Targeting excellence today to impact tomorrow

Strategy 2021–2025

Skoltech
Imagine the university, that is a top choice for the most talented students. Students motivated to explore the most promising areas of science and technology. Pushing the boundaries of Artificial Intelligence and Communications, Life Sciences, Cutting-edge Engineering and Advanced Materials, Energy Efficiency and ESG, Photonics, carrying out Advanced Studies.

Imagine the university, that is recognized globally. University that hosts world class research centers.

Imagine the university, that produces substantial impact on the national economy. Accumulates research and technology expertise, develops and transfers breakthrough technologies to the industry, supporting technologies implementation and witnessing scaling, creates new enterprises and jobs.

Imagine the university, that is an international dynamic intellectual hub, where talents enjoy studying and working in inspiring and supportive environment.

Skoltech is to be such a university. Cultivating excellence today, we impact tomorrow.
Mission

Skoltech facilitates the economy and society development by academic and technology excellence and entrepreneurial spirit.

Vision

Skoltech is an international university of a new type in Russia, fostering research in advanced areas of crucial importance for Russia and the world, promoting entrepreneurship, educating future science, technology and business leaders capable of working in a rapidly changing research and technology landscape. Skoltech looks beyond a university 3.0, integrating education, research and innovation to achieve a ground-breaking advance in high-tech and transfer best international practices to the national economy.

Skoltech today

Ten years ago, Skoltech was established from “ground zero” with an ambitious vision to be a great institute of science and technology. In a decade, Skoltech built 13 Centers in the most advanced areas. Faculty and researchers established state-of-the-art labs, produced impactful papers which brought Skoltech the rank of a top-100 world young university (Nature Index) and the title of the best university in computer science in Russia (Guide2Research). True to its mission, Skoltech succeeded to become a trusted partner of many top companies in Russia and the world. Distinctive technology expertise is provided on large-scale national programs. Efforts of translational research resulted in a portfolio of over 120 patents. Skoltech produced more than 100 startups, 70 companies are operating in Skolkovo. Skoltech graduated seven cohorts of students, successfully employed in top companies in Russia, advancing own startups or continuing academic career in Russia and all over the globe. Many changes are coming, we grow stronger, to deliver even more pioneering results.

Strategic governance [page 11-31]

Governance & management

Global standing

Favorable environment and operational sustainability

Educating leaders [page 32-43]

1st choice University in Russia

Culture to create

Distinctive baccalaureate

Fostering student success

Strong alumni support

Impact [page 44-58]

World level research centers

Intellectual core of the ecosystem

Cultivating entrepreneurial spirit and readiness

National Think Tank

Integrator of large scale programs

Community engagement

Goals

• to become a world leading university producing substantial economic impact in Russia
• to become a full-fledged university providing education in BSc, MSc and PhD programs
• to become the 1st choice university for the brightest students in Russia

Key indicators

100 bln Rub

Skoltech impact on the national economy

150 startups

founded by faculty, researchers, staff, students and alumni, with Skolkovo residency or received support from other institutes of development

140 papers

annual output in Nature Index and A* conferences

70%

of graduates employed in innovation sector in Russia
Strategy context

Preface

A new model of university in Russia, Skoltech was established in 2011 in collaboration with MIT with the vision of being a world-leading institute of science and technology. Starting from zero, with no faculty, students or campus, in nine years Skoltech has rapidly advanced along the way towards a top-100 world young university appeared in Nature Index ranking.

With MIT support, Skoltech went through the startup and ramp-up phases. Relying upon the expertise of the top world-class university, the core elements were designed and brought into operations: Centers for Research, Education and Innovation, Center for Entrepreneurship and Innovation, faculty and student recruitment, curriculum.

During the growth phase (2016 – 2020), Skoltech significantly expanded in all dimensions, reaching capacities of a fully functional university. The intense hiring campaigns helped to establish high-level research groups led by internationally known faculty demonstrating impactful academic results. As of today, faculty publication output, per capita, is on par with the world leading young universities, such as NTU, HKUST and KAIST. The student cohort exceeds a thousand, while the interest to Skoltech grew by an order of magnitude. The educational portfolio reached eleven MSc and seven PhD programs, with three now having EU accreditation. Skoltech campus was recognized as an architectural masterpiece, but what is most important, it provides state-of-the-art research facilities, multifunctional areas for teaching, learning, and working. Leveraging strong technology expertise in the areas important for Russia and the world, a wide portfolio of industry funded projects has been shaped. Students, faculty and alumni established more than one hundred enterprises, creating jobs and bringing value to the national economy and society. By doing so, and evolving with diversification of global technology trends, Skoltech enhanced the role of Russia in the international science and technology agenda.

Looking back to a span of ten years, Skoltech has accomplished much. Looking towards the future, we strive to achieve more.
Towards the strategy

The present strategy is the outcome of a process designed on the principles of inclusiveness, transparency and collegiality. Working shoulder to shoulder, the executive leadership, Directors of the Centers, representatives of the Skolkovo Foundation, Academic Council and Board of Trustees contributed to intense discussions to reach balanced views on the avenues for development, transparency of constructive inputs, consensus in decision-making.

The strategic planning took almost a year. Commenced with reflection on achievements, it was continued with SWOT, distilled into the common perception of Skoltech today and directions to go – the vision which gave birth to the Strategy concept. Sixteen task forces worked on bringing the concept to the Strategy 2021 – 2025 document. The National Economic School, a Skoltech Founder, was involved in developing the methodology for the KPI measuring Skoltech impact (Skoltech economy).

