maisano, D. (2017). Critical remarks on the Italian research assessment exercise VQR

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<sup>4</sup> According to the Implementation plan for State program “Development of Science and Technologies for 2013-2020”

2011 - 2014. *Journal of Informetrics*, 11(2), 337–357. <https://doi.org/10.1016/j.joi.2017.02.005>

Fursov K., K. G. N. (2015). Multidimensional assessment of R&D performance: evidence from the 2014 pilot evaluation exercise of Russian public research organizations. *Social Science Research Network. Series SSRN Working Paper Series "SSRN Working Paper Series."*

Gusev, A. B., & Ushakova, S. E. (2017). Government-commissioned research projects: the untapped potential. *Science. Innovations. Education*, (2), 48–70.

Parfenova, S. L., Bezrodnova, K. A., Bogatov, V. V., & Lyagushkina, E. A. (2017). Methodical Approaches to the Calculation of Indicators of the Publication Activity of Russian Researchers in the System of Government Management. *Publication Landscape of the Russian Science*, 95–103. <https://doi.org/10.24069/2017.978-5-7996-2227-5.16>