RAS expertise for assurance of consistency of solutions to applied problems and results of fundamental researches

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Abstract. Nowadays the main institution for exclusion of contradictions between the results of fundamental and applied problems can be the RAS expertise of big development projects, launched by the state and business. Such status is set in the Russian legislature as an indicator of expertise of highest qualification, scientific justification and exclusion of conflict of interests. Moreover, lack of disputing instruments allows to count on effectiveness of use of this institution in sphere of nature management and formation of “green” economy. A methodology of conduction of the RAS expertise for proposals on liquidation of accumulated environmental damage, done by the JSC “Baikalsky PPM”, in the context of technical feasibility and compliance with requirements of legal regime of Lake Baikal. Principal conditions of these expert works are: inclusion of the RAS Expertise into complex of measures on scientific support of realization of Russia’s national development goals; an organization that requests expertise of technical solutions of the affiliated parties cannot be a customer; compliance with common requirements of completeness and quality of information; competitiveness of expertise process; expertise procedure has to be supported by several levels of results’ verification keeping the confidentiality of information on experts’ identities and their executed work.

1. Introduction

On May 18, 1957 Council of Ministers of the USSR issued a decree “On establishment of the Siberian branch of the Academy of Sciences of the USSR”. It read: “To establish the Siberian branch of the Academy of Sciences of the USSR... To consider the main task of the Siberian Branch of the Academy of Sciences to be the comprehensive development of theoretical and experimental research in the field of physical, technical, natural and economic sciences aimed at solving the most important scientific problems and problems that contribute to the most successful development of the productive forces of Siberia and the Far East” [1].

Baikalsky PPM produced bleached pulp and other products from 1966 to 2013. The volume of accumulated waste as a result of the PPM activities is around 6.2 million tons. The main part of the waste consists of sludge-lignin, sludge waters, sludge-lignin ash, coal ash and slag ash, ash from bark boilers, pulping liquor liquid, gases, industrial and domestic wastes. The accumulated wastes are located on a more than 50-hectare territory in a close proximity to Lake Baikal, including its water protection zone [2-5].
The problem of elimination of the accumulated wastes of the Baikalsky PPM is a landmark problem for which the RAS Expertise will ensure the consistency of solutions to applied problems and the results of fundamental research⁴ [6].

2. Basic concepts of the RAS expertise in regard to determining the applicability of technologies for liquidation of the wastes accumulated by the Baikalsky PPM

The RAS Expertise is carried out in accordance with the requirements of Provisions on expert activity of the RAS² and Procedure for organizing and carrying out of expert activity in the federal state budgetary institution Russian Academy of Sciences⁵. The main provisions of this institution can be characterized by the following positions [7-11]:

* The RAS Expertise is an exclusive functionality of the Russian Academy of Sciences (Federal law "On introducing amendments to the Federal law "Concerning Science and State Scientific and Technical Policy" dated 21.07.2011 N 254-FZ article 6, 7)
* The RAS expertise executor is the Russian Academy of Sciences (link 2, point 4.4.).
* Execution of expertise is carried out also by regional subsidiaries, including the Siberian branch of the RAS (link 2, point 4.6), and additionally regulated by the RAS Charter (Resolution of the government of the Russian Federation dated 27.06.2014 N 589 "On approval of the charter of the federal state budgetary institute "Russian academy of sciences" point 86) and by Charter of the Siberian branch of the RAS⁶ (point 2, 14, 15).
* The RAS expertise can be carried out only by experts of the RAS (link 2, point 4.7). Their list is formed by the RAS subsidiaries based on proposals of the RAS subsidiaries and regional subsidiaries, including the Siberian branch of the RAS.
* After expertise is carried out, it has to be considered by the RAS Expert council (link 2, point 4.9).
* After the conclusion is made by the RAS Expert council, it has to be sent to a Customer.

According to instructions of the President of the Russian Federation, dated 12 September 2019, No Pr-1818 (hereinafter – pr-1818) following the results of verification of implementation of legislation on the Lake Baikal preservation and its ecological improvement⁷, a contest is required to select the best world technological solutions for utilization and disposal of Baikalsky PPM wastes: point 3a «to the Government of the Russian Federation, the Government of the Irkutskaya oblast together with the state development corporation “VEB.RU”»: a) to conduct contest procedures for selection and implementation of the world's best technological solutions for utilization and disposal of wastes, including the possibility of participation of foreign companies with experience in this field».

