Ministry of Education and Science of the Russian Federation

AGREED BY

Deputy Minister
of Education and Science
of the Russian Federation

_____ L.M. Ogorodova

«___»_____2017

APPROVED BY

Acting Rector of the Federal State
Autonomous Educational Institution of
Higher Education
«Siberian Federal University»

_____ E.A. Vaganov

«08» Сря 2017

Roadmap for
the Competitiveness Enhancement Program
of Siberian Federal University,
for the period 2016-2020
(Stage 2 – 2018-2020)

Moscow, 2017

The action plan for implementation of the Competitiveness Enhancement Program («Roadmap») of the Federal State Autonomous Educational Institution of Higher Education «Siberian Federal University» for 2018-2020 (2 stage – 2018-2020):

presented at the meeting of the International Council of the Russian Academic Excellence Project on _____ 2017;

it is adjusted in accordance with the recommendations of the Council, directed by the letter of the Ministry of Education and Science of the Russian Federation of _____ 2017 No. _____

Executive Team

1. E. A. Vaganov, Acting Rector, Siberian Federal University (SibFU); Professor; Doctor of Biological Sciences; Full Member, the Russian Academy of Sciences;
2. S.V. Verkhovets, Vice-Rector for Science and International Cooperation, SibFU; PhD in Agricultural Sciences;
3. S. I. Mutovin, Vice-Rector for Security and Human Resources, SibFU; Doctor of Economics;
4. M.V. Rumyantsev, Vice-Rector for Academic Affairs, SibFU; PhD;
5. T.A. Magdibur, Deputy First Vice-Rector for Economics and Development;
6. E. A. Turtapkina, Deputy Vice-Rector for Project Management, SibFU;
7. V. G. Upirova, Deputy Vice-Rector for Research and International Cooperation, SibFU;
8. A. A. Romanov, Deputy Vice-Rector for Research and International Cooperation, SibFU;
9. R. G. Shorokhov, Vice-Rector for Project Management, SibFU;
10. O. A. Brusyanina, Director of Project Office the Competitiveness Enhancement Program, SibFU;
11. I. N. Dovzhenko, Deputy Head of Financial Management
12. A.N. Tamarovskaya, Head of Project Office the Competitiveness Enhancement Program, SibFU;
13. K. A. Rubanov, Specialist of Project Office the Competitiveness Enhancement Program, SibFU.

The body of this document consists of 76 pages.

This document contains 7 appendices.

The appendices consist of 14 pages.

Acting rector of the University

_____ (**Evgeny Aleksandrovich Vaganov**)

[signature, seal]

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I. TARGET MODEL

I.1. Target Model Description

Stage 2 Roadmap of Siberian Federal University (hereinafter, “SibFU” or “University”) contains a detailed action plan for 2018-2020 developed based on the functional analysis of effectiveness of Stage 1 Roadmap (2016-2018) and recommendations of the International Council of the Russian Academic Excellence.

The Roadmap illustrates the process for transitioning to the SibFU’s target model that will ensure compliance with the globally recognized academic and research standards and will firmly position SibFU among the world’s leading universities and research centers in the areas of environmental management, natural resource management, sustainable development (including through better living standards and higher life expectancy) and forecasting of climate change and its effects, which will be evidenced by consistent representation of SibFU in international rankings such as ARWU, THE or QS and inclusion in subject rankings such as QS Environmental Sciences (Top-200), QS Agriculture & Forestry Sciences (Top-100), and QS Earth & Marine Sciences (Top-200).

The SibFU revised target model (mission, strategic goal, marketing strategy, management framework, etc.) is aimed at creating an advanced educational, research and innovation infrastructure to meet the 21st century global challenges: climate change, global warming, biodiversity loss, environmental depletion, and waste management.

Stage 2 Roadmap outlines the results to be achieved through a deterministic subject area identification approach, including creation of the end-to-end technologies that SibFU will use in developing and presenting disruptive solutions to ensure exponential improvement of its scientometric performance and international image by 2020. Performance targets will be achieved by way of transformation and institutional redesign, including streamlining of the academic and research management framework and establishment of Strategic Academic Units (StrAUs).

This approach will help SibFU to confidently integrate into international academic research teams and become Russia's academic and research hub offering competitive solutions to the global market.

The Roadmap implementation will be assessed by monitoring progress towards mandatory and optional 2020 targets presented in Section III, Roadmap Performance Indicators.

1. Mission and Strategic Goal

Based on the assessment of the University's Competitiveness Enhancement Program (Stage 1) and the recommendations of the International Council of the Russian Academic Excellence, the University’s mission and strategic goal have been updated to emphasize the SibFU’s focus on domestic and global challenges.

The SibFU’s mission is to create an academic and research hub for generating, distributing and implementing innovative solutions and providing comprehensive support to sustainability aspirations of Russia’s unique territories with a view to contributing significantly to the country’s global competitiveness and addressing the 21st century global challenges.

The SibFU’s strategic goal is to create a progressive academic and research environment and promote innovative solutions to ensure comprehensive support of sustainability aspirations pursued by the unique territories rich in renewable resources.

2. Target Model

SibFU produces highly qualified talent demonstrating creative and hands-on capabilities as well as capabilities to produce globally relevant knowledge and technology to expand the economic potential and raise the global profile of Siberia's priority regional industries. SibFU also promotes technological solutions aimed at enhancing Russia's strategic resource potential and security.

The 2020 Target Model is based on SibFU's vision as a center of excellence in environmental management, natural resource management, forecasting of climate change and its effects and improving the quality and expectancy of human lives that will bring new knowledge and technology to the global market, as well as a research and guidance center facilitating the development of the national policy of the Russian Federation in the hydrocarbon market and actively engaging in the implementation of the country's climate policy.

The Target Model has been developed with due regard to global digitalization, natural resource management and sustainability trends, international environmental regulation efforts and climate changes such as global warming, permafrost retreat and some other developments that are yet to be assessed and addressed in order to mitigate negative impact on society and economy and the overall development of the modern civilization.

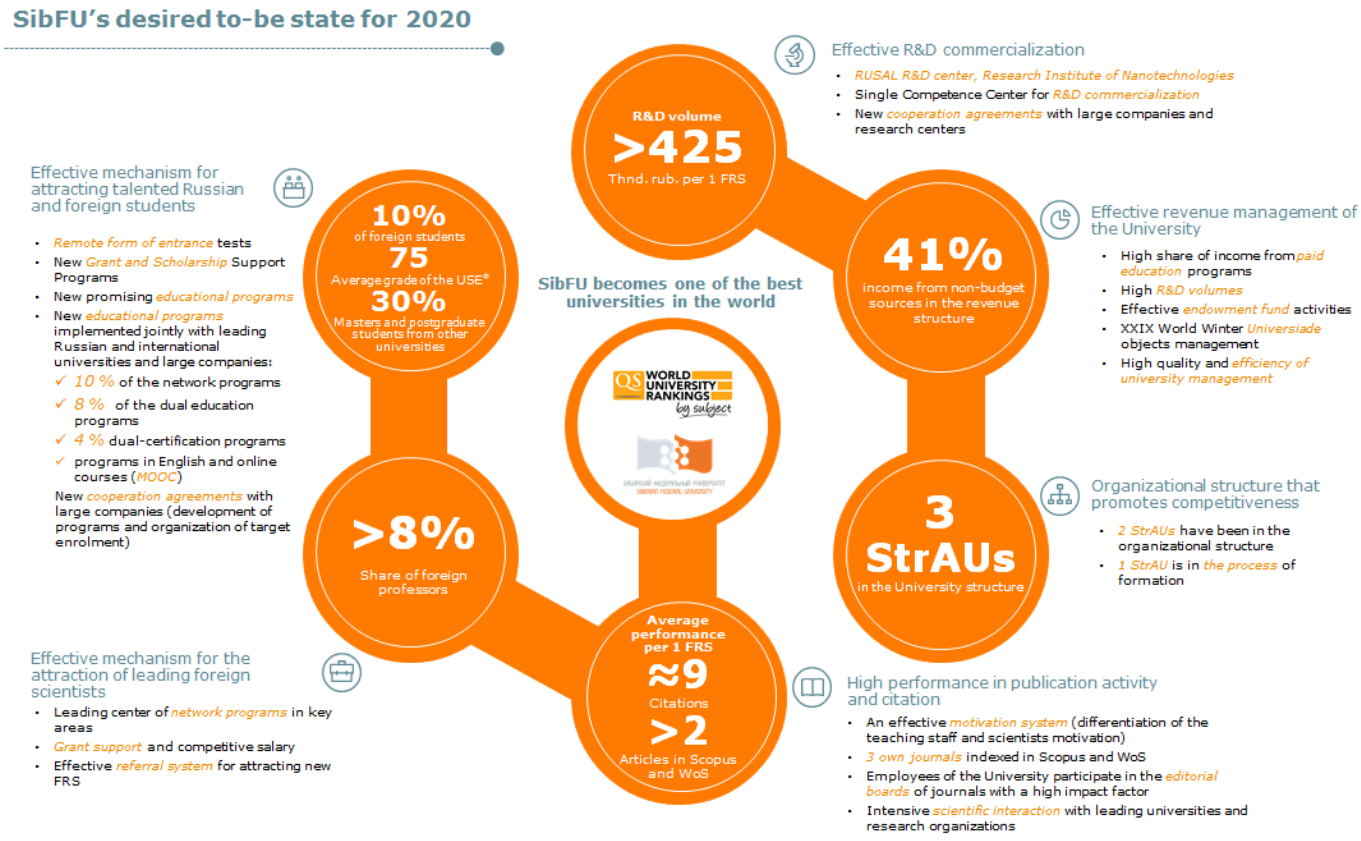


Figure 1. SibFU's desired to-be state for 2020

USE* – here and below Unified State Exam

3. Peer Universities

The peer universities for benchmarking and developing Stage 2 Roadmap were selected based on the qualitative analysis of the SibFU's as-is academic and research profile following the implementation of the 2015-2017 action plan, and the quantitative analysis of the threshold performance values required to hit the pursued global and subject rankings.

The selection criteria for the peer group include focus on the commercial development of unique natural areas; alignment of the target growth drivers of the SibFU with the strengths of the selected peer universities; and representation in the global subject rankings relevant to SibFU. Based on the criteria above, three peer universities were selected: the University of Alberta (Canada), the University of British Columbia (Canada) and the University of Alaska (United States). The selected universities have specific competitive advantages that were taken into account in the development of the Roadmap.

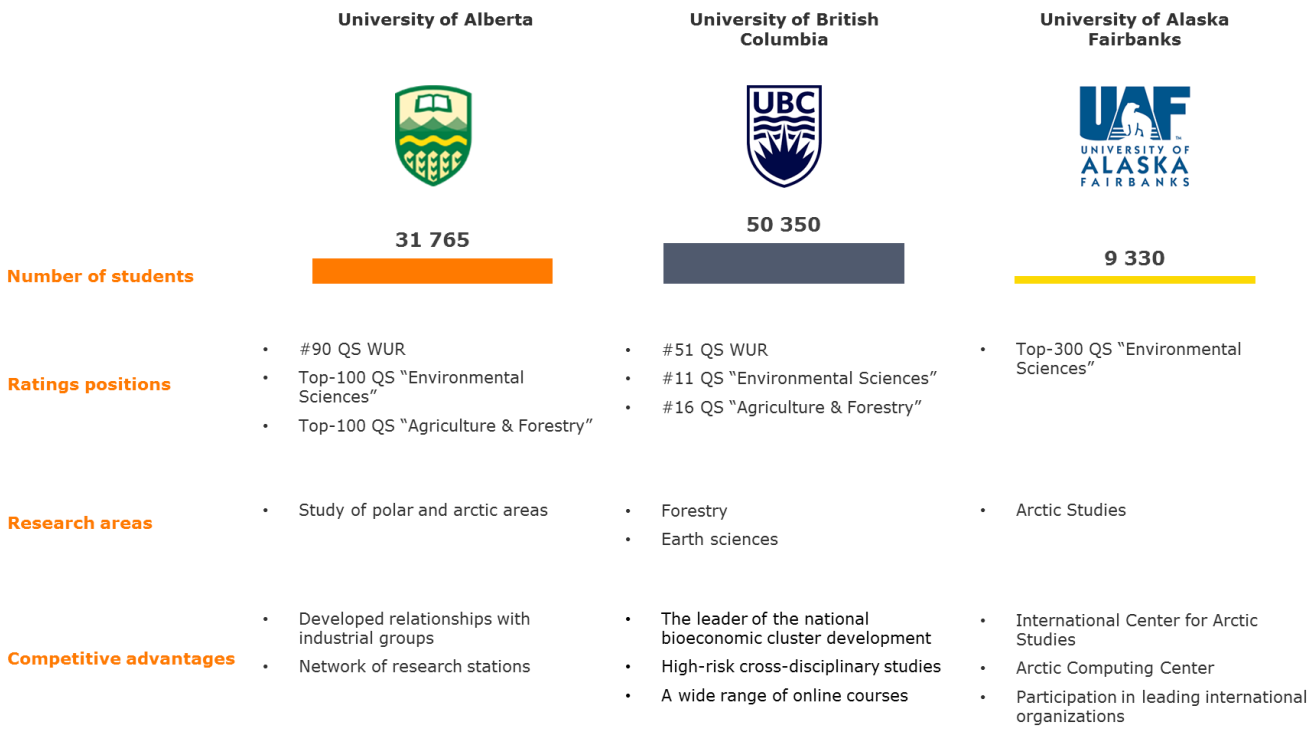


Figure 2. Peer universities

Benchmarking of scientometric performance against the peer group is shown in Figure 3.

In terms of the subject-weighted citation index, SibFU demonstrates strong positions in a number of areas, both globally and among the peer group. This gives reasons to expect exponential improvement of the SibFU's scientometric performance, provided that the University concentrates its resources in the respective areas and implements measures to encourage the increase of the number and quality of publications.

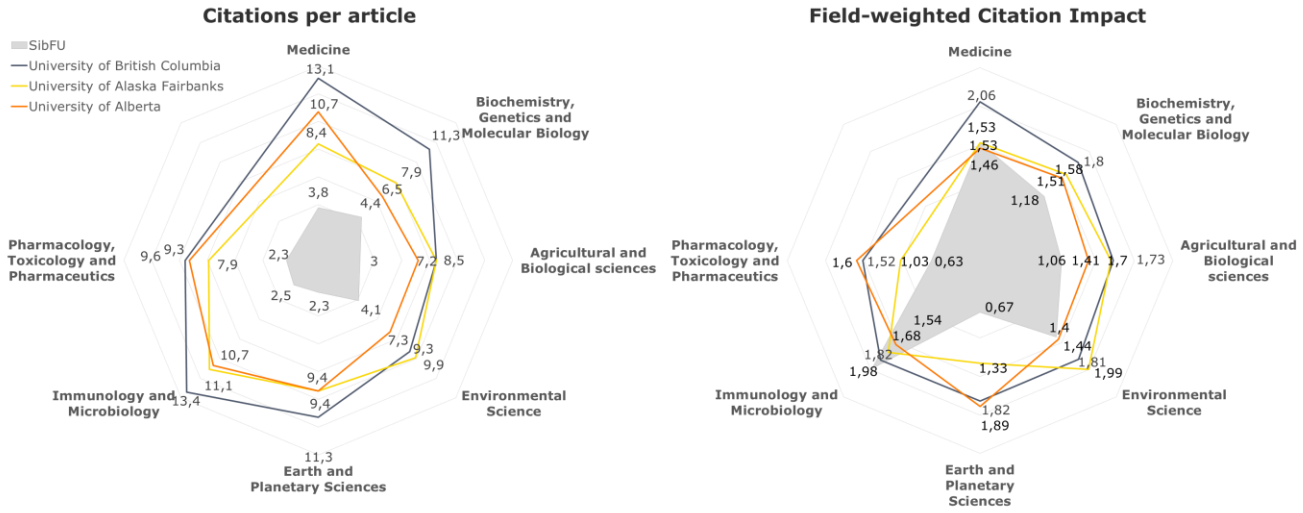


Figure 3. Benchmarking against peer universities: citation index, 2012-2016[2]

To evaluate the niche capacity and the business rationale behind specific research areas, we have analyzed the University's current standing and competitive edge in terms of R&D track record in Russia and globally, based on the relevant scientometric data. Several subject areas (highlighted in the picture below) show the highest potential and will drive further growth of the University's scientometric publication performance and secure its appearance in the pursued subject ratings:

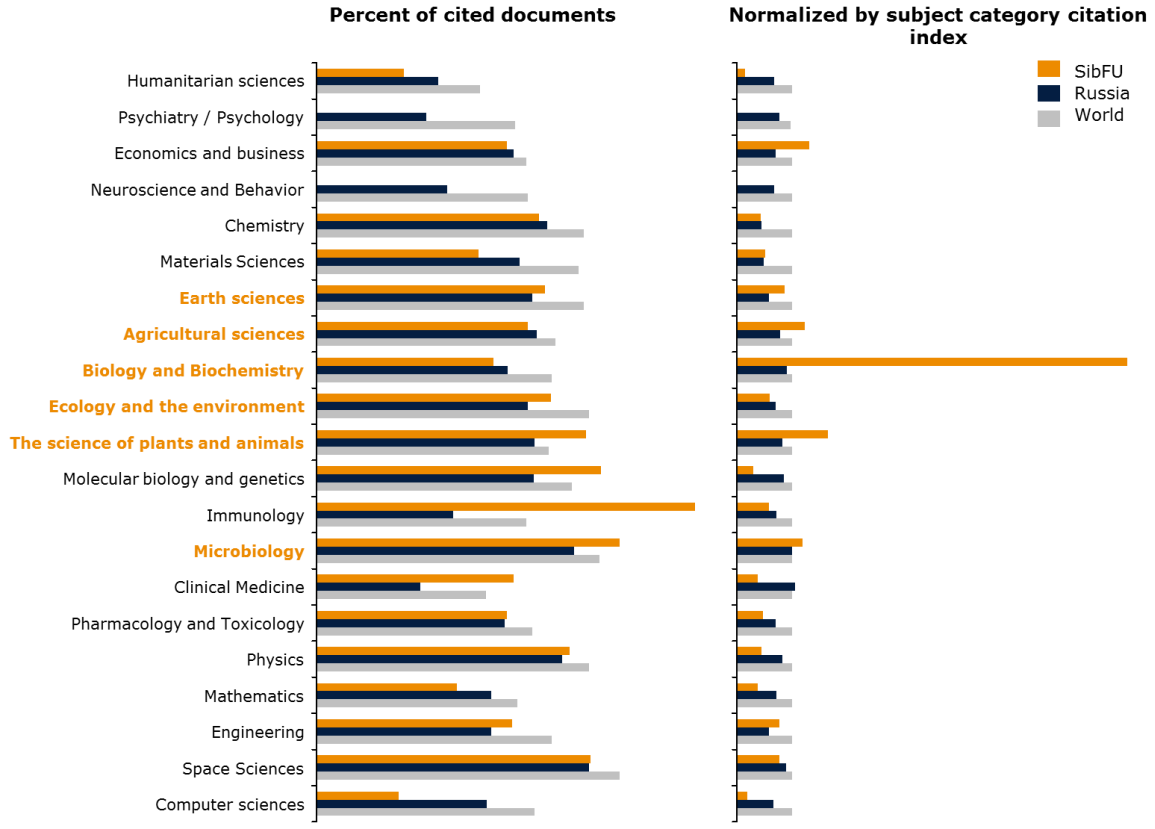


Figure 4. Benchmarking against Russian and global average citations, 2012-2016[3]

[2] Source: Scorpus

The data on Figure 4 demonstrates the demand for the SibFU's scientific products and its excellence in certain academic fields: biology and biochemistry, microbiology, earth sciences, plant and animals science, ecology and environmental and agricultural science.