Strategy development timeline

- **FEBRUARY.**
  - Annual session
  - Review of results and functional strategies

- **APRIL – JUNE.**
  - SWOT analysis
  - Defining SWOT of Skoltech as a whole, and functions

- **AUGUST.**
  - Vision
  - Consultations of leadership and CREI Directors

- **SEPTEMBER.**
  - Strategy concept supported by the Academic Council and Board of Trustees

- **OCTOBER.**
  - Strategy task forces
  - Consultation sessions on the scope of the strategy directions

- **NOVEMBER.**
  - Strategy 2021 – 2025 approved by the Academic Council, Board of Trustees, endorsed by the General meeting of Founders

- **DECEMBER.**
  - Strategy 2021 – 2025 approved by the Academic Council, Board of Trustees, endorsed by the General meeting of Founders
Planning context

The context is defined predominately by the outcomes of SWOT, made by the Centers and administration (refer to appendix for more details).

Skoltech demonstrates excellent academic outcomes and possess solid technology expertise in certain areas, thanks to the highly competent faculty. At the same time, the capacities to form task forces (teams of expertise) to advise upon and to assist in development in national large-scale programs are limited. Operational efficiency is questionable and requires improvement. Complex and time-consuming, some processes take excessive efforts of faculty, students and staff, distracting from core activities.

Skoltech opportunities and threats are caused by complex and dynamic global environment, trends in higher education, national economy and wider context. The pandemic brought challenges and, equally, opportunities to universities across the globe. As stated in the SWOT, the future pathways are viewed in new funding programs in biomedical research, obviously, but also in artificial intelligence, energy efficiency and ESG, and other areas, as the pandemic is changing dramatically the way we live and work. Global digitalization, also stimulated by lockdowns, gives a chance to enhance Skoltech online capacities in teaching and learning, marketing, recruitment, and day-by-day operations. The rapidly growing competition for talents is defined as one of the major threats.

On the national scale, the main competitors are top universities of 5 top 100 project, also high-tech companies offering programs tailored for immediate employment. To address a threat of financial constrains related to decrease of the federal funding and devaluation of the national currency, we will move towards operational sustainability, diversifying income and being more selective in making commitments to the projects with high operational costs from the federal funding.

As agreed by the task forces participants, the strategy enablers are English-speaking intellectual environment, strong commitment of personnel and students towards academic and technology excellence, cutting-edge research with consideration of use, cultivation of entrepreneurial spirit.

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1 The Project was launched in May 2013 in accordance with Decree of the President of the Russian Federation No. 599 “On measures to realize state policy in the sphere of education and science” with a goal to maximize competitiveness of leading Russian universities.
**Strengths**

Highly qualified personnel, 
multi-cultural English-speaking 
environment

Excellent publication record, 
top-100 Nature Index

Young Universities

Favorable teaching 
and learning environment, 
strong students

Solid expertise and 
recognition in select 
technological areas

Best-in-class campus 
and research facilities

**Weaknesses**

Disunity of purpose 
and commitment

Thin faculty in certain 
areas, weak focus 
on entrepreneurship 
and problem-driven 
projects, limited capacities 
for building task forces

Business processes are 
behind Skoltech growth, 
red tape

Skoltech PhD degree not 
recognized in Russia, yet

Absence of student dormitory

**Opportunities**

Increasing demand in life 
sciences domain due 
to COVID, new funding 
opportunities

Reform of the institutes 
of development, catching 
up with national priorities

Wider involvement 
of Founders and Trustees 
in capacity building

Contribution of time, talent 
and treasure of alumni

Hybrid operations 
(on campus and online)

**Threats**

Growing competition 
for talents among universities 
and companies

Limited job opportunities 
in national market 
for graduates of certain 
specialization, increase 
of brain drain

Changes in state regulations, 
priorities, economy, decrease 
of state committed funds

Complex positioning 
of Russia in the world

Epidemiologic uncertainty
Mission

Skoltech facilitates the economy and society development by academic and technology excellence and entrepreneurial spirit.
Vision

Being an international university of a new type in Russia, as envisioned by the founders of the Skolkovo project, Skoltech is the central element of the institutes for development to re-create a foundation for national high-tech industry, leveraging on the boost in research and entrepreneurship in science-intensive areas of the economy. In this paradigm, Skoltech fosters research in the most advanced areas of crucial importance for Russia and the world, and promote entrepreneurial activity while training science, technology and business leaders capable of working in a rapidly changing research and technology landscape. Skoltech looks beyond a university 3.0, integrating education, research and innovation to achieve a ground-breaking advance in the high-tech sector and transfer best international practices to the national economy. Our goal for 2025 is ambitious. Skoltech will become a full-fledged world leading university, producing substantial economic impact in Russia, generated by implementation of applied research results, technology licensing, creating new enterprises, jobs and revenues. Skoltech will become the 1st choice university for the brightest students in Russia, providing world class education in bachelor, master and PhD programs. The central to the strategy is Targeting Excellence Today to Impact Tomorrow. We shall target excellence in everything we do. A key ingredient of a world-leading university is viewed in academic and technology prominence reflected in the highest level of research, a strong reputation in chosen technology areas, international competitiveness of the educational offer. Operational excellence enables a favorable and supportive environment for students and personnel, which is a must for delivering the highest academic and technology results. In cultivating excellence, Skoltech will be chosen by the talents as the place to work and study.
The strategy implementation requires a focused governance and management framework, balanced size and shape targets, strong international outlook.

I.
Strategic governance
Target size and shape

By design, Skoltech is a small university providing research intense education in cutting-edge areas of science and technology. The initial parameters and targets of Skoltech model – numbers for faculty, researchers, students, Centers and educational programs – were defined in support of this vision.