In order to ensure the execution of the order Pr-1818, the Government of the Irkutskaya oblast applied to the Siberian Branch of the Russian Academy of Sciences with a request to conduct the RAS Expertise. The Government of the Irkutskaya oblast collected the aforementioned technological proposals, including the one from a subcontractor “VEB Engineering” Ltd (the sole founder is the State corporation VEB.RU). The total number of applications is around 50, containing 150 technological conversions of a complex nature.

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¹ Conclusion of the Expert Commission on works of Petrik V.I. The Commission for Petrik V.I.'s works expertise was created by the RAS Presidium order № 26 dated 2 February 2010. 21.04.2010 http://www.ras.ru/news/shownews.aspx?id=f66b4f85a3fa3-49e3-8835-976967b54e7#content
² Resolution of the RAS Presidium "On expert activity of the RAS" № 84 dated 21.05.2019 http://www.ras.ru/CSearchResults.aspx?SearchString=%d0%9f%d0%be%d1%81%d1%82%d0%bd%d0%be%d0%b2%d0%bb%d0%b5%d0%bd%d0%b8%d0%b5%d0%b4%d0%b8%d1%81%d0%be%d0%bd%d0%b0%d0%b9%d0%9d%d0%be%d1%82-21.05.2019%e2%84%9684 http://www.ras.ru/viewnumbereddoc.aspx?id=31402d41-fd4e-44ce-9db8-61022329907e&_Language=ru
³ Charter of the federal state budgetary institute "Siberian branch of the Russian academy of sciences" / Addition to Resolution of the RAS Presidium, dated 25 November 2014, № 153 https://www.sbras.ru/files/page/sustav_so_ran.pdf
⁴ Decree of the RAS "On procedure for expert activity of the RAS" № 10110-692 or 05.07.2019 http://www.ras.ru/viewnumbereddoc.aspx?id=31402d41-fd4e-44ce-9db8-61022329907e&_Language=ru
⁵ List of orders of President of the Russian Federation, dated 12 September 2019, № Pr-1818 based on results of verification of execution of legislation on the Lake Baikal preservation and its ecological enhancement http://kremlin.ru/acts/assignments/orders/61524
Since one of the most important requirements of the RAS expertise is absence of a conflict of interests and independence of the expertise, the customer of such work should be the Government of the Irkutskaya oblast or the Government of the Russian Federation (Russia’s Ministry of natural resources). Signing a contract with an economic entity, interested in the implementation of a specific technology, which directly competes with other participants’ technologies, will not allow to meet the requirement of independence and objectivity [12, 13]. In this case, the legal status of such an expertise will be equivalent to an expertise carried out by other organizations and can be easily challenged by any “loser” applicant, and much more by an applicant whose application has been officially published but has not been under the expertise.

3. Results and discussion

The authors of this publication have prepared a Methodology for the RAS examination of proposals on liquidation of accumulated environmental damage as a result of the JSC “Baikalsky PPM” activity from the view of technical applicability and compliance with the requirements of the legal regime of the Central ecological zone of the Baikal Natural Territory. The sequence and technology of the formation of the expertise stages includes:

- Structural description of an object of the expertise.
  - Justification of:
    - group of experts and their functions,
    - experts’ specialties,
    - approach to determination of number of experts in each group,
    - principal questions to be set in contracts with the RAS experts,
    - schedule of the RAS expertise and execution of works by experts in each group
- Formation of scheme of interaction of experts.
- Synthesis of questions from the expert questionnaire.
- Estimation of costs for the expertise.

The RAS expertise is carried out in conditions of confidentiality of information about experts and their expert work due to requirements of independency, professional competency of experts and validity of experts’ opinions, exclusion of conflicts of interests in expertise and others. In this regard, technical support is required for the expertise process in terms of realization of additional functions necessary for effective remote interaction with applicants, including ensuring operation of existing CleanBaikal.ru portal:

- creation of anonymous accounts for the RAS experts (including coordinators);
- interaction of experts of a single expertise with authors of applications in the question-answer mode;
- closed topic threads on the forum for discussion by the RAS experts (including coordinators) in accordance with tasks:
  - closed interaction of coordinator with experts of a single expertise, including cases with additional study;
  - closed interaction among coordinators per one specialty to ensure consistency with results of expertise of other similar technical solutions;
  - closed interaction among coordinators of technologies to ensure consistency with results of expertise of other similar technical solutions;
- technical support of work of the system.