Non-linear optics, spectroscopy and quantum chemistry papers by SibFU's scholars have been published in internationally recognized first percentile academic journals such as Chemical Reviews (impact-factor – 47.9) and Journal of Physical Chemistry Letters (impact-factor – 9.4); first decile journals such as Physics Reports (impact-factor – 22) and Nature Communications (impact-factor – 13,1); and first quartile journals such as Scientific Reports (impact-factor– 4.8) and Physical Chemistry Chemical Physics (impact-factor – 4.1). In addition, a number of SibFU's publications have been ranked among the top 100 most highly cited papers according to Web of Science. For example, "Exciton-Vibrational Coupling in the Dynamics and Spectroscopy of Frenkel Excitons in Molecular Aggregates" by Sergey P. Polyutov and his German, Swedish and Chinese colleagues published in Physics Reports in 2015, was named among the 1 percent of the most cited molecular physics papers and ranked among the top 100 most highly cited among over 50 thousand articles by Russian scholars.

Importantly, the lowest self-citation score for SibFU products is 16.4 percent, and the higher score is 29 percent, which is not a critical value according to Clarivate Analytics (the intellectual property and science business of Thomson Reuters up to 2016).

The main strategic objective in terms of improving the University's scientometric performance is to retain the number of publications without compromising quality. To intensify the respective efforts, the University concentrates its resources in the key research areas, including through comprehensive support to FRS, striving to encourage publications in top academic journals with the highest impact factor (first and second quartile journals) and improve the overall quality of publications through the development of a motivational system and increased networking.

4. Gap analysis

To develop the marketing strategy and a set of activities aimed at implementing the target model, an analysis of current gaps between present and target performance indicators for 2020 was performed, as presented below (Figure 5).

[3]Source: Web of Science

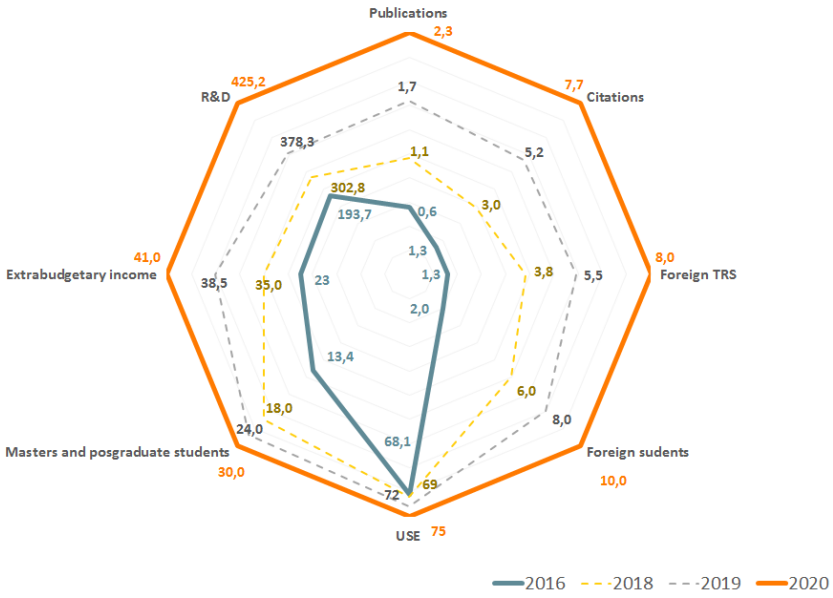


Figure 5. Analysis of gaps between the current and target state of the University by 2020, with a breakdown by performance indicator[4]

An analysis of reasons for the gaps was performed to achieve the planned indicators (Table 1).

Table 1. Current to target performance indicator gap analysis, 2020

No.	Indicator	Reason for the gap
1.1	Rank in ARWU general rating	• Lack of systematic activity aimed at promoting the University in global ratings • Inadequate level of academic reputation • Low level of citation of FRS, including due to a low share of articles published in journals with a high impact factor (the first and second quartiles) • Low share of international students and faculty • Insufficient number of students in PhD programs • Insufficient number of publications per one of the faculty and research staff
1.3	Rank in THE general rating	
1.5	Rank in QS general rating	
1.6.	Rank in QS subject rating (Environmental Sciences)	
1.7	Rank in QS subject rating (Agriculture & Forestry)	
1.8	Rank in QS subject rating (Earth & Marine Sciences)	
2.1.1	Number of articles in the Web of Science per one of the faculty and research staff	• A large number of FRS not involved in publication activity • Inadequate motivation to pursue publication activity, including low remuneration for articles and lack of competition to take positions with the University • Inadequate knowledge of English with FRS • Limited access to specialized databases necessary for research (due to cost constraints) • Inadequate number of the University's own journals indexed by WoS and Scopus
2.2.1	Number of articles in the Scopus per one of the faculty and research staff	
3.1	Average citation index per one of the faculty and research staff measured by the total amount of articles included in the Web of Science	• Lack of motivation to improve the quality of publications • Low share of articles published in journals with a high impact factor (first and second quartiles) • A low number of areas where highly cited publications are produced

[4] Scientometric indicators: the number of publications and the average citation index per 1 faculty and research person according to Web of Science

No.	Indicator	Reason for the gap
3.2	Average citation index per one of the faculty and research staff measured by the total amount of articles included in the Scopus databases	• Low academic mobility and inadequate level of international cooperation in terms of co-authoring articles • Limited access to specialized databases necessary for research (due to cost constraints) • Inadequate activity in creating new network interactions, entering international academic associations and large research projects • Inadequate knowledge of English with FRS
4	Share of international professors, lecturers and researchers in the total number of faculty and research staff, including Russian citizens with international Universities PhD	• Uncompetitive salaries • Inadequate level of international reputation • Limited access to specialized databases necessary for research (due to cost constraints) • Inadequate activity in creating new network interactions, entering international academic associations and large research projects • Inadequate knowledge of English with FRS • Prohibition to recruit international FRS in certain areas • Lack of a systematic approach to the search and recruitment of international FRS • Lack of motivation with managers of structural units to search and recruit international FRS
5	Share of international students enrolled in the key educational programs of the University (including students from the CIS countries)	• Inadequate level of international reputation • Low level of scholarship support for international students • Low motivation to attract international students • Inadequacy of the existing channels of attracting target student groups, inadequate marketing of academic programs in target geographical markets • Insufficient number of academic programs in English
6	Average Unified State Examination (hereinafter – USE) score of full-time students studying at the expense of the federal budget for bachelor and specialist degree programs	• Inadequate level of knowledge with prospective students • High competition between universities for talented applicants in the Siberian Federal District • A conservative position taken by management of the Schools regarding the minimum acceptable USE score • Lack of unique and modern academic programs • A large number of state-funded students across the University
7	Share of revenues from non-budget sources in the structure of the University's revenues	• Inadequate activity in working with business partners, scientific research organizations, small businesses and other buyers of R&D • Inadequate volume of innovation transfer and commercialization • Low share of students who pay for their tuition • Ineffective operation of the endowment fund • Insufficient number of students enrolling for additional education programs
8	Share of enrolled in master degree programs and postgraduate faculty and research staff training programs with a bachelor degree, a diploma or a master degree of other organizations, in the total number of enrolled in master degree programs and postgraduate faculty and research staff training programs	• Inadequate level of international reputation • Low level of scholarship support • Limited access to specialized databases necessary for research (due to cost constraints) • Inadequate activity in creating new network interactions, entering international academic associations and large research projects with a view to extending access to lab and research facilities
9	Volume of research and development works, calculated per one of the faculty and research staff	• Inadequate activity in working with business partners, scientific research organizations, small businesses and other buyers of R&D • Inadequate volume of innovation transfer and commercialization • Limited access to specialized databases necessary for research (due to cost constraints) • Inadequate activity in creating new network interactions, entering international academic associations and large research projects with a view to extending access to lab and research facilities • High share of FRSs not involved in R&D work
10	Academic reputation	• Narrow areas of key research

No.	Indicator	Reason for the gap
		• Inadequate activity in network programs and collaborations • Scientific results achieved are not promoted

Academic reputation is among the most complex reasons for the gap between the current and the target states. To enhance its academic reputation, it is important to increase the University's recognition in the academic community.

To achieve this, it is essential, first, to pro-actively promote the entire University's brand, which involves participation of the SibFU's representatives in scientific exhibitions, operation of professional associations, staging of scientific events of its own and ensuring their media coverage. Second, academic reputation is closely connected with publication activity and citations of the University's FRS.

To bridge the gap with respect to scientometric indicators, the following measures are required across the University:

- Introduction of effective contracts for all FRS, linked to publication activity;
- More active steps by publication activity support services;
- Targeted work with publishing houses;
- Control and measures to be taken to eliminate instances of self-citation;
- Monitoring current publication activity status, forecasting high potential areas of science and identifying opportunities for joint publications with international scientists using tools such as SciVal Benchmarking (Elsevier) and InCities (Thomson Reuters);
- Extension of network scientific interactions.

While intensifying the publication activity, it is necessary to use different approaches for individual Schools based on the indicators they have achieved and existing areas for development of each School and/or research area.

1. Support and rollout of experience (for Schools with a publication activity indicator of more than 1 publication per 1 FRS and those divisions which became part of the StrAU), which involves:

- Organization of short-term and long-term internships for the FRS;
- Acquisition and upgrade of equipment;
- Certification of scientific labs;
- Inviting visiting professors and postdocs;
- Assistance in increasing the level of publications (publications in journals of the first and second quartiles).

2. Development of the fundamental aspects of applied research (for Schools with 0.5 to 1 publication per 1 FRS):

- Assistance in writing articles in English;
- Introduction of obligations regarding publications related to R&D;
- Organization of short-term and long-term internships for FRS;
- Technical editing of articles;
- Support of network interactions with international scientists.

3. Raising awareness and motivation (for Schools with an indicator of less than 0.5 per 1 FRS):

- Explaining the algorithm of publication activity;

- Training in writing articles in English;
- Providing analytic data on journals most suitable for publications in various scientific areas.

The implementation of the Roadmap activities for 2018-2020 aimed at bridging the gaps in all the performance indicators also implies the use of a diversified approach to setting target indicators for individual Schools (scientific areas) taking into account their strengths - capability to grow the R&D indicator, attract international faculty and students, etc. (target measures of performance indicators for individual scientific areas are provided in Appendix 5).

In response to the global challenges of today and in order to bridge existing gaps, the SibFU has created two strategic academic units ("StrAUs"). The development of these StrAUs will lead to an increase in scientometric indicators through modernization of the educational and scientific process and transformation of management processes at the University. The StrAUs are providing effective solutions to global challenges (the biology, biotech and climatology StrAU – Green Science: Sustainable Environmental Management) and promoting extended cooperation with industrial partners, increased volumes of R&D, and development of innovation and technology transfer (natural resource mining and processing StrAU - M^3: Mining, Metallurgy, Materials Science).

The development of the StrAUs will provide for:

- Institutional transformation of the University;
- Possibility to scale and enhance the University's positions in the international academic environment in key areas of research;
- Modernization of the educational process: abandonment of ineffective academic programs, development of new academic programs focused on high potential interdisciplinary areas of studies in accordance with the New Profession Atlas prepared with support from the Agency for Strategic Initiatives under the Russian President and other forecasts of changes in the labor market (RBC, World Bank);
- Material increase in the number of international students studying under undergraduate and graduate degree programs.

A detailed description of both StrAUs is provided in section IV "Strategic Academic Units."

The transformation will enable integration of the University's efforts, enhance internal interactions between its structural divisions, focus resources on priority tasks, and as a result, achieve synergies in research activities, which will help to achieve target indicators and move the University up in subject ratings.

Key areas that have not become part of the StrAUs, such as Scientific Research Institute of Nanotechnology, Spectroscopy and Quantum Chemistry will also drive growth of the University, making an impact on integral scientometric indicators and development of network cooperation, continuing to evolve on the basis of the existing partnerships and interdisciplinary teams, and to be amalgamated in future.

5. Key areas of research

The University's science and innovation strategy is focused on the following tasks:

- Achieve world class, breakthrough results in the areas of key scientific competencies of the University in the key areas of research identified by the University;

- Diversify scientific research through extended foresight and initiation of research studies at leading scientific schools, and integrate with new consumers of scientific achievements, including internationally;
- Transition from research upon request to the creation of a demand with business partners for knowledge intensive research and production modernization in accordance with prospective global challenges determined on the basis of the research studies;
- Organize close scientific cooperation (including, in network form) with leading Russian and international scientific organizations in the key areas of the University's work; participate in large international R&D projects with a view to achieve an international level of cooperation in the area of scientific research, including develop a network of expedition base stations and comprehensive expedition programs;
- Complete a full cycle of scientific research, including fundamental and applied research, development and engineering work to create innovative products at orders from Russian and foreign companies and organizations, and commercialize the results of scientific research, development and engineering work.

Successful implementation of the SibFU's Competitiveness Enhancement Program implies inclusion in the QS Environmental Sciences (top 200), QS Agriculture & Forestry Sciences (top 100), and QS Earth & Marine Sciences (top 200) subject ratings.

The University's focus on key areas of applied research which is driven by the global challenges for the humanity and the respective trends in the development of resource mining and processing industries, and their demand for modernization of production processes, as well as increased competition in the area of satellite systems, together with the SibFU's competitive advantages, will enable the University to become a leader in global science in the following key areas:

- Biogeochemistry and climatology;
- Biological engineering; biotechnology of new materials;
- Non-linear optics, spectroscopy and quantum chemistry;
- Development of physical fundamentals for functional electronics devices, satellite construction, geoinformation systems, navigation and communication;
- Non-ferrous metallurgy and processing of aluminum and aluminum alloys.

A detailed description of the key areas of SibFU's research is provided in Appendix 7.

6. Marketing strategy

The marketing strategy has been developed to implement the target model of the SibFU. The main purpose of the strategy is positioning and enhancing the SibFU's reputation as a global leader in the key areas of scientific and educational activities that have been selected based on the existing global challenges. The marketing strategy of SibFU takes into account the current University's competitive advantages and potential 'growth points' and is focused on the following target markets:

- R&D and innovation market;
- Student acquisition market;
- Employer's Market;
- FRS market;
- Market of global expert communities.

Taking into account modern global trends in science, technology and education such as industry globalization and R&D, increased blurring of Russian and global intellectual space, increased competition for talented prospective students, demand for interdisciplinary academic programs, development of online education, etc., the main principles of the SibFU's marketing strategy include the focus of marketing operations on the needs and nature of each target audience as well as enhancement of the existing and development of perspective competitive advantages bringing the University to the forefront of target markets.

6.1. R&D and innovation market

SibFU is a modern technological university focused on the demands of industrial and financial enterprises and the development of small innovative enterprises. The SibFU's goal is to foster R&D activities through fundamental and applied research, scientific support of business and innovation staying ahead of companies' needs, and relying not only on the current industry development trends but also on technological development foresights.

The University's competitive advantages include:

1. Compliance of research areas with business and state needs

The University regularly conducts R&D promising market research in Russia and globally taking into account the specific nature of member schools. The analysis of R&D potential and prospects for commercialization is based on the review of foresights and forecasts, analysis of global markets, global scientific and technological challenges, needs of regional companies, and the existing potential of each of the selected areas.

The areas of priority scientific research described in Section I of Clause 5 *Key areas of research* largely rely on the results of the analyses. Apart from fundamental and applied research forming the basis of priority scientific areas, the University supports business and government institutions in performing various operations that require unique expertise and special R&D infrastructure, for example: environmental expertise and evaluation of maximum allowable emissions for industrial companies, assessment of animal population dynamics for regional authorities, support for large projects taking into account natural and technological risks for sustainable use of natural resources, and other types of work.

2. Close partnership with companies and research organizations

The University member schools have established long-term relationships with large companies in the key research areas and perform various types of R&D activities for them, as follows:

- School of Engineering Physics and Radio Electronics and School of Space and Information Technologies perform work to enhance GLONASS/GPS navigation equipment through the expanded functional capabilities and navigation equipment based on the Russian *System on a Chip* class element base in collaboration with Academician M.F. Reshetnev Information Satellite Systems, NPP Radiosvyaz;
- School of Fundamental Biology and Biotechnology collaborates with institutes of the Russian Academy of Sciences and medical organizations (FMBA, Oncology Center of the Krasnoyarsk Region);

- R&D center for the development of a dynamic system of mineral extraction and processing quality management and control based on deposit modeling and milling ore management was developed in collaboration with MMC Norilsk Nickel;
- School of Non-Ferrous Metals and Material Science cooperates closely with RUSAL, Polyus, Sovrudnik, etc.;
- School of Petroleum and Natural Gas Engineering executes R&D orders for Rosneft, Schlumberger, Gaspromgeologorazvedka, Rusal, etc.

Measures aimed at the creation of conditions for commercialization of SibFU's intellectual activity results are provided as part of SI 3 to achieve the program objectives with respect to R&D income.

6.2. Student acquisition market

The University's prospective student acquisition strategy aims at material increase in the number of Russian and foreign students studying on bachelor, master and postgraduate degree programs; pro-active attraction of talented students from other universities and regions of the Russian Federation; increase in the number of foreign students and expansion of the geography of educational service export to the CIS, SCO, APEC and other countries. The University endeavors to prepare specialists that will be sought after at the evolving labor market and will be able to solve tasks aimed at meeting global challenges.

The SibFU's target audience include:

- Talented Russian students with a high average USE score planning to receive quality education in their home regions;
- Foreign students ready to study in Russian;
- Russian and foreign students enrolled in joint academic programs including those in English.

China, CIS, South East Asia, and the Middle Eastern countries are the most promising foreign markets for the University, which is due to the list of the existing and planned disciplines (in accordance with the New Profession Atlas prepared by the Agency for Strategic Initiatives), geographic proximity and demand from prospective students.