In the course of development, responding to changing priorities and external factors, Skoltech adjusted the targets for faculty and students, Centers, at the same time being committed to the founders’ vision. In the light of aspirations towards excellence and sustainability, we balance the size and shape parameters. Balancing is not only about resources availability, but also about managing Skoltech development in a more focused way, so as to maintain its elite status.

By 2025, Skoltech will have 200 full-time faculty and 1200 students, including 20% of internationals. These targets will ensure a favorable student-to-faculty ratio which is important, in turn, for impactful research, teaching and learning excellence.

Skoltech will graduate annually ~340 MSc and PhD students. The first cohort of BSc graduates leaves Skoltech in 2023 under a joint program with a partner university.

Faculty, postdocs, researchers

The highest international standards for faculty recruitment allowed to establish the academic core in majority of Centers and educational programs. Considering the need to build task forces and play a substantial role in the national science and technology agenda, recruitment activities will be more focused in terms of the target professional competencies. During 2021 – 2023, considering the ongoing lab construction, faculty recruitment will be limited, with priority to young rising stars with a record of achievements and potential in the corresponding fields. Open calls will be resumed once Centers2 have permanent research facilities on campus.

Other dimensions for consideration include a share of international
The amendments to Scholarship Policy establish a compulsory requirement to present original hard copy of diploma to prevent double affiliations of students (introduced in 2019).

Faculty and full-time faculty. Skoltech is keeping the share of international faculty as 20%, the target for 2025 is 30%. Significant investments in research facilities, teaching and learning spaces allowed Skoltech to grow a share of full-time faculty up to 75% (September, 2021), these efforts will be continued. The research personnel is presented with 65% of postdocs, 15% of which are internationals. This is a baseline for maintenance. New positions will be opened and financed from faculty research packages, provided by Skoltech, as well as sponsored research funding.

Student cohort

To keep a profile of a world leading institute of science and technology, Skoltech strives to maintain a multicultural English-speaking cohort represented by talented and ambitious students from Russia and the world. A variety of channels tailored to specifics of national and international recruitment have been established. The merit-based selection is compliant with ethics values and international academic standards, recognizing every individual equitability regardless race, nationality, and gender.

Given the projections for the state funding (the main funding source for basic stipends), MSc and PhD intake will remain unchanged. The priority to enroll highly motivated students will stay on the agenda³. Double degree (cotutelle agreements) programs with top national universities such as Higher School of Economics, Moscow Institute of Physics and Technology, as well as leading international schools will be continued for utilizing advantages of enhanced curriculum and extensive opportunities for students’ development.

The share of internationals will be kept as 20%. It will be equally important to balance international enrollments in the programs. Building on success of piloting, the tailored outreach campaigns to Germany, Italy, USA, Mexico, India, China, Nigeria, and Kazakhstan will be continued (also refer to “Global standing”). The share of PhD students in the student cohort is an important

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³ The amendments to Scholarship Policy establish a compulsory requirement to present original hard copy of diploma to prevent double affiliations of students (introduced in 2019).
indicator of a research intense university, we will keep it as 40 – 45%. Extra PhD positions will be opened sponsored from external funds, as the increase is requested by many programs and faculty. A pilot cohort of bachelor students is expected to join Skoltech under the program in collaboration with a partner university. Skoltech will intensify efforts on involving industry partners to support student scholarships, the target share of students receiving industry scholarship is 10% of the cohort by 2025.

Graduates

Skoltech graduates, irrespective of the chosen career track – academia, high-tech industry or entrepreneurship, are successful in employment as evidenced from the survey. At the same time, the shares of career tracks should be balanced towards increasing a number of graduates involved in entrepreneurship. The attainable target is to have 15% of annual graduation, involved in startup activities by 2025.

Target Domains

Skoltech will continue to strengthen its academic and technology profile in the target domains, viewed as strategic areas for developing education, scientific, research and development and (or) innovation capacities. The agenda in the target domains is driven by efforts of Centers and executive leadership, and is approved by the Academic Council. In 2021, Skoltech made a revision of target domains and reconfiguration of the Centers to make the agenda more systematic as well as address select hot science and technology topics emerged.
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<td>• Computer Vision</td>
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<td>• 5G development</td>
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<td>• Wireless technology perspective studies</td>
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**STRATEGIC GOVERNANCE**

**SKOLTECH STRATEGY** 2021/2025

**Center for Research, Education and Innovation**

**Project Center**

**Center**
Center for Research, Education and Innovation

Centers for Research, Education and Innovation (CREIs) are main building blocks of Skoltech development. Contributing to Skoltech mission, the CREIs strive for the organizational model in a way that education is based on ‘curiosity-driven’ and ‘problem driven’ research that brings novelty and impact to economy and society. Also, CREIs shape innovation culture to establish new enterprises, generate know how and intellectual property. The globally competitive educational programs, professional training programs are designed and delivered by the Centers’ faculty. The Centers are also involved in consulting, community engagement, promotion of Skoltech brand and prominence.

The core parameters of a Center were defined at the initial stages of Skoltech development and followed by Skoltech to keep the model:

- a Center has a ‘critical mass’ – is of sufficient size of faculty and researchers, to attain a leadership position and address important and high-impact research problems, visible for development of the target domain(s).
- a Center’s research agenda is sufficiently broad to design and deliver own educational program.
- a Center seeks to transfer created knowledge and solutions to high-tech companies and wider communities.
- a Center is balanced in research, education and innovation activities.

Project Center

Project Centers are organizational units of new type specifically established to address priorities of national science and technology agenda. Focusing on producing impact on the national economy, Project Centers solve problem-driven tasks within areas which have potential for technology breakthrough and scaling.