A preliminary assessment of the amount of necessary expert work involves the conduct of 800-900 single expertise, 700-800 experts of the Russian Academy of Sciences in 40 specialties of SRSTI (State rubricator of scientific and technical information). The following groups of experts and their functions are suggested:

- Experts of single technical expertise: carry out an expertise of the stages of technologies in accordance with the expert's specialty; remotely anonymously interact with applicants.
Expert-coordinators of single technical expertise per specialty: carry out the coordination of technological stages for several single expertise in their specialty, as well as inspection of other coordinators for other single expertise in their specialty; anonymously interact with experts of those single expertise, with system analytics in terms of formulation of requests to experts, who carry out technical expertise, and authors of applications.

Leading expert–coordinators per specialty: make coordination of all single expertise in their specialty, participate in expertise support, including: consulting on composition of single expertise, content and form of questionnaires of the RAS experts; requirements to the RAS experts participating in the expertise; interaction with coordinators of single technical expertise on organizational issues.

System analysts (in case of technologies – only in terms of technical applicability): carry out expertise on technologies in general, as well as checking of other system analysts making expertise for other technologies.

Coordinators of system analysts (in case of technologies – only in terms of technical applicability): coordinate work of system analysts; give support of expertise, including: consulting on composition of expertise, content and form of questionnaires of the RAS experts; requirements to the RAS experts participating in the expertise; interaction with system analysts on organizational issues.

Experts of single legal expertise: carry out expertise of the stages of technologies, which received a positive conclusion from the technical expertise in terms of the legal admissibility of their implementation.

Experts–coordinators of legal expertise: coordinate single legal expertise, as well as checking of other coordinators of other single legal expertise.

Leading expert–coordinator of legal expertise: organizes and coordinates legal expertise, the work of coordinators of single legal expertise; participates in the support of expertise, including: consulting on composition of expertise, content and form of questionnaires of the RAS experts; requirements to the RAS experts participating in the expertise; interaction with coordinators of legal expertise on organizational issues.

The distribution of expert works is formed on the basis of the following principles:

- The allocation of single expertise among experts, including for verification among the coordinators of single expertise, is determined based on the indicators of the number of experts in specialty. Besides, the factor of non-admission of stable expert groups of single expertise is taken into account.
- The allocation of expertise among system analysts, including for verification purposes, is determined based on the indicators of the number of system analysts, the proximity of technologies, the number of single expertise per each technology.
- The relationships among the coordinators of system analysts on technologies and the head coordinators on specialty are determined.

The questions in questionnaires for the experts of each groups are formed based on goals of the expert work and the specialty. Coordinators of all groups are responsible for receiving answers from experts of single expertise, and in their questionnaire, they state answers received during the single expertise. Besides the questionnaires’ answers, the coordinators of all groups present an impersonal detalization of statistics on the experts’ answers per each single expertise, for which it is required to check and indicate a qualified majority of votes for each question in the questionnaire.

Preliminary report on the RAS expertise is submitted for consideration by the Interdisciplinary commission and after that by the RAS Expert council. Comments and suggestions of the members of the Interdisciplinary commission and members of the RAS Expert council, received during discussion of the draft report on the RAS expertise, are sent to the experts for consideration. The report, updated after accepted suggestions or arguments for unaccounted amendments, is submitted for approval by the Interdisciplinary commission and then – by the RAS Expert council.
4. Conclusion
The problem of liquidation of the accumulated environmental damage from the Baikalsky PPM activities can support the spread of implementation of the RAS Expertise procedure for the most significant, from the view of state interests, projects for the rehabilitation of closed objects and creation of new hazardous objects, elimination and prevention of environmental catastrophes, etc.

Contest in accordance with Pr-1818 can be carried out only on the basis of technical solutions that passed the procedure of the RAS Expertise on the applicability of proposed scientific and technical solutions. This will allow to protect the decisions made from revision in the medium term, ensure understanding of state decisions by citizens of Russia, and support from international institutes, including UNESCO, and ultimately eliminate the accumulated environmental damage.

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