The SibFU's humanities profile is focused mainly on Russian prospective students with a high average USE score, international non-CIS students (including China and other Southeast Asian countries).High demand, high quality and reputation of programs of humanities schools allow attracting talented and motivated students. The target audience of the scientific profile is represented by Russian prospective students with a high average USE score; the target audience of the engineering profile - by Russian prospective students with the USE score in Math more than 40 and prospective students from the CIS and Middle Eastern countries (Syria, Iraq).

The University relies on the following key competitive factors for attracting prospective students:

1. **Flexibility and variability of the educational process on bachelor, master and specialist programs:**
   - Possibility to build flexible educational paths providing for the choice of a wide range of subjects and interdisciplinary areas (in particular, students of the School of Fundamental Biology and Biotechnology and School for the Humanities can build individual educational paths);

- High share of variable elements of the curriculum including extra-curriculum disciplines;
- Modular programs enabling the creation of ad hoc courses taking into account educational needs of each student (for example, such programs are implemented by the School of Economics, Management and Environmental Studies and Corporate Oil&Gas Center).

2. **Unique academic bachelor and specialist programs, focused on new interdisciplinary areas of studies in accordance with the global agenda and the New Profession Atlas:**
   - Programs using the CDIO approach that are widespread abroad and have already proven effective in the preparation of highly qualified talent, capable to support complex engineering products, processes and systems in the modern environment over the whole life cycle are the current trend in the educational development in Russian (such programs are implemented, for example, in the Polytechnic School and School of Non-Ferrous Metals and Material Science);
   - The Special Engineering Education project aimed at the preparation of engineers-constructors for developing innovative enterprises (creativeness, teamwork, interdisciplinary approach to solution of problems, with the possibility to participate in the implementation of real projects);
   - Applied master degree programs – preparation of specialists for employers in accordance with the agreed curriculum, professional qualification requirements or professional standards. The University implements applied master degree programs for Academician M.F. Reshetnev Information Satellite Systems, Polyus, RUSAL's Engineering and Technology Centre, NPP Radiosvyaz, Federal Medical-Biological Agency, Sberbank, Russian Ministry of Emergency Situations, KrasTsvetMet, and MMC Norilsk Nickel;
   - Academic programs almost unrivaled in Russia (for example, Multidimensional Complex Analysis academic program, Hydroelectric Power Plant program for the Sayano-Shushenskaya branch of the SibFU in cooperation with PJSC RusHydro);
   - Development of academic programs aimed at the preparation of specialists for the sustainable development, increased efficiency in the utilization of natural resources and other global challenges (including programs as part of StrAU integrated in StrAU's R&D, for example, environmental management);
   - Possibility to explore interdisciplinary knowledge, technical and humanities-based education, which complies with characteristics of future professions: interdisciplinarity of skills and combination of technical and humanities-based knowledge. For example, extra higher education programs: Translator (English, German, French, Spanish), MBA, Computer Graphics and Web Design Specialist, Oil&Gas Manager, Science Based Technology Manager, etc.
3. **Broad opportunities for participation in academic mobility programs for students and postgraduates:**
   - Network programs (for example, the School of Fundamental Biology and Biotechnology is the participant of the networked learning, is involved in international cooperation and improves the process of the assessment of courses);
   - Double degree programs (such programs are implemented by the Law School, School of Philology and Language Communication, and School of Economics, Management and Environmental Studies).

- Internships in international partner universities (for example, as part of programs of Santander Bank supporting the cooperation of the SibFU with Spanish universities, students in engineering should complete an obligatory eight-week internship abroad at leading companies within their industry: Delcam (Birmingham, UK), Institut Aeronautique et Spatial (Toulouse, France), Internationale Agentur für Marketing und Technologietransfer GmbH (Düsseldorf, Germany), as well as Shandong University, Polytechnic University of Harbin, University of Durham, and some others).

4. **Excellent prospects of finding jobs after graduation in Russia and internationally:**
   - Availability of strategic partnership agreements with companies which provide internships schemes with good prospects of subsequent employment (the University has such agreements with the Polar Branch of MMC Norilsk Nickel, Polyus, SUEK, PJSC Gazprom, UC RUSAL, Rosgeo divisions, and a number of other large companies);
   - Targeted corporate academic programs (for instance, the School of Non-Ferrous Metals and Materials Science has three programs with UC Rusal; up to ten people enroll in targeted Alrosa programs in the School of Mining, Geology and Geotechnology annually, with a subsequent employment contract).
   - Regular employment of the University graduates by high tech companies (e.g., Academician M.F. Reshetnev Information Satellite Systems);
   - Quality training of students in professions which are in the highest demand (including Environmental Management and Increasing the Efficiency of Mineral Resource Processing) provides them with competitive advantage and ensures high rates of employment for University graduates both with Russian and international companies;
   - Interactions with recruiting agencies to assist in graduate recruitment in Russia and internationally;
   - Assistance with recruitment by the alumni association and the University's representative offices in other countries;
   - Graduates of the University in all study areas secure competitive salaries both relative to regional and national levels.
5. **A well-developed University infrastructure**

   The University has modern campus with well-developed infrastructure, among the best in Russia: in 2014, its dormitories were recognized the best among 533 Russian universities. The campus in an environmentally benign Krasnoyarsk area hosts 29 modern buildings (including apartment style dormitories), 24 academic buildings, a library and rector office building, a congress hall, and a multi-purpose sports complex. Further, the infrastructure will be extended with the addition of facilities built for the 29th Winter World Student Games.

   In addition to the broad academic opportunities, students can take an active part in a large number of extra-curricular sporting, creative and social activities.
6. **Support and incentives programs for high-performing students (including those having high USE scores) include the following:**
   - increased scholarships for academic, research, public, cultural, creative and sports activities; other scholarships for students having high USE scores, winners and prize-winners of

international and Russian academic competition, graduates of physics and mathematics classes having high USE scores, winners of sports competitions, etc.;

- other forms of incentives, including the provision of better living conditions on campus (for example, the Engineer Reserve program offering 4 floors of apartments at the Tesla Village accommodation to the Top-200 non-resident applicants having high USE scores in Physics and Informatics);
- Opportunity to combine studies with work in research labs and schools of SibFU as an assistant researcher, as well as to participate in R&D activities;
- Proprietary scholarships of SibFU ("SibFU scholarship") for contract students (high-performing international students and Russian students having high USE scores);
- Scholarships provided by the Mikhail Prokhorov Foundation, the Osamu Shimomura Foundation, the Forsazh scholarship program, the Oxford Russia Foundation, etc.;
- Regional support for students in priority areas;
- Opportunity train at the SibFU Honors College, which specializes in developing soft skills such as critical thinking, leadership, teamwork and communication skills.

Foreign applicants represent a specific target audience. The University offers the following competitive advantages for such applicants:

1. **Academic programs in English and programs that conform to the international educational standards:**
   - English-taught programs in the key areas of the University's activities (Applied Computing in Science and Technology, Comprehensive Analysis, Chemistry and Technology of Oil and Gas, Dendrochronology, Biotechnology, etc.);
   - The courses adapted for international students in terms of content and mode of study (such courses are available, in particular, at the School of Non-Ferrous Metals and Materials Science and the School of Philology and Language Communication , etc.)
2. **Support and incentives programs for high-performing international students:**
   - Scholarship support for international students (SibFU Fellowship);
   - System of mini-grants for the participation in academic mobility programs and conferences;
   - Full-time students are offered a place at the University dormitory for the period of study.
3. **Efficient system of training and adaptation of international students:**
   - System of curators who help international students adapt not only to living and studying in a new country, but also to particular fields of studies;
   - Pre-university Russian language preparation programs for international students, which allows the students to continue studying at the University in Russian.

The University offers the following competitive advantages for postgraduate students (including international students):

1. **Highly acclaimed leading scientific schools:**
   - E.A. Vaganov School of Dendroclimate and Dendroecological Monitoring of Northern Eurasia Forests: Eugene A. Vaganov, Rector of SibFU, HI=24; Nadezhda Chebakova, Senior

Research Officer of V. N. Sukachev Institute of Forest of the Siberian Branch of the Russian Academy of Sciences, HI=19;

- I. I. Gitelzon School of Environmental Biophysics (Biophysics and Biotechnology of Supraorganism Systems): the school comprises 17 doctors of science, 39 candidates of science and 26 postgraduate students;
- A.K. Tsikh School of Integral Methods of Complex Analysis and Algebraic Geometry: 14 doctors of science, 19 postgraduate and doctoral students;
- G.I. Shaidurov School of Radio Navigation and Radar Systems and Devices: 9 doctors of science, 27 candidates of science and 45 postgraduate students;
- The research team of Scientific Research Institute of Nanotechnology, Spectroscopy and Quantum Chemistry headed by S.P. Polyutov carries out research in cooperation with the largest international research teams and institutes;2015-2016: 36 WoS/Scopus publications including 18 articles in first quartile journals, an article in Physics Reports which received around 25 citations in one and a half year;
- The Dendrochronology research team co-authored 20 articles in Nature Geoscience and other international journals with the average impact factor of 4; other research teams;
- Six international laboratories (in particular, the Laboratory of Bioluminescent Technologies of SibFU, headed by Nobel Prize Laureate in Chemistry, Professor Osamu Shimimura, USA, Laboratory of Biotechnology of New Materials, coordinator: Lead Scientist, Professor, Dr. Anthony John Sinskey), Massachusetts Institute of Technology, USA, Laboratory of Biogeochemistry of Northern Eurasia, coordinator: Professor Ernst-Detlef Schulze, Max Planck Institute for Biogeochemistry and others).

According to AC Expert University ranking by faculty, SibFU ranks 4th out of 31 in the Humanities, 8th out of 15 in Earth Sciences and 10th out of 36 in Computer Sciences among the Russian universities.

2. **Well-developed scientific research resource base:**
   - The University has a number of unique scientific stations, labs and research centers providing the necessary conditions to conduct studies in a variety of fields (for more details see 6.3. The market for faculty and research staff (FRS)).
3. **International PhD programs:**
   - SibFU is currently one of the only six universities in Russia that award PhD degrees;
   - The University offers the following PhD programs in English: Biophysics, Metal Forming, Metallurgy of Non-Ferrous Metals, Multidimensional Complex Analysis, Optics and Quantum Chemistry, Urban Design and Planning, Ethnic and Cultural (Siberian Arctic) Studies, Ecology, Hydrobiology, Archeology, Mechanics of Liquids, Gas and Plasma, Paleogeography, Environmental and Resource Economics, Electrotechnology in Metallurgy.
4. **Support and incentives programs for high-performing postgraduate students:**
   - PhD grants amount to 600,000 rubles per year (scholarship is paid if the PhD candidate was enrolled in the SibFU postgraduate PhD program on a fee basis);
   - Award of the IFC Bank for the contribution to the scientific development of Siberia to young scientists and postgraduates of SibFU.

5. **Dissertation councils**
    - There are currently 18 dissertational councils operating in the University, including all priority areas of education at the University.

The Strategic Initiative 3 provides for a number of activities aimed at attracting talented Russian and international students in terms of improving academic programs, ensuring academic mobility of students and strengthening partnership with the country's leading campaigns.

6.3. The market for faculty and research staff (FRS)

Promotion of SibFU on the FRS market is one of the priorities for boosting the University's competitiveness. There are two target groups among the FRS: leading Russian FRS and foreign FRS.

A recruitment department, as well as University and specific Schools' management are responsible for Russian and foreign FRS search and recruiting The search for Russian and foreign FRS is concentrated in SibFU's key research areas, including non-linear optics, spectroscopy, ecology and natural resource management, biotechnology, oil & gas, non-ferrous metals and geology. Target countries for leading foreign "post-doc" specialists are India, Iran and Egypt. For retiring, but still active and ambitious scientists, the targets are Japan, Korea and Europe.

The key criteria for candidates to fill University vacancies are:

- Previous experience working at leading Russian or international scientific centers
- A PhD, candidate of science or doctor of science degree;
- Previous experience in project management, including network interactions with the science community and participation in grant-financed projects;
- A high H-Index in the relevant field of studies;
- SibFU seeks to hire young scientists (candidates under 35 years old, doctors under 40 years old) with the aforementioned exclusion;
- Motivation to conduct scientific research at the SibFU.

The most important success factors for attracting Russian and foreign FRS are:

1. **Scientific and research resources to conduct studies**

    SibFU has a developed network of permanent scientific stations, labs and research centers with state of the art equipment to conduct studies in a variety of fields.

2. **A competitive and transparent motivational system aimed at stimulating higher publication and citation rates, participation in expert councils and international cooperation**

Since 2014, SibFU has in place an evolving effective contracts system that allows compensating the university FRS in line with their scientific and educational achievements.

3. **Strong key areas of research**

The University achieved significant scientific results in the fields of Biology and Biotechnology, Nanotechnology and Nanomaterials, Energy-saving Production Technologies and Energy Efficiency, Chemistry and Materials Science, Mathematics and Information Technology, as well as in Climate Studies and Natural Resource Management.

The University supports its staff in boosting the number of publications in highly rated journals. These efforts led to more articles in Nature Geoscience, Scientific Reports (top 10% in the field), Nature

Communications, Chemical Reviews, Journal of Physical Chemistry Letter (top 1% of journals in the field).

4. **Proprietary research support programs for Russian and foreign FRS**

   The University provides the following forms of support:

   - Programs of young scientists' support, including Osamu Shimomura Fund, international schools for young scientists ("Intellectual Nanomaterials", International School for Young Scientists in the Fields of Robotics, Production Technologies and Automation). ;
   - Postdoc SibFU and PhD SibFU programs, which allow to attract foreign FRS, develop and broaden the scope of work, effectively exchange scientific information internationally, as well as establish own scientific networks to boost citation rates;
   - University support for any grant activities (via a special structural unit, The SibFU Center for Grant Support).

5. **Close partnership with large universities and companies in professional training programs and joint R&D projects**

The University has a large partnership network consisting of leading universities and scientific organizations, which allows to conducts joint research [5] and implement academic mobility programs[6]. Over 250 organizations in 45 countries. The University works very closely with institutes and universities from Sweden, Germany, Spain, France, Czech Republic, Slovakia, Italy, Japan, USA, China, Vietnam, Israel, Azerbaijan, Uzbekistan, Kyrgyzstan, Kazakhstan, Belarus, Turkey, Taiwan, Singapore, Mongolia and South Korea. Special attention is paid to the development of relations with the CIS and the members states of the Shanghai Cooperation Organization (SCO).

SibFU is working with large companies such as Rosneft, RusHydro, Academician M.F. Reshetnev Information Satellite Systems, NPP Radiosvyaz, Polyus Gold, MMC Norilsk Nickel, Rusal, Rosatom, Interregional Distribution Grid Company of Siberia. In particular, MMC Norilsk Nickel set up an R&D center at the SibFU in 2017.

To reach the goals of attracting the leading Russian and international FRS and growth in publication activity, there are a number of activities within the SI 1: development of internship programs, professional training and partnership programs with the leading Russian and international universities and companies, grant support for FRS, improvement of FRS motivational system, etc.

6.4. Employer's market

In order to remain competitive in the context of industrial revolution and change of energetic and technological pattern, SibFU orients its marketing strategy at provision of personnel training with multi-disciplinary competences, who are able to solve problems of transition to post-industrial society not only

[5]University of Barcelona, University of Arizona, University of East Anglia, Swiss Federal Institute for Forest, Snow and Landscape Research (Dendrochronology studies); Max Planck Institute for Biogeochemistry, Max Planck Institute for Chemistry, Kyoto University, Hokkaido University andIIASA in the fies of biogeochemistry; University of Freiburg, University of Barcelona, University of Alaska,Montana State University, NASA's Goddard Space Flight Center and FS USDA in the field of forest pyrology; and others

[6] Includingcooperation with such universities as Beijing University of Aeronautics and Astronautics, Charles University, University of Puget Sound, Aalto University, University of Haifa, Brandenburg University of Technology, University of Hanover,University of Gdansk, Indian Institute of Technology, Lappeenranta University of Technology, Sichuan University, University of Barcelona, University of Freiburg, Harbin Engineering University, Czech Technical University and others

for Russia, but also globally, including countries with transition economies. University aims at outrunning personnel training, which is aligned with interests of innovative development of employers.

According to Expert rating agency's Russian universities rating for 2017, Siberian Federal University occupies 10th place in Russia in terms of demand for graduates, being ahead of majority of the 5-100 Program participants.

Activities of SibFU within the framework of providing companies with highly skilled staff are conducted in the following areas:

- providing students with practice-oriented bachelor's, specialist's and master's programs, together with new interdisciplinary programs, which correspond to the global trends; developing soft skills within Higher School of Technological Entrepreneurship, as well as providing advanced training at continuing professional education for companies' employees;
- partnership with large regional companies and high technology sector leaders: Norilsk Nickel, Polus, Rusal, Rosatom, Academician M.F. Reshetnev Information Satellite Systems, NPP Radiosvyaz, AFK Sistema;
- expanding of collaboration with global companies, such as Schlumberger, Total, as well as environmental consulting companies in the area of ecological management, such as CH2M Hill, Arcadis;
- 31 centers of continuing professional education, including SibFU Corporate oil and gas center, as well as 3 centers in University branches.

The SI 5, aimed at strengthening the University brand and improving its positioning among potential employers in Russia and abroad, engages in activities such as rapid expansion of University business contacts, ensuring that companies are highly aware of the educational process strengths, as well as adaptation of training programs meeting the needs of employers. These activities all together will lead to increase in demand for University graduates in the labor market.

6.5. Market of global expert communities

The University sets goal to eliminate the gaps in academic reputation with the help of the following activities:

- strengthening the integration with global expert community via participation in specialized scientific activities, conferences, exhibitions and summits;
- increasing global expert communities' awareness of University achievements in scientific and educational field;
- strengthening of international collaboration via building relationships with organizations that have the most authority in the key research areas of the University;
- increasing share of SibFU representatives in the scientific networks (ResearchGate, Social Science Research Network, UniPhy, Academia.edu, Zbio, arxiv.org and others);
- building relationships with professional associations;
- active collaboration with rating agencies

The SI 5 provides for activities aimed at widening of University business connections, participation in key scientific, educational and social events, enhancing efficiency of the external communications in specialized media, and ensuring University brand recognition in expert community as consequence

7. Economic and financial model

Widening of a recourse base is the main University objective in the area of its financial policy, as it will enforce development of the current operations; enhance revenue structure diversification and efficiency of budgetary expenses. High share of non-government financing will ensure financial stability of the University and will lead to the rise in international ratings.