Project Centers primarily conduct R&D and innovation activities, while educational component is supported with select courses, research advising, as well as professional training programs for companies, institutes of development.

The core parameters of a Project Center include:

- a Project Center addresses important problems, relevant for national technology excellence,
- a Project Center’s research and development agenda is focused, problem driven and of applied nature,
- a Project Center transfers designed technology solutions to the industry (TRL > 5).
Educational programs

Aligned with the target domains, the programs blend fundamental knowledge with hands-on research, applications and entrepreneurship, providing students with wide opportunities to design customized learning trajectories using a rich course catalogue as well as activities offered outside the formal degree requirements.

The strategic priorities lie in continuous improvement of programs national and international competitiveness, accounting for expectation of students, industry partners, as well as factors influencing graduates’ employability.

New MSc and PhD tracks and programs will be launched in the fields where the Centers will accumulate sufficient capacities, considering a thorough review of proposals by the Academic Council. A distinctive baccalaureate will make Skoltech educational portfolio comprehensive.

Laboratory

A laboratory is established inside a CREI to focus on a certain direction(s) of research, education and innovation agenda. The core parameters of a laboratory are as follows:

– a laboratory is not a single faculty activity, the core personnel is represented by at least two senior faculty or senior level researchers, depending on research agenda,
– a laboratory is sustainable in operations irrespective its academic leadership,
– results of a laboratory contribute to the CREI results.

Research group

Research groups are teams of faculty, postdocs, researchers, students of a Center, or involving academic and engineering personnel of other Centers to work on cross-Centers directions or projects. Cultivating a spirit of mentorship, a research group plays a role of a ‘school’ under faculty’s leadership to train postdocs and students, and prepare them for work in a dynamic science and technology landscape.
Research Facilities
Effective and focused governance and management frameworks are enablers for success of the strategy implementation.

**Governance framework**

As established in the Charter, Skoltech governance is based on the principles of collegiality and transparency. The governance framework is maintained by the General Founders Assembly, Board of Trustees, Academic Council and President.

The General Founders Assembly is the highest collegial governance body which approves the Charter, appoints the Board of Trustees and the President, approves Skoltech participation in legal entities and membership in professional associations.

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**General meeting of Founders**

highest collegial governing body

**Board of Trustees**

oversight of strategy and plans, financial standing, issues related to management and organizational model

**Academic Council**

academic governance of research, education and innovation activities

**President**

**Executive management team**
The strategic issues of Skoltech development are overseen by the Board of Trustees and Academic Council within the authorities delegated in the Charter. While the Board monitors Skoltech strategic plans and results, financial standing, reviews competing priorities influencing strategic development, the Academic Council oversees the academic domain, focusing on ensuring highest level of research and education. The President is responsible for the overall management of the Institute. The executive leadership, represented by Provost and Vice Presidents overseeing particular functions, is appointed directly by the President. The governance framework will be further enhanced through maintaining relevant authorities and membership of the collegial governing bodies. Pursuant provisions of the Charter, the Board of Trustees was rotated in 2021, with appointing a new composition to serve for the next five years. The Academic Council is rotated in 2022.

Management framework

We will prioritize stronger collegiality, balanced decision-making, nurturing a culture of responsibility and accountability of the management as a team. The system of balanced scorecards, cascading the mission, strategic goals and targets to the executive leadership and further to subordinated functions will be introduced to focus the team on reaching Skoltech wide goals. Institutionalization will be continued with fine-tuning core policies and procedures. The priority package includes polices regulating planning and reporting, budgeting, personnel total reward, promotions and assessment, scholarships for students, project activities, IP and technology licensing, and operations. No less important is to nurture a culture of inclusion and responsiveness at all levels of the institute, increase the efficiency of functions. The executive team will be more transparent and proactive in communicating plans and decisions related to Skoltech core activities.
The international outlook has always been on Skoltech agenda as evidenced in the strategic partnerships, faculty professional network, diverse mix of students and academic staff, and global alumni network. In the last years, Skoltech global standing has been grown significantly: mostly half of the annual publication output is co-authored with international universities and research centers, the grant portfolio is enriched with EU funded projects, three PhD programs received EU accreditation. Skoltech entered the list of top-100 young universities of the Nature Index, making it the only Russian institution to achieve this.

We believe that international standing is predominantly founded on excellence in research, education and innovation. The stronger position will require stronger commitments to excellence, also with respect to setting and maintaining international collaborations. Positions in international rankings will be a consequence of excellence. Said that, no less important is to conduct targeted marketing and public relations campaigns to promote Skoltech to the global community.

Evolving international partnerships

Leveraging success of the international collaborations of initial stages, the partnerships will be evolved into more focused formats, allowing to access grant programs and research consortia. In the light of complex positioning of Russia in the world, funding opportunities are envisioned in European programs (e.g. HORIZON, programs sponsored by the grant agencies in Germany and France). Simultaneously, we will be more purposeful in launching new partnerships. The priority will be given to collaborations with clear opportunities for capacity building in research, education, and innovation.

Professional networking

Presence in international professional community is important for raising awareness of Skoltech research and technology expertise. Faculty membership in visible professional boards, societies, program committees will be prioritized. It is also important to be more
selective in choosing international conferences or making decisions on organizing (co-organizing) professional networking events – standards of excellence should be targeted (reference example: Skoltech membership in the executive organizing committee of the International Congress of Mathematicians 2022). Membership in the global R&D and technology alliances will be expanded. This will provide opportunities to promote Skoltech technology solutions, also become a part international networks involved in development technology concepts.

International student recruitment

Attracting students from the globe enables Skoltech culture of diversity and English-speaking environment. Skoltech unique educational offer (also see “1st choice University”) will be promoted globally in QS and THE networks and international fairs while international campaigns will be conducted; Germany, Italy, USA, Mexico, India, China, Nigeria, Kazakhstan are the countries of particular interest. We will also expand the country tailored promotion channels (e.g. China). The campaigns will be regularly adjusted in terms of the target regions (countries), promotion and recruitment tools. Short-term visiting opportunities will be promoted with a goal to attract students from top international universities.

Metrics of progress

% of sponsored research received in international grant programs, % of student enrollments from target countries, metrics of Skoltech international media coverage, moving forward in international rankings.
Favorable environment and operational sustainability

Skoltech is committed to provide students and personnel with opportunities to create, as well as to intellectual, cultural and merit development. The enablers for talent engagement and flourish are viewed in intellectual dynamic environment, professional growth and recognition, transparent policies and user-centered services, a brand-new campus with facilities and amenities required for focused, successful and enjoyable study and research. No less important is maintaining operational sustainability - efficient management of finance resources, facilities and infrastructure.

Intellectual dynamic environment

Skoltech will maintain a multicultural English-speaking environment, with community represented by staff and students from across the globe. To support this, recruitment campaigns and visiting programs will be implemented.

We will also increase a number of on-campus networking events, which stimulate exchange of advanced scientific ideas and concepts (Falling Walls, TEDx, Science Slam, etc.)

HR strategy

The development of HR strategy aligned with Skoltech strategy is a priority agenda for 2021. Given the Strategy aspirations, the ultimate goal is to ensure that Skoltech attracts right people with right skills to reach strategic goals. People feel valued, supported and engaged to perform their functions, and even more. Also important is the joint perspective - creating a sense of belonging “We are Skoltech”.

The strategy will be organized around the integrated framework of elements. Among the first measures planned are formalizing employer value
proposition, building a faculty tenure track ladder, revision of performance and reward system.

Student-centered services

The integrated approach to student support services is a priority. A consolidated database for keeping student records will be set as a base for design for digital services. A multifunctional service center will be opened to process online requests for services of registrar, visa and migration support, accommodation, travel, medical and life insurance. The Center will function on a ticket-based system, allowing to track efficiency of requests completion. The service package will be extended by psychological counselling on campus. To keep the educational offer attractive for internationals (also see “1st choice University”) Skoltech will provide accommodation in Skolkovo ecosystem apartments. The EU competitive conditions (affordable pricing, convenient services) will be offered.

Campus

The campus is instrumental for delivering the mission. We are fortunate to have the award-winning campus at the Skolkovo Innovation Center with state-of-the art facilities allowing for research and education of the highest level. The efforts for making community spaces not only functional, but also cozy will be systemized: key design concepts will be aligned with Skoltech brand identity by the marketing and campus management teams. In designing the spaces, students’ creative and vibrant ideas will be encouraged. We will also promote the campus to external audiences: points of presence of global educational players, such as ETS (TOEFL, GRE exams) will be opened.
Funding model

In 2011, the Government of the Russian Federation made a strategic decision to invest in establishment of a new type of university in Russia (also refer to “Mission and vision”). The significant investments allowed to attract high profile faculty and researchers, offer adequate scholarships for talented students, establish state-of-the-art infrastructure enabling the highest quality of research, teaching and learning.

At the same time, Skoltech made efforts and succeeded in diversifying sources of income by growing a share of sponsored research in the budget. The strategic priority is to ensure a further growth and diversification of revenue, implement cost containment approaches, maintain financial discipline to ensure that resources are invested to support the strategy in the best way. The annual budgets of the Centers will be planned considering the baseline workload:
Efficient administration

Excellence in administration services is measured with meaningful policies (also refer to “Governance and Management”), quality, accountability and transparency of processes, a strong internal client oriented approach demonstrated by all staff members, responsiveness to the needs and requests of service users.

We will further move towards a ‘less paper’ approach and electronic processing to reduce approval chains and time. Grants and contracts management systems, contract approval framework, systems of HR management will require immediate improvements, as defined in the SWOT.

Fundraising

Fundraising is crucial for achieving long-term operational and financial sustainability. Skoltech has unique value propositions for targeted groups of prospective donors. This includes shaping opportunities to be at the forefront of a great game-changing phenomenon, which is Skoltech, to approach solutions to both national and global technological issues, also fulfill philanthropic aspirations and willingness to contribute to society. Skoltech networks will open opportunities to advancing donor companies, e.g. by knowledge exchange on global science and technology trends.

Fundraising will be organized around building long-term relations with high profile individuals, corporations and corporate foundations, alumni (also see “Strong support from alumni”). The priority fundraising formats are viewed in named faculty positions, student scholarships and fellowships, target support for research initiatives, sponsorship and naming opportunities in scientific events, naming opportunities on campus.

Metrics of progress

retention rates for academic and non-academic personnel, Skoltech rank as an employer (personnel surveys), rating of administration services, financial indicators on sources of income, net profits, % of sponsorships and donations to the annual operational budget and endowment.
Designed by Herzog & De Meuron (Switzerland)

Campus

- Research facilities
- Multifunctional teaching and learning spaces
- Student cohort spaces
- Community building spaces
- Library
- Meeting rooms
- Open space offices
- Inner yards and recreation zones
- Café and canteen

10 min to Moscow subway station (D1)

136 000 m²

4 levels

880 m
Skoltech will be the 1st choice university providing elite research intense education for the brightest BSc, MSc and PhD students – future leaders in science, technology and business, capable of working in a rapidly changing research and technology landscape.