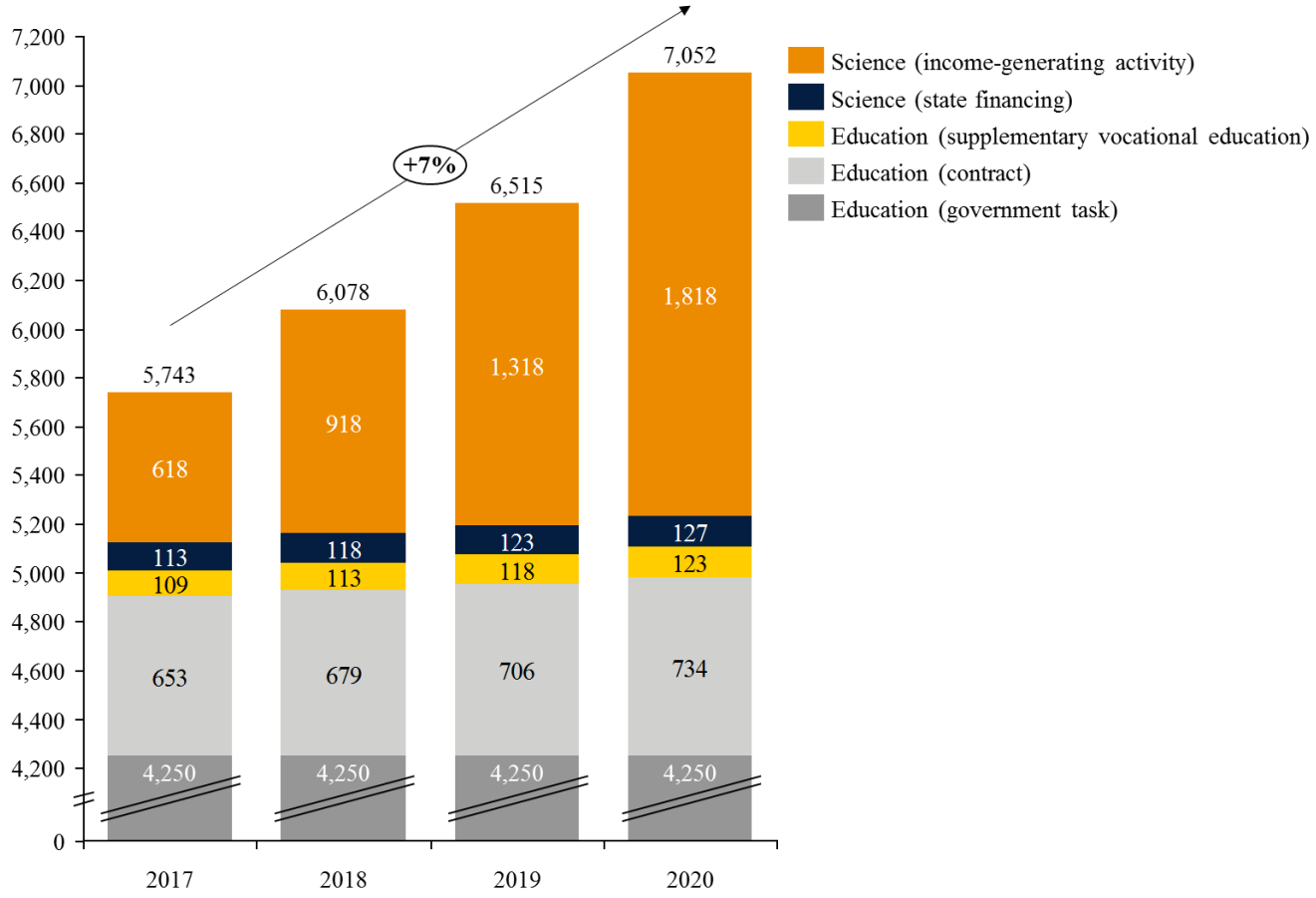


Figure 6. Forecast of SibFU revenues, million rubles.

Following activities are aimed at increasing share of non-government sources in the revenue structure of the university:

- revising of academic programs portfolio, increasing number of master's programs, as well as continuing professional education programs;
- increasing share of paid academic programs, which are in demand among students, as well as increasing the number of international students (from countries outside CIS);
- 4% annual indexation of tuition fees (below the inflation rate stated in the federal budget for 2017-2019)
- setting priorities in the R&D portfolio, receiving funding from Russian and international grants, joint research programs with companies;
- enhancing commercialization opportunities from intellectual property via patenting growth;
- attraction of additional revenue due to introduction of campuses and medical centers and other facilities of the Winter Universiade;

- growth of SibFU engagement in economic and social region development which will ensure fund raising from Krasnoyarsk region budget;
- development of University endowment fund, as well as other forms of fund raising for nonprofit University projects

8. Management and organizational re-design

The effectiveness of the efforts envisaged by the Roadmap is directly dependent on the University having an efficient management framework. This would require organizational changes to ensure a fully transparent allocation of roles and responsibilities among the University's divisions, as well as to increase employee motivation required for achieving a transformation that will lead to stronger competitiveness of the University.

Improving the management framework as part of Stage 2 of the Roadmap involves the implementation of the following key changes:

1) Develop a service model for interactions between the Schools and the centralized divisions

The service model assumes that the Schools act as structural units directly responsible for work and services that are provided as part of the primary activities of the University and aimed at developing relations with the target audiences (academia, students and the business community). This effectively means that the Schools:

- Own the key processes at the University;
- Act as growth drivers for the University, focusing on tasks that involve direct interactions with the key target audiences;
- Act as clients and users of administrative and other services that are required for operational efficiency;

As part of the service model, the University is responsible for the two key roles:

- First, it acts as a manager by defining objectives, setting goals and monitoring their implementation;
- Second, it acts as a supportive function by providing the Schools with certain services and advisory support.

Implementing the service model requires analyzing the allocation of roles and responsibilities between the Schools and the University, as well as centralizing certain service roles, including:

- Marketing Services responsible for promotional activities for the University and the centralization of external contacts
- Recruitment Services responsible for personnel recruitment
- Onboarding Services for foreign lecturers, researchers and students
- Public and Scientific Event Services
- Research Support Services.

2) Create a director role with the responsibility for developing the areas of scientific activities

The proposed activity involves implementing a science leader role at the University, as well as a role responsible for developing defined groups of schools (3 to 5 schools per role) that work on related subject areas in order to ensure coordination between scientific and educational activities for the purpose of developing integrated academic programs, multi-disciplinary research activities and joint R&D efforts.

These roles will be responsible for:

- Formulating a development strategy and acting as a coordinating link for the schools as these plan their activities
- Monitoring and enhancing the performance of the schools.

3) Create a department for education programs

The Department of Education Programs will be responsible for formulating education programs, as well as for coordinating and overseeing educational and methodological activities at the structural units of the University. This activity is aimed at the transition to a module-based education approach that provides for separate competence assessments and certifications for each module. This approach will enable a personalized study path for each student. It will also include the shift to financing academic programs, rather the structural units.

4) Organizational changes (consolidation of the structural units)

- Creating a School of Economics and Management by consolidating the School of Economics, Management and Environmental Studies; the School of Economics and Commerce, and the School of Business Management and Economics. This consolidation will enable an integrated education environment at the bachelor studies level and a more flexible planning process for academic programs, making this academic field more appealing to the target groups of applicants and students. It is expected that each of the three schools proposed for consolidation will continue to provide third-year bachelor students with the opportunity for graduating in the major study fields offered by these schools, in line with the "2+2+2" concept. In addition, the consolidation will promote higher publication rates among the faculty and research staff (FRS) by encouraging research activities. It will also enable the elimination of duplicating across academic programs and ensure higher average USE admission scores among those entering the School of Economics subsequent to the consolidation.
- Upgrading the organization of the University as part of the StrAU initiative would require:
  - creating a StrAU director role that will correspond to the role that the director for development has in the management hierarchy;
  - creating StrAU deputy director roles: A deputy director for science (including the commercialization of the results from scientific research) and a deputy director for educational activities), with
    a) the deputy director for science responsible for (i) integrating the activities of scientific teams while ensuring the coordination of research at various schools and departments as part of the StrAU initiative, (ii) managing scientific research resources and (iii) commercializing the results from scientific research;
    б) the departments that support the education process within the StrAU, reporting to the deputy director for education activities. This deputy director will be responsible for planning, structuring and enrollment as regards the academic programs within the StrAU.

Going forward, the StrAU initiative will provide for a full re-design of the university organization, including the consolidation of most academic departments.

I.2. Strategic initiatives (SI)

The 2016-2018 Program (Stage 1) aimed at increasing the University's competitiveness has identified key priorities for further development and resulted in reviewed strategic initiatives, bringing a focus on the areas that are critical for stronger competitiveness of the University.

The figure below shows changes made to the strategic initiatives of the University (Figure 7).

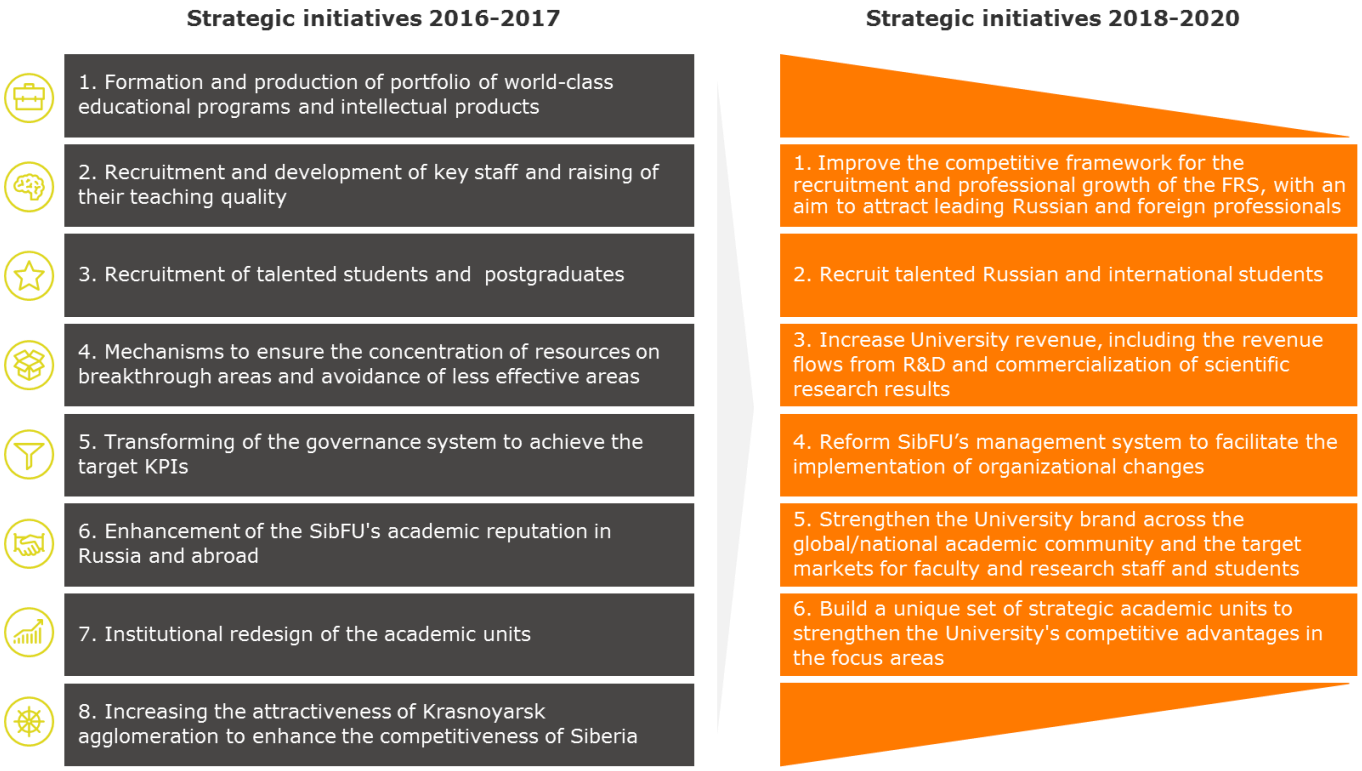


Figure 7. Roadmap's strategic initiatives transformed in order to bring a focus on the key areas

The key changes made to the strategic initiatives are explained by the need for a more accurate focus on the key markets in line with the marketing strategy, as well as by the fact that these initiatives are linked to the performance indicators established for the 5-100 Program. As a result, the 2018-2020 Roadmap has been adjusted as follows:

- The tasks related to creating a portfolio of programs have been incorporated into SI *Recruitment of talented Russian and international students*;
- The tasks for promoting innovative and entrepreneurial activities are addressed as part of SI *Increasing university revenue, including the revenue streams from R&D, paid education services and the commercialization of scientific research results*;
- The tasks for promoting the University are part of SI *Strengthening the university brand across the global/local academic community and the target markets for faculty and research staff and students*;[7]
- The tasks aimed at creating mechanisms to concentrate resources in the key research areas are addressed as part of the strategic initiatives handling (i) the transformation of the university

[7] The 2016-2018 Roadmap included these tasks as part of SI *Increasing the attractiveness of Krasnoyarsk agglomeration to enhance the competitiveness of Siberia*

governance model, (ii) the development of the StrAU and (iii) the target markets (faculty and research staff, students, innovations and R&D).

Following the changes to the set of strategic initiatives and the efficiency analysis of the output from the activities completed during Stage 1, certain initiatives have been consolidated and adjusted in terms of their quantity, target indicators and contents to be included in the 2018-2020 Roadmap, i.e.:

- Some activities have been consolidated based on various criteria such as having common target performance indicators, common owners or common implementation tools;
- Activities that have been completed successfully or identified as inefficient, as well as activities that are successfully addressed as part of the day-to-day activities of the University have been excluded from the implementation. This will enable reallocating the Program's funds to other relevant activities;
- Based on best global practices and the expected impact from implementation, the existing activities have been adjusted and new activities have been developed.

Best practices to enhance competitiveness include the mechanisms practiced by leading universities in Russia and abroad, including Carnegie Mellon University, National Taiwan University, Hong-Kong University of Science and Technology (HKUST), Czech University of Life Sciences and other universities occupying top spots in international rankings or demonstrating high growth in publication/citation rates or in the share of foreign professors/students. (Please see Appendix 6 for more details on best practices.)

These changes have reduced the number of initiatives envisaged by the Roadmap (Stage 1) from 83 to 32 initiatives in the 2018-2020 Roadmap. These developments are aimed at ensuring less complicated coordination of initiatives, concentrating administrative resources in priority areas and building higher efficiency in allocating financial resources across the initiatives for the maximization of their impact on growth in the performance indicators.

Each strategic initiative is addressed with a short description below, including key tasks and deliverables, as well as the University's competitiveness initiatives that are under way or in the process of planning.

SI 1. Improve the competitive framework for the recruitment and professional growth of the FRS, with an aim to attract leading Russian and foreign professionals

The key tasks to be fulfilled by the University as part of implementing this strategic initiative include:

- Implementing an efficient framework for attracting foreign FRS candidates and PhD holders from foreign universities;
- Supporting professional growth of the FRS;
- Supporting research activities among the FRS;
- Promoting higher expert participation rates among the FRS in the international arena. (This is part of Activity 4.2.4).

For the purpose of these tasks, the University has implemented initiatives aimed at providing grants to younger FRS professionals, developing internship and advanced training programs and encouraging higher publication activity of the staff. These initiatives were implemented as part of Stage 1 of the program for enhancing competitiveness (2016-2018), including the succession planning initiative.

Further steps in this area will involve concentrating the program's administrative and financial resources in the break-through research areas, with the focus on:

- Expanding internship, advanced training and partner programs that are carried out in cooperation with leading Russian and foreign companies and universities;
- Strengthening English language competences among the FRS;
- Providing grant support to FRS professionals from the University and other leading Russian and foreign universities / organizations;
- Implementing a referral program based on recommendations from the employees for the purpose of attracting foreign FRS professionals and PhD holders from foreign universities.

The implementation of this strategic initiative should result in higher quality and quantity of publications in the key research areas; higher quality of education and scientific activities by the FRS due to competences enhanced as a result of the participation in internship and advanced training programs; the establishment of, and growth in, networking interactions with leading Russian and foreign organizations and professionals; the attraction of skilled FRS professionals to the University.

SI 2. Recruit talented Russian and international students

The key tasks to be fulfilled by the University as part of implementing this strategic initiative include:

- Building stronger competitiveness in the field of academic programs;
- Growing student and postgraduate mobility programs;
- Growing programs to support talented students and postgraduates;
- Developing a more flexible framework for entry exams.

As part of these tasks, the University has started implementing grant and scholarship support programs for talented Russian and foreign students (including students with higher USE scores), as well as initiatives aimed at developing the research infrastructure, designing/implementing academic programs and improving the efficiency of academic postgraduate programs.

Further development of this strategic initiative will involve:

- Developing and improving academic programs, with a focus on increasing network interaction programs taught in English and providing the opportunity for graduating with two degrees, as well as dual education programs;
- Developing remote education programs;
- Developing an education program for foreign nationals;
- Building stronger partnership with leading businesses in the region and the country;
- Promoting higher academic mobility among students and postgraduates by implementing exchange / internship programs in cooperation with leading universities and technology centers in Russia and abroad;
- Stepping up support programs for talented students and postgraduates to increase research activities, including offering higher scholarships for postgraduates with higher USE scores in the specialist disciplines;
- Creating a more flexible admission framework by developing a system for entry exams on a remote basis.

The implementation of this strategic initiative will result in competitive offerings for students across all higher education levels, helping to attract talented students, build better study environment, step up research activities among the students and build stronger reputation of the University with potential employers of graduates.

SI 3. Increase University revenue, including the revenue flows from R&D and commercialization of scientific research results

The key tasks to be fulfilled by the University as part of implementing this strategic initiative include:

- Providing a supportive environment to increase revenue flows from R&D performed to the benefit of the state, manufacturing companies and research organizations, including the enhancement of internal communication with small innovative enterprises operating within SibFU;
- Encouraging the commercialization of the results of initiative research and development projects implemented by students and staff of the University;
- Providing a supportive environment to increase revenue flows from other sources (including endowment fund sponsorship).

To attain these objectives the University established new laboratories, research stations on key research areas, developed the research infrastructure, developed incentives promoting innovative and entrepreneurial activities, improved mechanisms to raise funds from the business community and alumni association.

Further development implies the increased focus on the key research areas including:

- Providing a supportive administrative and financial environment to develop the research base and increase the scope of R&D activities in cooperation with companies, research organizations and the government;
- Providing a supportive environment to carry out joint R&D activities by functional divisions (research groups, departments, research laboratories and R&D centers) and small innovative enterprises of the University;
- Establishing a functional division - an expertise center for commercialization of initiative research projects implemented by SibFU's students and staff.

As a result of this strategic initiative, a supportive environment should be developed to increase the University's revenue from R&D and other sources.

SI 4. Reform SibFU's management system to facilitate the implementation of organizational changes

The key tasks to be fulfilled by the University as part of implementing this strategic initiative include:

- Optimizing processes to improve the competitiveness of the University;
- Optimizing the University's management system.

To complete the first stage of the Competitiveness Enhancement Program (2016-2018), the SibFU implemented the following key tasks: upgraded the rectorate, established 5-100 Project Office, upgraded the Supervisory Board and adjusted its key tasks and objectives, established the project management

expertise center. In general, the University takes actions to introduce the project management principles and toolkit.

Further improvement of the University's management system that contributes to competitive growth of the University includes the following steps:

- Reduce the in-class work for research staff, including by establishing rates for research staff and introducing a differentiated approach to motivate FRS focused on faculty and research activities;
- Improve the SibFU's incentive program, including cascading of goals across all hierarchy levels of the University (from the development and introduction of the Schools' KPI framework to updating effective contracts with FRS), developing incentive programs for support functions and implementing incentive mechanisms for employees' personal success contributing to successful implementation of the Roadmap;
- Create director role with the responsibility for developing the areas of scientific activities. These directors will be responsible for formulating a development strategy as well as for coordination, planning, monitoring and improvement of the Schools' performance;
- Establish StrAU (as part of Activity 6.1.1.);
- Implement portfolio and project approach to R&D management;
- Develop a service model of communication between the Schools and the centralized divisions implying clear distribution of roles and responsibilities between the SibFU (performs management functions) and the Schools (act as owners of business processes, University development drivers, service customers and users), and the centralization of all service functions (marketing, recruitment, R&D support and other functions implemented in favor of the Schools)
- Implement best practice sharing support programs developed to identify and share best practices employed by individual structural units (Schools) across the University;
- Implement actions to optimize the Roadmap implementation management system and communications between the participants and the stakeholders;
- Implement actions to improve operational performance.

This strategic initiative is a top priority for further development of the University. Building an environment favorable for implementation, development, improvement and smooth running both principal (education, R&D) and supporting activities of the University is a key driver of successful implementation of the SibFU's Competitiveness Enhancement Program.

SI 5. Strengthen the University brand across the global/national academic community and the target markets for faculty and research staff and students

The key tasks to be fulfilled by the University as part of implementing this strategic initiative include:

- Enhancing communication across scientific and business communities;
- Promoting the SibFU among applicants, students and FRS;
- Promoting the SibFU at major international events;
- Enhancing communication with expert communities to improve the SibFU's academic reputation.

To address the above tasks the University takes steps to develop internal scientific journals, inspire participation of SibFU's researchers and academic staff in high-rated scientific events devoted to the key scientific focus areas of the University. The University also acts to promote its brand in various formats, including ratings, social networks, major Russian and foreign mass media, and to establish a sole operator of congress and forum activities function. To promote its brand SibFU is actively involved in the Krasnoyarsk Economic Forum and in the preparation to the Winter World University Games 2019.

Further steps to promote the SibFU's brand include:

- Enhancing communication of the University's FRS across scientific and business communities
- Actively cooperating with rating agencies;
- Targeting the SibFU among foreign students and establishing its representation on the most prospective markets;
- Taking steps to plan, organize and support public and scientific events, including international scientific conferences, exhibitions and symposiums to promote the SibFU's brand, facilitate and motivate the FRS to participate in the above events.

The implementation of this strategic initiative should result in a fully established reputable brand of the University which is widely recognized across scientific and business communities and which makes the University more attractive for applicants, students, faculty and academic personnel from Russia and abroad.

SI 6. Build a unique set of strategic academic units to strengthen the University's competitive advantages in the focus areas

To bridge the existing gaps the SibFU has created two StrAUs to improve scientometric performance through modernization of the educational and scientific process. The development of these StrAUs will entail efficient solutions tailored to scientific and technical priorities of the Russian Federation designed to address global challenges ('Green Science: Sustainable Environmental Management') and enhanced cooperation with industrial partners, advanced R&D, innovations and transfer of technologies ('M^3: Mining, Metallurgy, Materials Science').

Apart from StrAUs that are expected to be presented at the Board's meeting, additional strategic units are to be developed in certain areas of high competitive advantage of the University:

- 'Sport life' is intended to capitalize the heritage of XXIX Winter World University Games in Krasnoyarsk, establish a research and development educational center of physical training, sports and tourism and promote sports and healthy lifestyle;
- 'Energy' is intended to develop the energy sector of Siberia, including renewable energy;
- 'Liberty Arts' is intended to develop and promote humanitarian research worldwide.

The development and embedding of the StrAU into the organizational structure of the University will increase autonomy of certain structural divisions and improve the decision-making mechanisms to enable concentration of administrative and financial resources on the key areas of research with a view to improving scientific research reputation and taking leadership positions in the specified areas.

New StrAUs are to be developed to enable further improvement of the University's management system.

Conclusion

As part of developing the 2018-2020 Roadmap, we analyzed the performance of the 2015-2017 Roadmap, revised the target model and estimated the gaps between the current status and the target model. We determined the key areas for University development in the coming years considering the existing global challenges and based on the gap analysis and analysis of scientometric performance. As a result, we identified two StrAUs addressing global challenges, developed strategic initiatives and activities focused on the selected key development areas and enabling the upgrade of the management system and bridging the existing gaps. These actions are intended to gain a foothold on the international scientific and educational market that will be proved by gaining and securing the SibFU's position in general and specialized international rankings.

II. THE ACTION PLAN FOR THE IMPLEMENTATION OF SIBFU'S COMPETITIVENESS ENHANCEMENT PROGRAM ("ROADMAP")

Table 1

The Action Plan for the implementation of SibFU's Competitiveness Enhancement Program ("Roadmap") on the 2018-2020

Strategic initiatives / tasks / actions	**Performance indicators (name and unit)**	**Values of Performance Indicators**			**Actions of Decree[8]**
		2018	**2019**	**2020**	
SI 1 Improve the competitive framework for the recruitment and professional growth of the FRS, with an aim to attract leading Russian and foreign professionals					
Task 1.1 Advanced training of the FRS					
Action 1.1.1 Organization of joint short-term and long-term (sabbatical) internships, remote advanced training and partnership programs with leading Russian and foreign universities and companies	Proportion of the number of the FRS of the university that took part in the academic mobility programs implemented by the university in the total number of FRS, %	24%	28%	32%	c
Action 1.1.2 Establishment of a program to increase the level of English language proficiency of the FRS, who are engaged in key research and educational areas (within the Faculty of Teacher Development); conduction of mandatory international certification as a results trainings; Creation of a methodical manual on writing articles in English and publishing articles in international journals	Share of articles written by SibFU scientists in English, %	17%	24%	33%	c
	Share of courses conducted in English in total number of courses, %	3%	4%	5%	
Task 1.2 Support of FRS for research activities					
Action 1.2.1 Development of a system of research grants for FRS from SibFU, leading Russian and foreign universities and organizations	Number of published articles on researches conducted by the FRS supported by the research grants system per one grant, pcs.	1.5	2	2.5	e, h
	Number of awarded grants by SibFU to FRS, pcs.	222	250	290	

[8] The letter-designations are presented in Table 2

Strategic initiatives / tasks / actions	Performance indicators (name and unit)	Values of Performance Indicators			Actions of Decree[8]
		2018	2019	2020	
Task 1.3 Implementation of an effective system for attracting foreign FRS and holders of PhD degree received in foreign universities					
Action 1.3.1 Introduction of referral program for attracting foreign FRS and PhD holders from foreign universities	Share of foreign FRS invited through referral system, %	15%	20%	25%	b
SI 2 Recruit talented Russian and international students					
Task 2.1 Increasing flexibility of the entrance examination system					
Action 2.1.1 Expansion of the admission remote exam system for master's programs, as well as the increase in the admission period for the bachelor's, specialist, master's and postgraduate programs	The proportion of students enrolled in the Master's program based on the results of the entrance examinations in distance form, in the total number of students enrolled in the Master's program at the University,%	10%	15%	20%	e
	Enrolment competition for bachelor and specialist programs, persons per place	8	8,6	9,4	
	Enrolment competition for master's programs, persons per place	3,7	4,1	4,5	
	Enrolment competition for postgraduate programs, persons per place	2,8	3,2	3,6	
Task 2.2 Availability of support programs for talented students and postgraduate students					
Action 2.2.1 Introduction of scholarship support program for applicants enrolled in the first year of bachelor and specialist programs with Unified State Exam (USE) score of more than 90 points for those who apply for liberal arts programs and more than 80 points for those who apply for technical programs, in the first semester of the first year of study	The proportion of students who received scholarship support for the high score of the USE, in the total number of students of the first courses of bachelor degree and specialist full-time academic programs in SibFU, %	3,3%	3,7	4,2%	e

Strategic initiatives / tasks / actions	Performance indicators (name and unit)	Values of Performance Indicators			Actions of Decree[8]
		2018	2019	2020	
Action 2.2.2 The introduction of a competitive grant and scholarship system for talented master and postgraduate students to intensify research activities with the obligation to publish articles on the results of the research for those students who received the support	Number of published articles on research conducted by master degree and postgraduate students who received the grant or scholarship support per one grant/scolarship, pcs.	0.6	0.8	1	d, e
	Number of awarded grants/scholarships to talented master and postgraduate students, pcs.	83	100	120	
Task 2.3 Development of academic programs					
Action 2.3.1 Introduction of new and improvement of existing academic programs, including: • English-taught programs (including PhD programs); • Double degree programs in conjunction with leading foreign universities; • Dual education programs; • Development of remote education; • Development of preparation programs for international students;	Share of students enrolled in English-taught programs in the total number of SibFU students, %	3%	4%	5%	e
	Share of students enrolled in double degree programs in the total number of SibFU students, %	2%	3%	4%	
	Share of students enrolled in dual academic programs in the total number of SibFU students, %	1%	4%	8%	
	Share of students enrolled in remote academic programs in the total number of SibFU students, %	0,4%	0,9%	1,5%	
	Share of students enrolled in preparation programs for international students in the total number of SibFU students, %	2%	2,7%	3,3%	

Strategic initiatives / tasks / actions	Performance indicators (name and unit)	Values of Performance Indicators			Actions of Decree[8]
		2018	2019	2020	
Task 2.4 Development of international mobility programs					
Action 2.4.1 Ensuring academic mobility and internationalization of students and postgraduate students, including development and funding of exchange programs for the purpose of studying and participation in joint projects	Share of students and postgraduate students who took part in academic mobility and internationalization programs (cumulative), %	15%	20%	20%	e
Action 2.4.2 Development and implementation of a system of international internship programs for master degree and postgraduate students in the leading technology centers and universities	Share of master and postgraduate students who published articles as a result of the internship in the total number of master and postgraduates students who took part in internship programs of SibFU, %	90%	95%	100%	d, e
	Share of master and postgraduate students who took part in internship programs in the total number of master and postgraduate students, %	5%	10%	15%	
SI 3 Increase University revenue, including the revenue flows from R&D and commercialization of scientific research results					
Task 3.1 Creation of conditions for R&D projects income growth					
Action 3.1.1 Elaboration and implementation of a program for the development of a research equipment and data base in the context of institutions, as well as a program for attracting extra-budgetary funds	Availability of a program for the development of a research base in terms of institutions and a program for attracting external funds, yes / no	yes	yes	yes	b, h

Strategic initiatives / tasks / actions	Performance indicators (name and unit)	Values of Performance Indicators			Actions of Decree[8]
		2018	2019	2020	
	Share of extra-budgetary funds spent on the research equipment and data base in the structure of the University's income, %	10%	15%	15%	
Action 3.1.2 Development and launch of a program for attracting business partners to co-finance R&D activities; development of R&D plan in cooperation with companies; development of regulations for cooperation with companies on R&D	Share of R&D co-financed by the companies conducted at the University in the total amount spent on R&D, %	28%	40%	55%	b, h
Task 3.2 Creation of conditions for the commercialization of scientific results					
Action 3.2.1 Creation of a single competence center for the commercialization of scientific research projects accomplished by students, postgraduate students and FRS of the University	Funds attracted from the commercialization of R&D projects made by students, postgraduate students and FRS of the University with the help of the center, thousand rubles	1556	1611	1666	a, h
	The ratio of funds attracted with the help of the center to the total volume of applications for raising funds, %	25%	35%	50%	
Task 3.3 Creation of conditions for income growth from other sources					
Action 3.3.1 Development of the University’s endowment fund, including development and implementation of the fund promotion program	The share of funds raised by the endowment fund in the form of contributions and income from investment in the total amount of extra-budgetary funds, %	2%	4%	6%	a

Strategic initiatives / tasks / actions	Performance indicators (name and unit)	Values of Performance Indicators			Actions of Decree[8]
		2018	2019	2020	
SI 4 Reform SibFU's management system to facilitate the implementation of organizational changes					
Task 4.1 Optimization of processes to improve the competitiveness of the University					
Action 4.1.1 Increase of operational efficiency and rationalization of the information flow management based on the Lean principles	The share of reduced costs in the processes / units in which the principles of Lean were implemented (cumulative), %	5%	8%	10%	e
	Degree of satisfaction of FRS, administrative and managerial staff and students with the information management system of the University, score (from 1 to 10, where 1 is completely dissatisfied and 10 is completely satisfied)	6	7	8	
Action 4.1.2 Implementation of a program for the support of the best practices exchange between institutions	The number of best practices, replicated by the Institutes within the University, pcs.	2	3	3	e
	The average number of best practice implementations in the Institutes for one best practice, pcs.	4	5	6	
Action 4.1.3 Reduction of the audience load for the FRS engaged in scientific activities, including the introduction of a differentiated approach to motivating the FRS, focused on teaching or research activities	Number of publications per FRS in Scopus and Web of Science databases for the last three years, pcs.	0,95	1,31	1,82	b, d, e
	A differentiated approach to the motivation of FRS focused on teaching and scientific activities is introduced, yes / no	yes	yes	yes	

Strategic initiatives / tasks / actions	Performance indicators (name and unit)	Values of Performance Indicators			Actions of Decree[8]
		2018	2019	2020	
Task 4.2 Optimization of the University Management System					
Action 4.2.1 Creation of a position of director of the key research areas development, responsible for the development of a certain set of institutions (3-5 institutes per director)	Level of key performance indicators (KPI) completion by the institutions, %	60%	70%	80%	a
Action 4.2.2 Formation of a single Institute of Economics and Management on the basis of the Institute of Economics, Management and Nature Management, the Institute for Business Processes and Economics, and the Trade and Economic Institute	Completed, yes / no	yes	yes	yes	d, f
Action 4.2.3 Creation of a service model for the interaction of Institutes and centralized units, based on the principle of positioning the Institutes as "earning / business units" that own all the processes related to scientific and educational activities and the University performing a management function, providing a set of service and consulting functions for the Institutes. Revision of roles and responsibilities between the Institutes and the University, and centralization of service functions	Degree of achievement of the effectiveness indicators of service units, %	70%	80%	90%	c, d, e, h
Action 4.2.4 Improvement of the motivation system of University departments and Institutes and all the categories of university staff	Number of publications per FRS in Scopus and Web of Science databases for the last three years, pcs.	0,95	1,31	1,82	d, h
	The degree of satisfaction of staff and students of the service departments and departments of the University, a score (from 1 to 10, where 1 – completely dissatisfied, and 10 – completely satisfied)	7	8	9	
	Level of key performance indicators (KPI) completion by the institutions, %	60%	70%	80%	

Strategic initiatives / tasks / actions	Performance indicators (name and unit)	Values of Performance Indicators			Actions of Decree[8]
		2018	2019	2020	
Action 4.2.5 Implementation of a portfolio and project approach in R&D management: structuring the development process through phases covering the entire R&D cycle; Creating a three-tiered decision-making mechanism for R&D: Scientific and Technical counsel, scientific and methodological council, Directorate	The ratio of difference between funds raised for R&D conduction, as well as funds from the commercialization of R&D and total costs of R&D projects to the raised funds and commercialization volumes, including labour cost , %	1,5%	1,8%	2,1%	a, b, h
	A portfolio and project approach is introduced in R&D management, yes / no	yes	yes	yes	
Action 4.2.6 Optimization of the communication system and management of the Roadmap implementation for participants and stakeholders	Degree of achievement of the Roadmap target indicators, %	90%	90%	90%	a, h
	Degree of achievement of the Roadmap realization KPIs, %	80%	85%	90%	
	Degree of achievement of Roadmap Actions performance indicators, %	90%	95%	100%	
SI 5 Strengthen the University brand across the global/national academic community and the target markets for faculty and research staff and students					
Task 5.1 Expansion of the University's contacts in the scientific and business environment					
Action 5.1.1 The launch of a program of the R&D volume increase and rise in interaction with foreign scientists and research teams by expanding the network of contacts of the FRS and the University in the scientific community	The volume of R&D projects carried out jointly with foreign scientists per one FRS, thousand rubles	52,0	62,4	73,7	b, c, e, h
	The share of articles published by the scientists of the University in co-authorship with foreign scientists in Web of Science journals, %	27%	31%	35%	

Strategic initiatives / tasks / actions	Performance indicators (name and unit)	Values of Performance Indicators			Actions of Decree[8]
		2018	2019	2020	
	The share of articles published by the scientists of the University in co-authorship with foreign scientists in Scopus journals, %	22,5%	26,5%	30,5%	
Action 5.1.2 The launch of the program of increase in target recruitment of students and R&D volume by expanding the network of contacts of the FRS and the University in business environment	The volume of R&D projects, attracted from business partners, per one FRS, thousand rubles	429,1	444,3	459,6	e, g, h
	Number of foreign students attracted by target recruitment, persons	70	100	150	
Task 5.2. Promotion of the University in the markets of applicants, students and FRS					
Action 5.2.1 Creation of communication plan; introduction of a comprehensive program of presence in the social networks taking into account the characteristics of the target audience (including popular social networks, scientific forums depending on the region and scientific topics, the media)	Annual increase in the number of visits of the University website and Institute sites, %	20%	30%	50%	b, g
Action 5.2.2 Development and implementation of the University targeted promotion system among foreign students with the exception of activities to promote through the University's representative offices in other countries	Number of study applications from foreign students and applicants, with the exception of applications received through representative offices in other countries, pcs.	1025	1196	1281	g