II. Educating leaders
The centerpiece of unique educational offer at Skoltech is the integration of a broad variety of courses in cutting-edge areas of science and technology with advanced training in entrepreneurship and innovation, deep immersion in R&D projects performed by the Centers and industry-oriented labs. In the last years, a significant progress has been made towards designing the globally competitive portfolio of the graduate programs. The course catalogue doubled in size. Three PhD programs received the EU accreditation based on criteria of academic excellence, positioning, organization and management, supervision and training, integration to the job market. Simultaneously with Skoltech programs development, the national higher education landscape was evolving. Many universities increased the quality of offer by attracting international faculty, launching courses in English, setting collaborations with international schools, scholarships programs and investing in facilities. In addition, flexible programs to master programming skills and immediate employment provided by high-tech companies entered the market. Besides, the attractiveness of Skoltech offer is also affected by a non-recognition of Skoltech PhD degree in Russia, absence of the institution to provide students with military training, limited student accommodation capacities. These factors make it important to define how we will maintain a truly distinctive offer which will differentiate Skoltech from other national and international universities.

Elite education

Skoltech elite education is ensured by selective cutting-edge content of the academic programs, curriculum flexibility, allowing students to design individual study paths, world class faculty excellence in teaching and supervision, students’ internships to the top international universities. These components are supported with a favorable environment and wide opportunities for career development. The portfolio of MSc and PhD programs will be enriched by new tracks and new programs in emerging directions (e.g. Agro, Internet of Things and Wireless Technologies), also involving international universities and industry partners.
The course catalogue will further grow in the parts of entrepreneurship and innovation, courses with applied components, research hands-on learning seminars. Relevance of curriculum will be ensured by support of the International Advisory Committee, review panels, Industrial Councils, high-tech companies. Teaching excellence is a core for maintaining a high-quality educational offer. Junior faculty will be supported with programs for raising teaching skills. Another measure required is balancing faculty load (teaching, research advising).

The in-house center of expertise will be established to support building online capacities. The center will design quality standards, provide methodological support, facilitate production of high-quality content.

Accreditation and recognition

International accreditation is an indicator of quality of educational programs. In addition to EU accreditation of PhD programs, which will be continued, we will address the issue of recognition of Skoltech PhD degree in Russia at the official level, also involving the Board of Trustees and Founders.

Promotion

Further investments will be made in promoting the educational offer nationally and globally (also see “Global standing”). Clear messages on the value proposition of each program aligning to the target audiences will be developed. Digital promotions will help to widen a coverage. Marketing analytics measuring students’ expectations, competitiveness of the offer, results of outreach campaigns will be also accumulated.

Metrics of progress

quality of student intake, 
% of drop-offs per programs, 
analytics measuring attractiveness of the educational offer from target audiences, 
students’ satisfaction with learning experiences at Skoltech (survey).
Culture to create

Skoltech programs and courses are designed considering the learning outcomes for science, engineering and innovation leadership, developed under the guidance of Skoltech Founding President, Ford Professor of Engineering at MIT, Edward Crawley with involvement of representatives of high-tech companies, academia and business. Knowledge of applied science and engineering is included in the component “Disciplinary knowledge and reasoning”. Although the programs have rich curriculum, the engineering component, especially of the industry-oriented programs, such as Photonics, Material Sciences, Space and Engineering Systems, shall be expanded to be on par with the international peers, as seen from the relatively low rate of graduates’ employment in engineering companies.

To ignite creation of contemporary engineering school in Russia and enable a technological leap, Skoltech will renew a focus on nurturing the culture to create.

Curriculum enhancement

To increase employability of graduates in high-tech engineering industry, the programs will be fine-tuned from the point of needs of the companies (also see section “1st choice University”). Expertise of the Industrial Councils of Centers and Skoltech partners will be utilized for receiving target recommendations. The other measures will include supporting students’ participation in technology projects (also see “Fostering student success”), expanding guest lectures of industry experts, increasing the number of PhD theses focusing on engineering problems.

Interdisciplinary projects initiative

The interdisciplinary projects initiative will be launched to bring engineering students from multiple programs together, with a goal to tackle real problems...
set by the industry. Among the potential directions are Robotics, Manufacturing, New Materials Design, Photonics. The initiative will be managed by faculty with strong industrial experience, who will ensure projects design, mentoring, setting collaborations with industry and best-in-class international engineering interdisciplinary projects, train student teams for global competitions. The flagship project, focused on engineering problems relevant to the needs of Skolkovo Innovation Center will be piloted. The committee representing engineering faculty and Skoltech industrial partners will be established to design the project concept, plan resources and a timeline.

Metrics of progress

number of engineering-oriented students and faculty involved in the initiative, number of industry partners / international partners collaborating.
Skoltech was established as a graduate research and entrepreneurship intense university. Although proposals on opening a baccalaureate appeared earlier, they were not viable due to insufficient critical mass of faculty and absence of permanent campus. Today, considering the strategy vector and Skoltech standing, the decision, also supported by the Founders, is made with the following reasoning.

A world level institute of science and technology should be full-fledged in providing all three levels of education. The baccalaureate will give birth to Skoltechians – students to grow up in Skoltech culture and environment from the very beginning. In a broader sense, the Skolkovo ecosystem will be advanced, providing a full cycle of modern education comprising of Skolkovo Gymnasium, Bachelor, Masters and Doctoral levels at Skoltech.

Baccalaureate concept

The shift to the knowledge economy requires to train a new generation of science and technology elite specializing in cutting-edge areas of science and technology areas. This goal requires to have a full cycle of the highest quality education on all levels: school – bachelor studies – MSc studies – PhD studies. Moscow has a solid base of such a system – strong school, however need a university of a new type, which will continue the educational cycle.