Strategic initiatives / tasks / actions	Performance indicators (name and unit)	Values of Performance Indicators			Actions of Decree[8]
		2018	2019	2020	
Action 5.2.3 Establishment of the University representative offices in the most promising markets to promote the University, including: development of cooperation with secondary schools and recruiting agencies (vocational guidance activities in schools), road shows in schools with participation of FRS, faculty and current students	Number of study applications from foreign students and applicants, from the countries where the representative offices are located, pcs.	256	512	854	g
Task 5.3 Promotion of SibFU on major international events					
Action 5.3.1 Organization of activities for the planning and maintenance of socially significant and scientific events (SibFU based): • planning of the activities with a high potential for attraction of the FRS and analysis of the results / fulfillment of the commitments of participation in external scientific and socially significant events in accordance with the key research areas (action is centralized in the Service for the organization of socially significant and scientific events); • conduction on the basis of SibFU of Russian and international scientific conferences, exhibitions, symposia aimed at developing of the SibFU brand as the leading Russian university in priority areas (action is centralized in the Service for the organization of socially significant and scientific events)	Number of socially significant and scientific events with international participation of more than 10% organized on the base of the University, pcs.	13	16	20	b, c, h
	Completeness of the obligations fulfillment of participation in external scientific and socially significant events by the University in accordance with the key research areas, %	90%	95%	100%	
Action 5.3.2 Planning the participation in socially significant and scientific events (SibFU based and external): increase in the FRS participation with reports at Russian and international scientific conferences, exhibitions, symposia aimed at developing a personal brand of FRS (including relevant KPIs in FRS effective contracts)	Number of highly rated socially significant and scientific international events in which the delegation from the University took part with a presentation, a report or as an exhibitor, pcs.	15	19	22	b, c, h
SI 6 Build a unique set of strategic academic units to strengthen the University's competitive advantages in the focus areas					
Task 6.1 Development of the StrAUs in the most competitive and promising scientific and educational areas					

Strategic initiatives / tasks / actions	Performance indicators (name and unit)	Values of Performance Indicators			Actions of Decree[8]
		2018	2019	2020	
Action 6.1.1 Development of StrAUs: identification of research and educational areas, its structure, development plans and management system	Number of strategic academic units approved by the International Council of the 5-100 Program, pcs.	2	2	2	a, b, g
	Number of internal strategic academic units of the University, pcs.	0	1	1	
Task 6.2 Development of competitive academic programs that correspond to global challenges and development trends					
Action 6.2.1 Creation and development of unique interdisciplinary academic programs in key research areas with a focus on the Atlas of emerging jobs by Agency for Strategic Initiatives	Share of students and postgraduate students on unique interdisciplinary academic programs in the total number of students and postgraduate students of the University, %	0,3%	0,9%	2,1%	f
	Number of unique interdisciplinary academic programs in key research areas, pcs.	3	7	10	

Table 2

Financial support for the plan of actions to implement the program of increasing the competitiveness ("roadmap") of the Siberian Federal University for 2018-2020 at the expense of extra-budgetary funds and subsidy for state support of the leading universities of the Russian Federation in order to increase their competitiveness among the world leading scientific and educational centers

(rubles)

		Actual expences		**Planned expenses**							
		2016		**2017**		**2016**		**2017**		**2016**	
1.	Funding of 5-100 Competitiveness Enhancement Program Mandatory Activities: Subsidy and Non-Government	**Subsidised**	**Non-Government**	**Subsidised**	**Non-Government**	**Subsidised**	**Non-Government**	**Subsidised**	**Non-Government**	**Subsidised**	**Non-Government**
	Total, including:	150 000 000	98 850 310	141 541 300	105 590 000	150 000 000	161 334 000	150 000 000	163 899 000	150 000 000	189 269 000
	a) Establishing a succession pool for senior university management, attracting specialists with experience in international and Russian Universities and research organizations	23 839 122	27 313 847	28 289 084	1 910 000	7 500 000	17 500 000	6 750 000	15 750 000	6 750 000	15 750 000
	b) Recruiting more **youthful faculty members and researchers** with time spent and know-how gained in academic and research spheres, in leading international and Russian Universities and research organizations	33 751 172	2 083 036	30 525 767	2 140 000	13 006 000	5 574 000	8 532 000	3 657 000	9 328 000	3 998 000
	c) Putting into force a number of international and internal academic mobility programs for faculty and researchers (internships, advanced training, professional re-training, exchange programs, etc.)	52 025 618	798 888	27 383 117	1 110 000	28 101 000	9 927 000	28 616 000	12 813 000	25 656 000	20 609 000
	d) Improvement of tertiary education										

		Actual expences		Planned expenses							
		2016		2017		2016		2017		2016	
	– postgraduate programs and doctorates	6 202 079	-	5 173 667	940 000	14 397 000	33 593 000	16 811 000	39 225 000	19 703 000	45 973 000
	Supporting undergraduates, graduates, interns and young faculty members and researchers	20 285 824	2 482 360	22 609 665	2 370 000	46 571 000	20 923 000	52 618 000	23 640 000	54 943 000	24 684 000
	f) Development of joint academic programs with leading international and Russian Universities and research organizations	5 886 811	-	18 392 500	920 000	7 200 000	18 300 000	3 900 000	11 350 000	1 800 000	7 200 000
	g) Recruiting international students to study in Russian Universities, including joint (double degree) programs with international Universities, and applicants who showed creative abilities and interest in science (research and development) activities	8 009 373	3 330 243	9 167 500	3 000 000	17 173 000	7 360 000	16 597 000	8 937 000	17 072 000	12 061 000
	h) Fundamental and applied scientific research in collaboration with Russian and international organizations:	-	62 841 936	-	93 200 000	16 052 000	48 157 000	16 176 000	48 527 000	14 748 000	58 994 000
	R&D projects with the involvement of leading Russian and international researchers as project leaders and/or projects in collaboration with advanced scientific organizations, including the option of setting up structural units at participating universities	-	22 831 984	-	33 200 000	14 427 000	43 282 000	15 384 000	46 152 000	17 644 000	52 932 000
	R&D projects together with Russian and international high-tech organizations, including the option of setting up structural units at participating universities	-	40 009 952	-	60 000 000	1 625 000	4 875 000	792 000	2 375 000	792 000	2 375 000
2.	Funding of 5-100 Competitiveness Enhancement Program Additional										

		Actual expences	Planned expenses			
		2016	2017	2016	2017	2016
	Activities: Non-Government					
3.	Funding of 5-100 Competitiveness Enhancement Program: Other sources					
4.	**Total amount of subsidy**	150 000 000	141 541 300			
5.	**Residual amount of the subsidy by the end of year**	0	0			0

III. PERFORMANCE INDICATORS OF THE «ROADMAP»

Table 3

Performance indicators of the Action Plan for the implementation of SibFU's Competitiveness Enhancement Program ("Roadmap") for the period 2016-2020 (Stage 2 – 2018-2020)

№	Indicator	Unit	Fact	Planned values of indicators			
			2016	2017	2018	2019	2020
MANDATORY PERFORMANCE INDICATORS							
1.	Position (within the accuracy of 50) in world's leading ratings (in a comprehensive list by subject)						
1.1.	Rank in ARWU (Academic Ranking of World Universities)	rank	–	–	–	–	401-500
1.2.	Rank in THE (The Times Higher Education World University Rankings)	rank	801+	601-800	501-600	351-400	301-350
1.3.	Rank in QS (QS World University Rankings)	rank	–	601-650	351-400	251-300	201-250
1.4.	Rank in QS (QS World University Rankings) by Subjects «Environmental Sciences»	rank	–	–	251-300	201-250	151-200
1.5.	Rank in QS (QS World University Rankings) by Subjects «Agriculture & Forestry»	rank	–	–	151-200	101-150	51-100
1.6.	Rank in QS (QS World University Rankings) by Subjects «Earth & Marine Sciences»	rank	–	–	–	–	151-200
2.	Number of articles in the Web of Science and Scopus databases without duplication per one of the faculty and research staff						
2.1.1.	Number of articles in the Web of Science per one of the faculty and research staff (5 years)	number	0,63	0,81	1,08	1,62	2,26
2.1.2.	Number of articles in the Web of Science per one of the faculty and research staff (3 years)	number	0,42	0,63	0,86	1,18	1,64
2.2.1.	Number of articles in the Scopus per one of the faculty and research staff (5 years)	number	0,83	0,90	1,20	1,80	2,51
2.2.2.	Number of articles in the Scopus per one of the faculty and research staff (3 years)	number	0,58	0,70	0,95	1,31	1,82
3.	Average citation index per one of the faculty and research staff measured by the total amount of articles included in the Web of Science and Scopus databases without duplication						

№	Indicator	Unit	Fact	Planned values of indicators			
			2016	2017	2018	2019	2020
3.1.	Average citation index per one of the faculty and research staff measured by the total amount of articles included in the Web of Science	number	1,26	1,86	3,01	5,18	7,70
3.2.	Average citation index per one of the faculty and research staff measured by the total amount of articles included in the Scopus databases	number	1,42	2,07	3,35	5,75	8,56
4.	Share of international professors, lecturers and researchers in the total number of faculty and research staff, including Russian citizens with international Universities PhD	%	1,28	2,0	3,8	5,5	8,0
5.	Share of international students enrolled in the key academic programs of the University (including students from the CIS countries)	%	2,0	3,7	6,0	8,0	10,0
6.	Average Unified State Examination (hereinafter – USE) score of full-time students studying at the expense of the federal budget for bachelor and specialist degree programs	score	68,1	68,5	69,0	72,0	75,0
7.	Share of revenues from non-budget sources in the structure of the University's revenues	%	23,0	33,0	35,0	38,5	41,0
8.	Share of enrolled in master degree programs and postgraduate faculty and research staff training programs with a bachelor degree, a diploma or a master degree of other organizations, in the total number of enrolled in master degree programs and postgraduate faculty and research staff training programs	%	13,4	15	18	24	30
9.	Volume of research and development works, calculated per one of the faculty and research staff	thous. rubles	193,7	242,8	302,8	378,3	425,2
EXTRA PERFORMANCE INDICATORS ESTABLISHED BY THE UNIVERSITY							
10.	Average age of the faculty and research staff	years	53	52	51	50	48
11.	Total value of the researches conducted per one of the faculty and research staff	mln rubles	0,26	0,4	0,6	0,8	1,0
12.	Share of the faculty and research staff with Hirsch index above 10	%	1,5	1,7	2,7	3,2	3,8
13.	Share of master degree students with bachelor or specialist degrees of other universities	%	23	26	30	35	40
14.	Position in the other world rankings (in the general list)						
14.1.	SCImago rankings	rank	669	650-700	600-650	600-650	550-600
14.2.	Webometrics rankings	rank	1489	900-1000	800-850	500-560	350-400
14.3.	GreenMetric rankings	rank	338	300-330	250-300	200-250	150-200
14.4	Worldwide Professional University Ranking (RankPro)	rank	488	400-450	350-400	301-350	201-250

IV. STRATEGIC ACADEMIC UNITS

Table 4

The calendar plan for the formation and development of the StrAU of Siberian State University

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
1. General University Actions in the formation and development of the StrAU						
1.1	Development of StrAUs: identification of research and educational areas, its structure, development plans and management system	September			Number of strategic academic units approved by the International Council of the 5-100 Program, pcs. Number of internal strategic academic units of the University, pcs.	6.1.1
2. Formation and development of the StrAU (Green Science: Sustainable Environmental Management)		The purpose of StrAU: Organization of research and education activities aimed at reducing human environmental footprint and human impact on natural environment, and improving the quality of life Key tasks of StrAU: • Conduct fundamental and applied interdisciplinary scientific research in the priority areas of biochemistry, climatology, forestry, natural resource management, carbon economy, and biological engineering, and implement international projects aimed at addressing global challenges • Prepare specialists under fundamental and practice focused interdisciplinary educational programs, including in biophysics and environmental monitoring • Advance the development of sustainable natural resource management technology and low carbon economy, create the fundamentals for innovative entrepreneurship in the areas of forestry and natural resource management and build scientific fundamentals for the addressing of the global greenhouse gas concentration and climate change problem • Promote knowledge intensive products and services aimed at addressing global problems and specific problems of emerging economies (natural disasters, depletion of natural resources) in the international market, monetize intellectual property and bring original devices, reagents and methodologies for professional research activity, school and university education systems, environmental monitoring organizations, medical diagnostic labs, etc. into the Russian and global market The SibFU's position in QS subject ratings as a result of the formation and development of the StrAU: QS Environmental Sciences (top 200), QS Agriculture & Forestry Sciences (top 100), QS Earth & Marine Sciences (top 200)				
2.1 Organizational changes						
2.1.1	Creation of the StrAU organizational structure	March			The StrAU's Steering Committee, Committee on Educational Activities,	6.1.1

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
					Committee on Scientific and Innovation Activities, and Commission of academic program directors and tutors have been established, and StrAU project team has been defined.	
2.1.2	Creation of the Center of Excellence in Bioengineering area		May		Opening of the Center of Excellence in Bioengineering area	6.1.1
2.1.3	Creation of the Laboratory for Preventive Toxicology of SibFU	May			Opening of the Laboratory for Preventive Toxicology of SibFU	6.1.1
2.1.4	Creation of the Bioinformatics Center of SibFU	July			Opening of the Bioinformatics Center of SibFU	6.1.1
2.1.5	Creation of the Center for Promotion of a Healthy Lifestyle of SibFU		June		Opening of the Center for Promotion of a Healthy Lifestyle of SibFU	6.1.1
2.1.6	Creation of the Center for retraining of specialists of engineering profile for medical organizations of SibFU			June	Opening of the Center for retraining of specialists of engineering profile for medical organizations of SibFU	6.1.1
2.2 Changes and results of educational activities						
2.2.1	Development of the SibFU PhD degree		December		Development of international PhD research networks and academic exchanges in the area of biology, for the SibFU's PhD programs	6.1.1
2.2.2	Opening of the new Master's program in the field of preventive toxicology		June		The International Master's program in the field of preventive toxicology have been developed and implemented	6.1.1

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
2.2.3	Organization of the training on project management for Bioengineering Science		December		Project teams have been created, trained and started working on projects on bioengineering	6.1.1
2.2.4	Development of network academic programs in the field of bioengineering in cooperation with UrFU		October		The agreement on network academic program with UrFU has been signed	1.1.1
2.2.5	Development of summer and winter schools on the leading research areas of StrAU	June			New summer and winter schools on the leading research areas of StrAU have been opened	6.1.1
2.2.6	Creating and transferring academic programs in e-learning platform				25% of academic programs in e-learning platform	6.1.1
2.2.7	Organization of internships for students and FRS	September	September	September	Internships for StrAU students and FRS at international universities organized	2.4.1
2.2.8	Creation and launch of academic programs in English language	September	September	September	Academic programs in English language have been formed and implemented	2.3.1
2.3 Changes and results of research and scientific and technical activities						
2.3.1	Implementation of a publication activity enhancement program	June			A publication activity enhancement program implemented (organization of joint work with the Center of Academic Writing, the Center of Academic English Writing, etc.)	6.1.1
2.3.2	Formation of new scientific groups	April	May	May	New scientific groups led by leading Russian and global scientists have been formed	6.1.1
2.3.3	Conducting the Annual International Seminar on the StrAU topics of research	June	June	June	The Annual International Seminar on the StrAU topics of research have been	6.1.1

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
					organized and conducted	
2.3.4	Upgrading facilities and equipment for the academic programs, increasing the share of practical studies performed on modern equipment	October	October	October	Facilities and equipment for the academic programs have been upgraded, the share of practical (non-lecture) and lab studies performed on modern equipment has been increased.	3.1.1
2.3.5	Organization of internships for students and FRS with the purpose of measurement	September	September	September	Internships for talented students and FRS of the StrAU for the purpose of conducting measurements on unique equipment of global research centers have been organized and conducted	2.4.2
4. General changes and results, incl. at university level						
2.4.1	Improving the SibFU's position in QS subject ratings		January	January	The University's position in the QS Environmental Sciences (top 200), QS Agriculture & Forestry Sciences (top 100), and QS Earth & Marine Sciences (top 200) subject ratings has been improved.	6.1.1
2.4.2	Increase of income from grant-funded activity and non-budgetary sources by stepping up the University's R&D activity and search for new partners	December	December	December	Income from grant-funded activity and non-budgetary sources have been increased	3.1.2
2.4.3	Achievement of high scientometric indicators	December	December	December	Such indicators as «number of publications in the WoS/Scopus database per one faculty and research person», and «average citation index per one faculty and research person» have been improved	6.1.1

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
2.4.4	Attraction of international FRS	September	September	September	A set of measures aimed at attracting international FRS to the university or Russian FRS with PhD degrees from international universities has been implemented, the share of international FRS has been increased	1.3.1
2.4.5	Attraction of foreign students	September	September	September	A set of measures aimed at attracting international students to the university has been implemented, the share of foreign students has been increased	5.2.2
3. Formation and development of the StrAU (M^3: Mining, Metallurgy, Materials Science)		The purpose of StrAU: Enhance the educational and scientific research processes in the University's units related to the metals&mining/oil&gas industries in order to increase the research performance, attract talented Russian and foreign applicants and generate competitive export projects, responding to global challenges Key tasks of StrAU: 1 The key task is the educational process transformation and preparation personnel of a new formation able to foresee industry trends, propose innovative areas of products, and take into account the changing environment due to developed competencies. 2. The contribution to the global research agenda: 2.1 Full-scale digitalization of resource exploration, exploitation and processing. Therefore, there is a need in Big Data and Blockchain-related research based on AI and neuron network mechanisms (shaft-sinking facilities require sensors of high mechanical and chemical resistance; separating facilities to explore inaccessible fields, etc.); 2.2 Improvement of ore processing technologies (increase of recovery ratio: e.g., oil recovery ratio based on the field structure in terms of geographical aspect). These technologies are intended to enable the maximum recovery of product with minimum field exploitation to reduce the technogenic pressure; develop non-waste production methods for preliminary processing of hydrocarbons and ore mineral resources (recovery and industrial use of by-products); 2.3 Development of methods for rehabilitation of disturbed land resulting from the industrial development of territories (renovation of decommissioned production facilities; implementation of green metallurgical technologies, new electrolytic vessels, electrolysers of increased capacity (RA-550 and more), inversion of industrial emissions into oxygen, etc.); The SibFU's position in QS subject ratings as a result of the formation and development of the StrAU: QS Environmental Sciences (top 200), QS Earth & Marine Sciences (top 200)				
3.1 Organizational changes						
3.1.1	Creation of the StrAU organizational structure	March			The StrAU's Steering Committee, Committee on	6.1.1

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
					Educational Activities, Committee on Scientific and Innovation Activities, and Commission of academic program directors and tutors have been established, and StrAU project team has been defined	
3.1.2	Creation of collaboration between the StrAU and Industrial Partners	September			Consortium agreements with Industrial Partners (PD PJSC MMC Norilsk Nickel, PJSC Polyus, UC RUSAL and others) have been entered into	6.1.1
3.1.3	Upgrading facilities and equipment		November	October	Facilities and equipment for labs and centers of collective use have been upgraded; the share of practical (non-lecture) and lab studies performed on modern equipment has been increased	6.1.1
3.1.4	Opening of RUSAL-SibFU R&D center		November		The center for professional training and retraining of personnel for the aluminum industry has been opened. Research of improving the environmental friendliness and economy of aluminum production have been organized. Technological process modeling have been developed	6.1.1
3.1.5	Creating the laboratory of innovative materials			September	The laboratory for researching and improving properties of innovative	6.1.1

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
					materials (magnetic, heat-resistant, corrosion-resistant, radiation-resistant, powder materials, cold-resistant metals and alloys, metals with shape memory) has been established.	
3.1.6	Creating the non-ferrous metals laboratory in cooperation with OJSC Krastsvetmet		April		Performance of the lab for investigation and modernization of methods for the production of non-ferrous metals has been supported	6.1.1
3.1.7	Creating the digital technology center for 3D modeling of mineral mines			December	The center for adoption of digital technologies (UAV, hyperspectral complexes) in the production lines and production string of the mining and metallurgical complex based on global trends (digital economy, Internet of things) has been created.	6.1.1
3.2 Changes and results in educational activity						
3.2.1	Updating of target faculty and research staff	August	August	August	The target set of FRS involved in the functioning of the StrAU has been qualitatively updated (vocational training and retraining has been carried out; the FRS`level of foreign language proficiency has been improved; a visiting professor for networking on academic programs has been attracted; internships in	1.1.1

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
					leading educational centers were conducted	
3.2.2	Updating and upgrading of academic programs	September	September	September	Inefficient academic programs (AP) have been reduced. The present APs have been updated: the share of disciplines taught in English language increased up to 50%, the international accreditation of the AP was carried out; MEOC (mass educational online courses) in English language was opened; Double Degree system with foreign universities was introduced; New master's academic programs: «Processing of heavy oils and residua», «Oil and Gas Engineering», «Catalysis in oil refining», «Chemical engineering», «Modern technological research and evaluation of mineral raw materials», «Geomechanics», «Geometallurgical evaluation and character of ore», « Evaluation and deep processing of mineral raw materials », « Modern technologies in the management of science-intensive production of metallurgical complex » for teaching engineering and	2.3.1

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
					technical personnel of the new formation (coordinator of distributed drivage team including scheduling, engineer of robotic systems, operator of UAV for exploration of mines, eco-analyst in extractive industries, system mining engineer, eco-recycler in metallurgy and mining, designer of equipment for powder metallurgy, etc.). have been created	
3.2.3	Development of the SibFU PhD degree on key StrAU research areas		September	September	SibFU PhD programmes in the area of metallurgy, mining and oil and gas «Chemical engineering», «Distributed gateway technologies» have been established	1.1.1
3.2.4	Promotion of a set of StrAU`academic programs in the world market was implemented	September	September	September	Agreements on target enrollment of foreign students from Vietnam, Iraq, Syria, China and CIS countries have been concluded; Close cooperation has been provided through internships and academic exchange programs (joint educational modules, credits accountance) with the French Institute of Petroleum (IFP), Vinci Technology (France), Core Laboratories	5.2.2

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
					(USA), University of Cádiz UCA (Spain), University of New South Wales UNSW (Australia), Institute of Nanotechnology of Aragon INA (University of Zaragoza), Axens (France), etc.; The regular information support of academic programs has been organized on the following web sites: Study in Russia, Bachelorstudies, Masterstudies, Phdstudies, and others	
3.2.5	Implementation of a publication activity enhancement program in mining, metallurgy and oil and gas complex industries for all FRS and students		September	September	Special courses for preparation of articles under the publication activity enhancement program in cooperation with the Center of Academic Writing in order to increase the qualitative growth of the level of publications (reviews, full-text articles, analytical reports) in high-ranking journals have been implemented	1.2.1
3. Changes and results of research and scientific and technical activities						
3.3.1	Increase of the key FRS and post-graduate students' research potential	October			Internships for talented students and FRS of the StrAU in the leading research centers and laboratories of the industry (Freiberg Academy,	1.1.1

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
					Helmholtz Center Dresden-Rossendorf, Schlumberger, Leibniz Association, University of New South Wales (Australia), Queen's University (Canada)) have been organized and conducted; research results have been presented at international conferences and published in high-rating publications	
3.3.2	Development of network scientific cooperation		February		A joint research process has been organized with the French Petroleum Institute (IFP), Vinci Technology (France), Core Laboratories (USA), University of Cadiz UCA (Spain), University of New South Wales UNSW (Australia), Axens (France), etc.	1.1.1
3.3.3	Formation of new interdisciplinary scientific groups		March		New international interdisciplinary scientific groups led by leading Russian and global scientists have been formed	6.1.1
3.3.4	Transfer of research results		August	November	The results of the studies, implemented with the help of the StrAU, are presented to the world through licensing and implementation of patents, high-ranking publications in co-authorship with foreign scientists, speeches at international	3.2.1

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
					scientific events, popularization of research with the use of the digital economy tools	
3.4. General changes and results, including at the University level						
3.4.1	Improving the SibFU's position in QS subject ratings		January	January	The University's position in the QS Environmental Sciences (top 200), QS Earth & Marine Sciences (top 200) subject ratings has been improved	6.1.1
3.4.2	Increase of R&D volume	December	December	December	Income from non-budgetary sources have been increased by stepping up the University's R&D activity and interaction with new industrial partners interested in improving production	5.1.1
3.4.3	Achievement of high scientometric indicators	December	December	December	Such indicators as "number of publications in the WoS/Scopus database per one faculty and research person", and "average citation index per one faculty and research person" improved	6.1.1
3.4.4	Attraction of international FRS	September	September	September	A number of foreign and Russian FRSs with PhD degrees from foreign universities have been attracted due to the exclusivity of the content of applied research, the vast material and technical base, the opportunities for interaction with industrial	1.3.1

№	Action Name	Dates of results			Output	Action from «RoadMap»
		2018	2019	2020		
					organizations; the indicator "share of foreign FRS" has increased	
3.4.5	Attraction of international students	September	September	September	Agreements with foreign partners on target recruitment of foreign students have been made; The active information policy on attraction of students to exclusive educational programs is tested; The indicator "share of foreign students" has been strengthened	5.2.2

APPENDIX 1. METHODOLOGY FOR CALCULATING ADDITIONAL INDICATORS

Methods of calculating additional indicator 1.

The average age of the academic and faculty staff is calculated based on the following formula: $\frac{\sum_{i=1}^{n} \text{Rate}_i * \text{Age}_i}{n}$, where Age_i is the age of faculty, Rate_i is their salary and n is the total labor costs. The data on the number of the academic and teaching staff and age of faculty is provided by the university on the basis of the personnel department database.

Methods of calculating additional indicator 2.

Calculation of the volume of ongoing research per faculty is based on the following formula: (m+p)/n, where m is the target subsidies budget implementation (in the areas of scientific research), p is the cost of scientific research in income-generating areas of activity and n is the average number of academic and teaching staff of the university. The data is taken from the target subsidies budget implementation and the revenues and expenditures for scientific research at the expense of income-generating activities sections of the university budget.

Methods of calculating additional indicator 3.

Calculation of the share of the academic and teaching staff with Hirsch index above 10 is based on the following formula: m/n, where m is the number of the academic and teaching staff with Hirsch index above 10, and n is the average number of the academic and teaching staff of the university. Hirsch index data of SibFU academic and teaching staff is taken from the reference and bibliographic science citation databases of the Web of Science and Scopus.

Methods of calculating additional indicator 4.

Calculation of the share of Master's degree students with Bachelor's or specialist degrees of other universities is based on the following formula: m/n, where m is the number of the Master's degree students with Bachelor's or

Specialist degrees of other universities and n is the total number of Master's degree students. The data is provided by the university on the basis of the copies of the enrolled to the Master's programs students' diplomas which are stored at the educational department.

Methods of calculating additional indicator 5.

Specifies the position (range) in the overall rankings, published on the website of the corresponding rankings:

1. Webometrics – http://www.webometrics.info/**.**
2. GreenMetric ranking – http://greenmetric.ui.ac.id/
3. SCImago – http://www.scimagoir.com/
4. Worldwide Professional University Ranking (RankPro) – http://www.cicerobook.com/en/ranks

APPENDIX 2. INDICATORS OF THE ACTION PLAN REALIZATION

Indicators of the program realization to increase the University competitiveness among the world's leading scientific and educational centers, approved by the Federal Government on October 29, 2012 № 2006-R

Indicator name	Unit	Fact	Planned values of indicators			
		2016	2017	2018	2019	2020
1. Total number of employees recruited for senior management positions with a track record of working for leading universities and scientific organizations in and outside of Russia	people	2	3	5	7	9
2. Number of scientific journals of the University, included in database Web of Science and/or Scopus	number	1	1	2	2	3
3. Number of employees included in the succession pool for managerial positions	people	63	150	150	150	150
4. Share of the number of young faculty and research staff (hereinafter – FRS) attracted to the university, with work experience in the leading Russian and international universities and / or in the leading Russian and international research organizations, in the total number of young FRS	%	0,68	1,5	2,9	4,4	5,7
5. Share of the number of FRS, who participated in academic mobility programs realized by the University, in the total number of the University's FRS	%	20	20	30	30	30
6. Number of academic mobility programs for the University's FRS and FRS from outside organizations realized by the University	number	3	5	5	5	5
7. Share of the number of young University's FRS in the total number of University's FRS	%	23,1	32	32	33	33
8. Share of the number of students on programs of higher full-time education, who have received support, in the total number of students on programs of higher full-time education	%	10	15	20	25	25
9. Share of the number of research assistants and young FRS, who have received support, in the total number of research assistants and young FRS of the University	%	30	30	30	30	30
10. Number of higher education programs and continuing vocational programs developed and implemented in partnership with the leading Russian and international universities and/or in the leading Russian and international scientific organizations	number	3	5	7	8	10
11. Share of the number of students from leading international universities involved in the University, in the total number of students	%	0,12	0,5	1	1,5	2
12. Number of research projects carried out with the involvement of the leadership of the leading Russian and foreign scientists and / or in cooperation with leading Russian and international scientific organizations on the basis of the University, including the ability to create structural divisions of the University	number	2	10	15	20	25
13. Number of research and development projects in cooperation with Russian and international high-tech companies on the basis of the University, including the ability to create structural divisions of the University	number	16	16	22	27	40

APPENDIX 3. FINANCIAL PROVISIONS OF THE "ROADMAP" FOR 2018

Strategic initiative/task	Total amount of the financial provisions, thousand rubles.	including from				Actions from Decree of the Government of the Russian Federation of March 16, 2013 No. 211	Comments
		funds of the subsidy for state support of the leading universities of the Russian Federation	federal governments funding for current operations of the University	income-generating activity	other sources		
SI 1. Improve the competitive framework for the recruitment and professional growth of the FRS, with an aim to attract leading Russian and foreign professionals	**47 715**	**31 073**	**-**	**16 642**	**-**	**b, c, e, h**	
Task 1.1 Advanced training of the FRS	32 012	20 847	-	11 165	-	c	
Task 1.2 Support of FRS for research activities	15 540	10 120	-	5 420	-	e, h	
Task 1.3 Implementation of an effective system for attracting foreign FRS and holders of PhD degree received in foreign universities	163	106	-	57	-	b	
SI 2. Recruit talented Russian and international students	**80 340**	**43 168**	**-**	**37 172**	**-**	**d, e, f**	
Task 2.1 Increasing flexibility of the entrance examination system	-	-	-	-	-	e	
Task 2.2 Availability of support programs for talented students and postgraduate students	21 885	11 759	-	10 126	-	e, d	
Task 2.3 Development of educational programs	19 500	10 478	-	9 022	-	f	
Task 2.4 Development of international mobility programs	38 956	20 932	-	18 024	-	e, d	
SI 3. Increase University revenue, including the revenue flows from R&D and commercialization of scientific research results	**13 000**	**5 625**	**-**	**7 375**	**-**	**a, b, h**	
Task 3.1 Creation of conditions for R&D projects income growth	10 000	4 327	-	5 673	-	b, h	

Strategic initiative/task	Total amount of the financial provisions, thousand rubles.	including from				Actions from Decree of the Government of the Russian Federation of March 16, 2013 No. 211	Comments
		funds of the subsidy for state support of the leading universities of the Russian Federation	federal governments funding for current operations of the University	income-generating activity	other sources		
Task 3.2 Creation of conditions for the commercialization of scientific results	1 000	433	-	567	-	a, h	
Task 3.3 Creation of conditions for income growth from other sources	2 000	865	-	1 135	-	a	
SI 4. Reform SibFU's management system to facilitate the implementation of organizational changes	**112 679**	**34 812**	**-**	**77 867**	**-**	**a, b, c, d, e, f, g, h**	
Task 4.1 Optimization of processes to improve the competitiveness of the University	8 000	2 472	-	5 528	-	b, d, e	
Task 4.2 Optimization of the University Management System	104 679	32 340	-	72 339	-	a, c, d, e, g, h	
SI 5. Strengthen the University brand across the global/national academic community and the target markets for faculty and research staff and students	**51 600**	**33 522**	**-**	**18 078**	**-**	**b, c, e, g, h**	
Task 5.1 Expansion of the University's contacts in the scientific and business environment	6 000	3 898	-	2 102	-	b, c, e, g, h	
Task 5.2. Promotion of the University in the markets of applicants, students and FRS	31 600	20 529	-	11 071	-	b, g	
Task 5.3 Promotion of SibFU on major international events	14 000	9 095	-	4 905	-	b, c, h	
SI 6. Build a unique set of strategic academic units to strengthen the University's competitive advantages in the focus areas	**6 000**	**1 800**	**-**	**4 200**	**-**	**a, b, f, g, h**	
Task 6.1 Development of the StrAUs in the most competitive and promising scientific and educational areas	-	-	-	-	-	a, b, g, h	
Task 6.2 Development of competitive educational programs that correspond to global challenges and development trends	6 000	1 800	-	4 200	-	f	

APPENDIX 4. MATRIX OF THE "ROADMAP" ACTIONS REALIZATION

Legend (beginning of implementation):

Is implemented in 2018

2019

2020

Institutes

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		SAD	SH	SEPS	SEC	SBME	SPEST	SPLC	EMES	LS	SMT	SMGG	SEC	SEPRE	SSIT	SMCS	SPNGE	PS	SFBB	SNFMMS	SEG
1.1.1	Organization of internship and professional development programs, partnership programs with leading universities and companies											2020		2020		2020	2020		2020	2020	
1.1.2	Establishment of an English language development program for FRS	2018	2018	2018	2018	2018	2018		2018	2018	2018	2020	2018	2020	2018	2020	2020	2018	2020	2020	2018
1.2.1	Development of a research grant system for FRS											2020		2020		2020	2020		2020	2020	
1.3.1	Introduction of the referral program for attracting foreign FRS and PhD from foreign universities	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2020	2018	2020	2018	2020	2020	2018	2020	2020	2018
2.1.1	Expansion of the admission test in the remote form for masters students	2019	2019	2019	2019	2019	2019	2019	2019	2019		2019	2019	2019	2019	2019	2019	2019	2019	2019	2019
2.2.1	Introduction of scholarship support for prospective students who have passed USE with high scores	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
2.2.2	The introduction of a competitive, grant and scholarship support system for talented masters and postgraduate students	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
2.3.1	Introduction of new and improvement of existing academic programs	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
2.4.1	Ensuring academic mobility and internationalization of students and postgraduate students	2018	2018	2018	2018	2018	2018	2018	2018	2018		2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
2.4.2	Development and implementation of a system of international competitive internship practices for masters degree and postgraduate students	2018	2018	2018	2018	2018	2018	2018	2018	2018		2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
3.1.1	Development of the program for the research base expansion											2020		2020		2020	2020		2020	2020	2020
3.1.2	Development and launch of a program to attract business to co-finance R&D											2020		2020		2020	2020		2020	2020	2020
3.2.1	Creation of a single competence center for the commercialization of the R&D of students, postgraduates and FRS	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019
3.3.1	Development of endowment fund activities	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
4.1.1	Increase of the operational efficiency	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
4.1.2	Implementation of a program for sharing best practices among institutions	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018	2018
4.1.3	Reduction of the teaching load for FRS engaged in research activities	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019
4.2.1	Creation in the structure of the University of the directors division for research activities development	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019	2019

Legend (beginning of implementation):

Is implemented in 2018

2019

2020

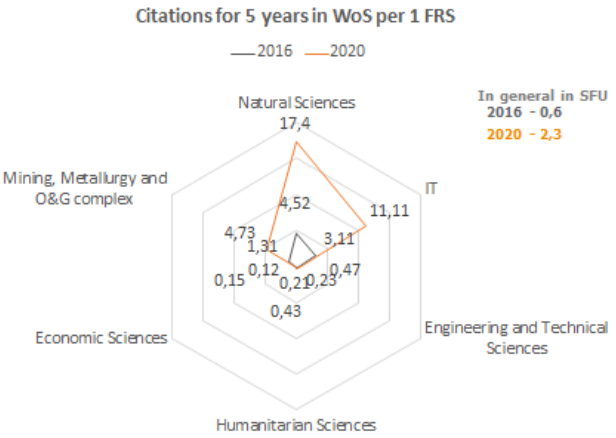
Institutes

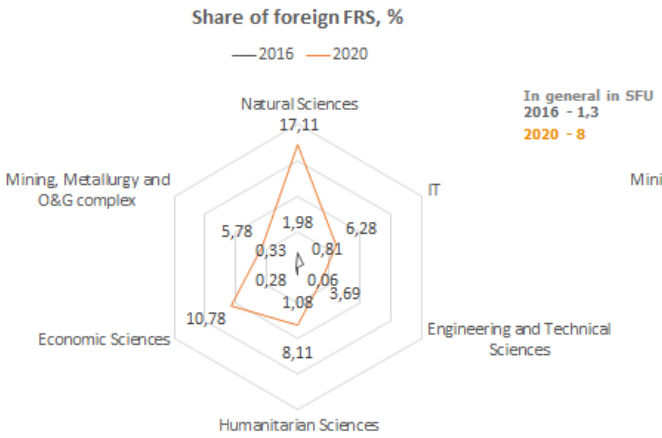
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		SAD	SH	SEPS	SEC	SBME	SPEST	SPLC	EMES	LS	SMT	SMGG	SEC	SEPRE	SSIT	SMCS	SPNGE	PS	SFBB	SNFMMS	SEG
4.2.2	Formation of a single Institute of Economics and Management																				
4.2.3	Creation of a service model for the interaction of Institutes and centralized units																				
4.2.4	Improvement of the motivation system																				
4.2.5	Implementation of portfolio and project approach in R&D management																				
4.2.6	Optimization of the management system for the implementation of the Roadmap and setting communications between stakeholders and stakeholders																				
5.1.1	Expansion of the network of contacts of FRS and the University in the scientific community																				
5.1.2	Expansion of the network of contacts of FRS and the University in business circles																				
5.2.1	Creation of a communications plan																				
5.2.2	Development and implementation of targeted promotion of the University among foreign students																				
5.2.3	Establishment of the University's representative offices in the most promising markets																				
5.3.1	Organization of planning and maintenance activities of socially significant and scientific events																				
6.1.1	Development of StrAU																				
6.1.2	Creation and development of unique interdisciplinary academic programs																				