Opening a baccalaureate in Russia, particularly, in Moscow with strong competition among the well-established schools, requires a truly distinctive offer. For that reason, Skoltech baccalaureate will not focus on a monodiscipline. The choice rather lies within Artificial
Intelligence, Material Science, and Engineering. The baccalaureate will be distinguished by unique learning environment – research intense curriculum in English, small classes for the brightest STEM students supervised by top faculty, excellent campus spaces and research facilities. The entry requirements will be higher in comparison with top national schools, strong selection procedures will maintain the quality of intakes.

In the light of formal limitations related to opening bachelor programs (accreditation), Skoltech will establish a partnership with a top national school and (or) a leading high-tech company to share resources. Sber is considered as a potential partner for the program in Artificial Intelligence. The Committee on Baccalaureate composed of executive leadership, faculty and representatives of the stakeholders will be formed to review choices, finalize the proposal and a roadmap. The final decision is made by the Board of Trustees, considering the recommendation of the Academic Council.

Metrics of progress

quality of incoming students, % of students engaged in research, other program criteria evaluating quality of curriculum and courses.
To educate the next generation of leaders in science, technology and business, Skoltech is building a holistic system for fostering student success to let future graduates achieve their career aspirations. The system is formed with a mix of elements stimulating students’ professional, entrepreneurial and personal skills.

In the course of Skoltech development, these elements were developed with different speed, influenced by such factors as faculty recruitment, construction of the campus. With regards to career development opportunities, we see that the current offer is focused more on the academia track: students are supported with international academic mobility, scholarships to present publications at international conferences, extra stipends for academic excellence. At the same time, opportunities for students with career aspirations for high-tech industry or entrepreneurship require additional attention and investment.
Scholarship model

The new scholarship model will be implemented to equally support students, pursuing academia, high tech and entrepreneurship tracks. In specifics, the model will introduce a new approach for assigning basic stipends, as well as extend eligibility criteria for extra stipends. Enrolment decisions and decisions on assigning basic stipends will be decoupled, so that the brightest students will be the first to receive admission offers with basic stipends right after successful completion of selection interviews. Other students will be eligible for offers with scholarships after all selection waves, if available, or based on results demonstrated during or between the selection events.

The stipend for development will be introduced to reward results of academic and technology excellence, as well as results in entrepreneurship. The new scholarship model is piloted from the academic year 2021 – 2022 under the supervision of the Scholarship Committee.

Career Center

Opened in 2020, the Career Center will facilitate enriching student life with various development opportunities, counsel students on job markets trends, organize sessions with high-tech companies. The formats of activities and a pool of employers will be expanded. The job placement program in cooperation with high-tech companies, R&D centers, including Skolkovo companies, as well as representatives of the Industrial Councils will be launched in 2021. The Center will also involve alumni for career counselling (refer to section “Strong alumni support”). Regular communications on market trends, vacancies, internships will be maintained.

Development Program

The new program will provide students with broad opportunities to develop competencies in academia, high-tech and startup tracks. In addition to internships to world leading universities and research centers, students will be offered scholarships for top international conferences, hackathons, entrepreneurial contests. Social engagement, such as volunteer projects, community outreach (also refer to “Wider community engagement”) will be also nurtured.

Metrics of progress

- % of graduates’ employability in the first four months after graduation
- % of graduates employed in high-tech and startup tracks
- % of student satisfaction with career growth opportunities
- % of graduates satisfied with Skoltech degree in terms of employability
Strong support from alumni

The alumni community reached 1000, spread in more than 30 countries of the globe. The alumni career paths are a key measure of quality of Skoltech education and support provided. Graduates decided to grow in high-tech sector are employed in the top national and international companies located in Russia – Sber, Samsung, Mail.ru, HUAWEI, KPMG, Tinkoff and others. Those who continue training at PhD or postdoc positions, which we refer to as “academia track”, found themselves at Skoltech or top international universities, such as MIT, Caltech, Stanford, Princeton, EPFL. We are also proud that 40% of Skolkovo residency startups, associated with Skoltech, are founded or co-founded by the alumni. By 2025, the alumni community will exceed 2000. Accounting that, the community of supporters, ambassadors in many countries of the world, promoters, and donors, is crucial for Skoltech advancement.

Communication lines

Effective communication is a starting point for building alumni relations. As the first step, the CRM will be launched to keep relevant records and establish capacities for communications. Considering a global spread of alumni, digital communication will be a primary channel for spreading news about Skoltech, opportunities and programs for engagement. Offline events will be organized to get our community even closer. The Alumni Association will be registered with Skoltech support, to instrument alumni initiative and keep the communication lines open. The Association will maintain the community, facilitate target programs. Simultaneously, the Association will organize annual events which will lay a basis for setting traditions.
Engagement program

The engagement program will be facilitated by the Alumni Association and Career Center, to promote opportunities for student career advising, mentoring, arranging internships, job placement. At the same time, alumni will be offered opportunities for professional networking with each other, faculty, Skoltech partners. Nurturing the culture of giving back among students is important for raising future generations of grateful alumni. To do so, joint students-alumni events will be organized with involvement of the Student Council. Target fundraising opportunities will be established to support student research and innovation projects, startups, sponsor scholarships for development. Alumni fundraising will be embedded into Skoltech fundraising strategy and held by the Alumni Association.

Metrics of progress

number of active alumni, event registrations, volunteer rate (including ambassadors, mentors, speakers, event organizers), social media / email activity, donations.
Skoltech will be a full-fledged world leading university, producing substantial economic impact, recognized as a national think tank – a center of research and technology expertise in select priority areas.