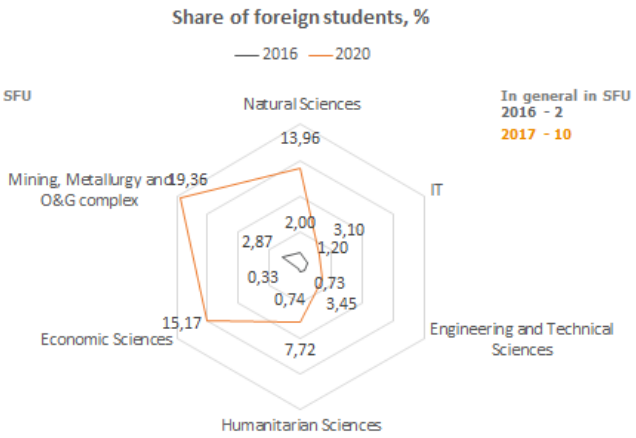
List of abbreviations for Institute names

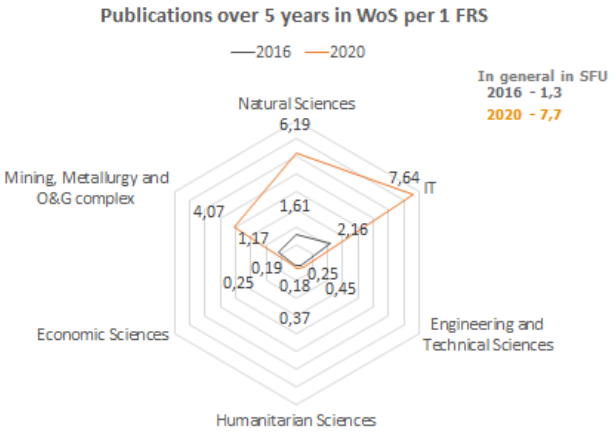
SAD	School of Architecture and Design	EMES	Economics, Management and Environmental Studies	SEG	School of Ecology and Geography
SH	School for the Humanities	LS	Law School	SEC	School of Engineering and Construction
SEPS	School of Education, Psychology and Sociology	SMT	School of Military Training	SSIT	School of Space and Information Technologies
SEC	School of Economics and Commerce	SMGG	School of Mining, Geology and Geotechnology	SMCS	School of Mathematics and Computer Science
SBME	School of Business Management and Economics	SEPRE	School of Engineering Physics and Radio Electronics	SPNGE	School of Petroleum and Natural Gas Engineering
SPEST	School of Physical Education, Sport and Tourism	SFBB	School of Fundamental Biology and Biotechnology	PS	Polytechnic School
SPLC	School of Philology and Language Communication	SNFMMS	School of Non-Ferrous Metals and Material Science		

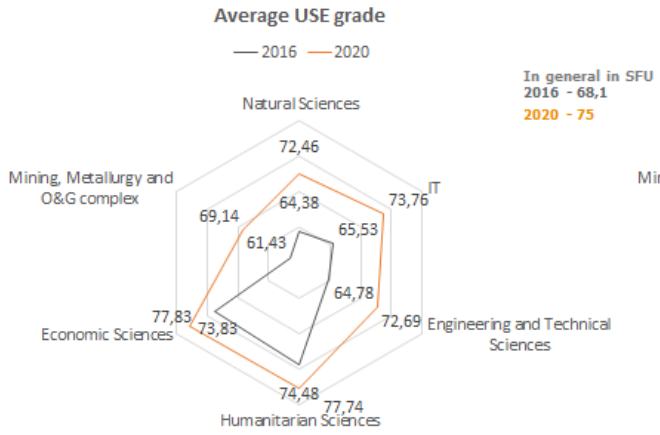
APPENDIX 5. ACTUAL AND TARGETED VALUES OF INDICATORS OF PERFORMANCE

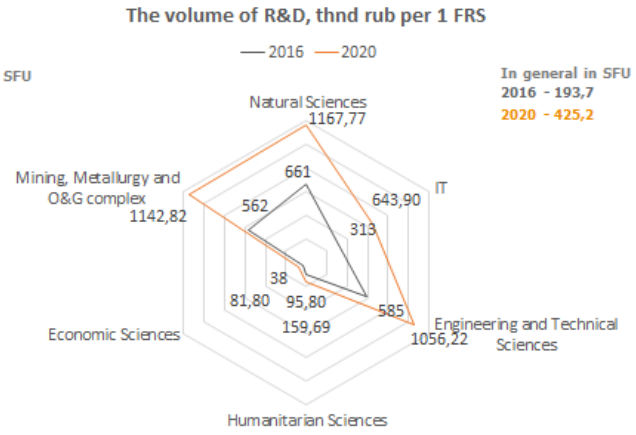












APPENDIX 6. BEST PRACTICES USED BY OTHER UNIVERSITIES

No.	University name	Short description of practices
Promotion of higher publication/citation rates		
1.	National Taiwan University	Faculty and academic staff motivation framework based on citation indices
2.	Czech University of Life Sciences (Prague)	Teaching staff motivation framework based on excellent publication performance, share of foreign professionals employed and publications with recognized journals Internal grant competitions for PhDs
3.	Hong-Kong University of Science and Technology	The dedicated team assisting the faculty and academic staff with applying for external grants
Attracting foreign professors, lecturers and researchers		
1.	Carnegie Mellon University	Flexible career opportunities with the three career paths: teaching career, research career and the combination of the two
2.	King Abdullah University of Science and Technology	Leveraging scientific and research resources as a key tool to attract top foreign faculty and academic candidates
3.	London School of Economics and Political Science	Integrated assistance with obtaining work permit/visa for academic professionals and their families
Attracting foreign students		
1.	Czech Technical University in Prague	The dedicated function that assists foreign students with transfer, accommodation, study plans and other issues related to the onboarding process
2.	The University of Arizona	International university fairs and programmes that enable potential students to visit classes led by the university academic representatives
3.	Columbia University	Flexible choice of the components of a academic programme run at a pace comfortable for a student

APPENDIX 7. SIBFU KEY RESEARCH AREAS

1) Biochemistry – climatology

The purpose of this research area is to contribute to the development of the climate policy of the Russian Federation and the international community, the development of a low-carbon economy with an orientation toward developing the competences of the innovative entrepreneurship in the area of ecosystems biogeochemistry, sustainable forestry and nature management, introduction of technologies for advanced development in forestry, security of the Russian Federation. Biogeochemistry and in particular the study of the carbon cycle, is an important area in climate research. The University investigates the movement of carbon between different environments, which makes it possible to comprehensively study climatic trends and build forecasts for the future.

In this field of study the University cooperates with such organizations as the Biogeochemistry and the Chemical Institute of the Max Planck Society (Germany), Kyoto University (Japan), Hokkaido University (Japan), IIASA international organization, Sukachev Forest Institute of the SB RAS[9], Severtsov Institute of Ecology and Evolution (IEE RAS), Institute of Archeology and Ethnography of the SB RAS, Texas University of Agriculture and Mechanization (USA), Swiss Federal Research Institute WSL (Switzerland) and PSI (Switzerland), Northeastern Federal University named after M.K. Ammosov (Russia).

Research in this area in the SibFU is carried out by the Institute of Ecology and Geography. The works of the Institute scientists are published in journals whose impact factor reaches 14.3. Together with partner scientific organizations the Institute implements projects of the RSF[10] and the Ministry of Education and Science of the Russian Federation for up to 50 million rubles.

Studies in this area are carried out among other things on the basis of the unique ZOTTO Observatory (station for integrating atmospheric observations of carbon flows) with a satellite antenna and a set of equipment for the assessment of net ecosystem exchange (gas analyzers, particle counters, photometers, nephelometers and other devices).

2) Biotechnology of new materials

The purpose of this research area is to create a center for biotechnological excellence in SibFU as one of the priority areas of the university oriented to fundamental scientific research and innovative activities in the area of biotechnology of new biomaterials. The unit is engaged in the search for solutions to the global problems of our time: the reproduction of food, raw materials and energy resources, the development of new environmentally friendly biomaterials, tools and technologies for cellular and tissue engineering and biocontractive organs, molecular genetic engineering of producers, the development of highly closed circulating technologies for the synthesis of targeted products and waste management .

Today SibFU researchers led by the world famous scientist Anthony J. Sinschi (H-index 54) are engaged in the creation of a scientific basis and experimental substantiation of the use of

[9] SB RAS – here and below "Siberian Branch of the Russian Academy of Sciences"
[10] RSF – here and below "The Russian Science Foundation"

biodegradable polymers of a given structure for the newest biomedical technologies. Developments in this area are used in medical institutions, biotechnology production, agriculture, environmental protection, educational institutions and are also useful for toxicological research. Today the Department of Biotechnology is a participant of the Federal Target Program "Development of the pharmaceutical and medical industry of the Russian Federation for the period until 2020 and a further perspective". The project implemented under the program has the goal of entering the Russian and global markets until 2020 with solutions for the production of material based on polymers of microbial origin capable of destruction. In this area of research, foreign scientists are actively involved to work in SibFU, including a scientist from India whose Hirsch index is 86, as well as researchers and teachers from England and the USA.

SibFU is the leader in citing publications in biology - the number of citations of publications of SibFU scientists in this area exceeded 5,300 in 2015. In 2016 scientists from the Biotechnology Laboratory of New Biomaterials published 15 articles in international journals indexed by the Web of Science the factor of which was 41.5. In addition to the articles SibFU scientists jointly with the Institute of Biophysics of the SB RAS publish monographs in major Russian and international publications[11,12]. The average citation index in the Scopus database in 2016 was 23 per one FRS, in the Web of Science – 15 per 1 FRS.

In 2015 the laboratory staff took part in the work of the European Congress on Biopolymers "ESBP - European Symposium on Biopolymers 2015", which resulted in their work being recognized for their best practices and contribution to research and engineering in the area of polyhydroxyalkanoates.

3) Biological Engineering

The research area of biological engineering is addressing the strategic task of improving the quality of life and human habitat through the development of biotechnological and biophysical directions. Today SibFU scientists received the greatest recognition in the sphere of bioluminescence. This is a scientific direction the purpose of which is to create a new generation of bioluminescent biosensors that are used for environmental monitoring, stress control in biological objects, endotoxicosis in the human body, food quality and quality of the environment in closed ecosystems.

The Laboratory of Bioluminescent Biotechnologies founded by Nobel laureate Osamu Shimomura, an honorary professor of SibFU, is operating in the University. Within the framework of the development of a new direction of bioluminescent analysis - enzymatic biotesting scientists of SibFU have developed a new technology for producing a dosed multicomponent reagent "Enzymolum", which is a model of a cell of luminous bacteria according to the luminescence intensity of which it is possible to determine the degree of

[11] Fundamentals of design and application of new generation agricultural products [Text]: [monograph] / Volova T.G, Zhila N.O., Prudnikova S.V. [and others]; Federal State Budgetary Institute of Science Institute of Biophysics, Siberian Branch of the Russian Academy of Sciences. - Krasnoyarsk: Institute of Biophysics SB RAS, 2016 - 212 p.

[12] Volova T.G., Vinnik Yu.S., Shishatskaya E.I., Markelova N.M., Zaikov G.E. Natural-Based Polymers for Biomedical Applications // Oakville, Canada. Canada: Apple Academic Press, Inc. – 2016. – 360 p.

contamination of the object. This method has a wide area of application: for monitoring the environment, as well as assessing the state of the human body.

In 2016 SibFU scientists published 176 articles in this area of study in journals indexed by Scopus and the Web of Science. The average citation rate per one FRS in the Scopus database in 2016 was 21.

Today the laboratory participates in the implementation of the following projects: "Experimental model of the bacterial cell: the reconstruction of metabolic processes in the hyaloplasm" (MES RF), "Comparative bioinformatic analysis of flavin-dependent oxidoreductase of luminous bacteria" (RFBR[13]), "Bioluminescent method of monitoring the body of athletes participating in the Universiade 2019 on the content of lactate in saliva "(KRFSSTA)[14]. Projects are implemented on the basis of the unique equipment, for example: a 96-core SMP server IBM x3950 X6 with a RAM of 3 TB, which has no analogues in terms of RAM per node in Russia.

4) Non-linear optics, spectroscopy and quantum chemistry

Scientific work in the area of non-linear optics, spectroscopy and quantum chemistry is consistent with the solution of problems within the global challenges of our time, providing for improving the quality of life, increasing productivity and reducing energy costs of electronics, developing alternative energy sources, including the creation of new solar energy. The main areas of research and development are:

- optical medical biotechnologies (methods of destruction of malignant cells with plasmon nanoparticles);
- development of solar energy converters into electrical based on plasmon and organic nanoparticles;
- "artificial photosynthesis" (interdisciplinary research on the creation of new solar energy);
- Development of new biopolymer submicron structures for bio-sensors and targeted drug delivery

In SibFU, such well-known scientists as Vladimir Shalaev (H-index 75), Hans Ogren (H-index 68) and Faris Helmukhanov (H-index 35) develop his area of study. In 2017, SibFU became the first Russian university of the JINGLE collaboration signing a cooperation agreement with the Swedish Joint Scientific Nanotechnology Center for Global Energy. Within the framework of cooperation, joint scientific work is planned to study fundamental processes in promising materials of nanoplasmonics, photosynthetic complexes, quantum dots, as well as in a variety of light-emitting devices in order to create and develop new methods and technologies for accumulating and converting energy from alternative sources.

Scientific laboratories closely cooperate with Russian and foreign scientific organizations, such as the University of Cadiz (Spain), the Royal Institute of Technology (KTH, Stockholm, Sweden), the Technical University of Dresden (Germany; Prof. A. Eichmüller, world leader in the area of synthesis of colloidal quantum dots - artificial luminophors), Krasnoyarsk

[13] RFBR – here in below “Russian Foundation for Basic Research”
[14] KRFSSTA – “Krasnoyarsk Regional Fund for Support of Scientific and Technical Activity"

State Medical University, Kirensky Physics Institute of the SB RAS, Astaf'ev Department of Chemistry of KSPU.

In 2015-2016, the staff of the Laboratory of Nonlinear Optics and Spectroscopy published 36 articles in journals indexed by the Web of Science and Scopus, including 18 articles in the journals of the first quartile; an article was published in Physics Reports, which received about 25 citations in a year and a half. Articles of scientists of the laboratory in collaboration with foreign scientists are published in the journals of the first percentile and the first decile[15]. The total impact factor of the articles for 2 years was about 102. In addition, over the same period, two large grants were received for the amount of 18 and 12 million rubles for 3 years, two grants of the President of the Russian Federation for the abroad study for the amount of about 3 million rubles and a Presidential scholarship for young scientists. The staff of the scientific laboratory took part in the Postdoc SibFU program, the program of its own PhD degrees in SibFU. Also since 2016, the program of the double diploma PhD together with the Royal Swedish Academy of Sciences is being realized.

5) Designing promising crystalline and nanoscale composite and film systems and developing physical phenomena for devices of functional electronics

Nowadays there is an interest in the direction of spin-dependent phenomena due to the fact that as an instrument of influence on the material one can use not only the electron charge, but also its spin degree of freedom. Along with the development of new physical phenomena and principles, this leads, in turn, to a transition to the scale of the nanoscale. The use of spintronic devices as memory elements, reading heads, sensor elements (sensors, receivers, etc.), devices for movement and rotation control, as well as micromechanical devices has already become widespread.

The Institute conducts research on the basis of unique equipment for the deposition and analysis of films of various types, including magnetic and nanoscale films and also actively cooperates with scientific organizations and companies such as the Institute of Physics of the SB RAS and NPP "Radio Communications".

For the last 5 years SibFU scientists have published more than 170 articles in journals indexed by Scopus and more than 170 articles in journals indexed by Web of Science. Articles of scientists working in this direction are published in the journals of the first and second factors, including such journals as Applied Physics Letters (impact factor-3) and Thin Solid Films[16] (impact factor-1.9). The average citation rate per FRS in the Web of Science and Scopus databases was 15.

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[15] Gleb Baryshnikov, Boris Minaev, and Hans Ågren, Chemical Reviews, 117 (9), pp 6500–6537, (2017)
Denis Ceolin, Jean-Pascal Rueff, Andrey Zimin, Paul Morin, Victor Kimberg, Sergey Polyutov, Hans Agren, Faris Gel'mukhanov, Journal of Physical Chemistry Letters, 8 (12), pp 2730–2734 (2017)
M. Schroter, S. D. Ivanov, J. Schulze, S. P. Polyutov, Y. Yan, T. Pullerits, O.Kuhn, Exciton-Vibrational Coupling in the Dynamics and Spectroscopy of Frenkel Excitons in Molecular Aggregates, Physics Reports, 567:1-78 (2015)
Rafael C. Couto, Vin´ıcius V. Cruz, Emelie Ertan, Sebastian Eckert, Mattis Fondell, Marcus Dantz, Brian Kennedy, Thorsten Schmitt, Annette Pietzsch, Freddy F. Guimara˜es, Hans Agren, Faris Gel'mukhanov, Michael Odelius, Victor Kimberg and Alexander Fohlisch, Nature Communications, v.8, p. 14165 (2017)

[16] V.G. Myagkov, V.S. Zhigalov, A.A. Matsynin, L.E. Bykova, Yu.L. Mikhlin, G.N. Bondarenko, G.S. Patrin, G.Yu. Yurkin. Formation of ferromagnetic germanides by solid-state reactions in 20Ge/80Mn films. // Thin Sol. Films.-2014.-V.552.-№3.-P.86-91.

6) Metallurgy and metal working of aluminum and aluminum alloys

Today, the Institute of Non-Ferrous Metals and Materials Science (INFM & MS) conducts research in the area of science and technology, covering the processes of obtaining metals from ores or other materials, as well as processes associated with changes in the chemical composition, structure and properties of metal alloys. In particular, the following projects are being carried out:

- creation of high-tech, super-powerful and energy-efficient aluminum production by electrolysis of cryolite-alumina melts based on RA-550 technology;
- development of economically-alloyed high-strength Al-Sc alloys for use in road transport and navigation;
- development of scientific, technical and technological solutions for the creation of an import-substituting technology for obtaining aluminum-titanium ligature for the modification of aluminum and its alloys, which is characterized by low energy and material consumption.

The main advantage of this area in SibFU is the high degree of practical applicability of research results, the availability of unique equipment for R & D implementation, as well as close contacts with customers - the largest companies in the mining and metallurgical industry in Russia.