III. Impact
World level research centers

A world level research center is defined by research excellence and recognition on the global scale. To increase Skoltech visibility and recognition, nucleation and supportive environment for the world level research centers are required. This is viewed in a critical mass of outstanding faculty and researchers focused on cutting-edge research, brightest and highly motivated students, supportive governance, efficient mechanisms for technology transfer, state-of-the-art facilities, financial sustainability. Research focused initiatives will be launched as supportive actions on nurturing world class research.

Outstanding faculty, researchers, students

Outstanding faculty and researchers are crucial for maintaining intellectual dynamic environment that attracts talents from Russia and the world. Skoltech has recruited high caliber faculty and researchers in many fields, as demonstrated in the highest quality publication output. Recruitment will be ensured by target opportunities and open calls.

No less important is to create excellent opportunities for Skoltech alumni, studying for PhD or having postdoc training at top world universities, to return to Skoltech. To ensure the highest quality of research advising, the number of graduate students will be balanced per faculty, to achieve a golden ratio of six students (MSc and PhD) per faculty.

Focused agenda

The research agenda of a world level center is focused, meaning that it is not a simple sum of individual faculty research projects, or research conducted by a collection of separate individuals or laboratories. The agenda is coherent, integrating diverse directions under the umbrella with key complementary expertise of the team constituting the effort. To ensure research focus of the Centers, international reviews will be continued every two-three years, also to judge the quality of results against the world universities benchmarks. The assessment of progress on the Centers strategic programs is planned for 2023.
Academic Freedom

Academic freedom is an attribute of a world leading university, important for maintaining the culture of excellence. Finding a balance between academic freedom and strategic priorities to establish task forces (refer to “National think tank”) will be a challenge. We will address this by building a culture of openness and responsiveness among faculty and on the level of the Centers.

Research infrastructure

Research excellence requires exceptional facilities. As of today, Skoltech has more than 40 laboratories and shared facilities with state-of-the-art equipment. Completion of the laboratory construction schedule by 2024 is a priority. Investments in research equipment will be made from the state funding. New investments will be made to establish additional computational facilities of a high-performance computing cluster, and targeted engineering and research hubs, which will advance experimental activities. The efficiency of research facilities operations will be increased by unified standards for providing access to infrastructure or services, establishing database of technology competencies (facilities, equipment, services). Also, the mechanisms for registering equipment load, certification and attestation of laboratories, ISO 9001 standards will be applied.

Metrics of progress

% of international grant funding in total research income, % of publication output in top journals and conferences, e.g. Nature Index journals, A* conferences; international awards of faculty, researchers, students; reputation metrics of international rankings.
Skoltech was established as a central part of part of the institutes of development, and in particular, Skolkovo project, to nurture competencies which are absent or limited in Russia, however crucial for economy development. Today Skoltech is fully functional university with the best campus in the modern city of Skolkovo with excellent opportunities for studying, working and living.

Skoltech is cooperating with Skolkovo Gymnasium, Center of Intellectual Property, Technopark, Ventures, Skolkovo Foundation. Nevertheless, the formats of cooperation can be expanded, the ecosystem players should move towards an integrated agenda to advance the Skolkovo as a whole.

Inclusion in national and global agenda

Skoltech has accumulated expertise in a number of priority areas (refer to “National think tank”). Active promotion and embedding the expertise to the national level agenda will be ensured by consolidated efforts, also defining large directions (priority sectors) of the innovation ecosystem development. Skoltech global network will be utilized for setting cooperation with international peers. Among the regions of interest are Europe, BRICS, Asia, Israel.

Opportunities of ecosystem

Building industrial and business partnerships, currently held by Skoltech and Foundation independently, will be improved by means of a ‘joint offer’ approach, to promote opportunities (services) of the ecosystem as a whole. Efficiency of liaising with partners will be increased by a common information landscape. Establishment of Skoltech entrepreneurial belt will be
accelerated using networks and capacities of the ecosystem. Skoltech will contribute to transforming the ecosystem into the city open for technology experiments. Skoltech faculty and researchers will use these unique opportunities to have a testbed for piloting technology results in the areas of smart city technologies, artificial intelligence, robotics, energy consumption.

**Skolkovo brand**

Despite a growing awareness of Skoltech among national and international audiences, we seek for even more visibility. We believe that a closer cooperation in marketing and public relations will allow to promote both Skolkovo and Skoltech, and extend the target audiences in Russia and globally. Among the priority activities are joint PR campaigns, media projects, events of the ecosystem. Also, a strategic plan for public outreach and community engagement will be developed and implemented to foster Skoltech as part of the community. Simultaneously, there is a need to increase internal communications on opportunities of the ecosystem: news channels of the Skolkovo participants will deliver relevant content, in both Russian and English.

**Metrics of progress**

number of joint promotion projects, metrics of marketing and media.
Cultivating entrepreneurial readiness and spirit

Skoltech development in the innovation and entrepreneurship domain is led by the Center for Innovation and Entrepreneurship (CEI). The CEI focuses on designing and delivering educational component, managing intellectual property and business development.

Entrepreneurial environment

As of today, the portfolio of Skoltech associated startups exceeds 100 enterprises, including almost 70 companies operating in the Skolkovo ecosystem. Skoltech IP is presented predominantly by high-tech technologies, the majority of items have approved commercialization strategy through licensing to industrial partners or are assigned to Skoltech associated startups to create a complex product and develop a new market niche. Further nurturing of entrepreneurial environment will be supported by a complex of measures, including translational research programs, programs aimed at identifying patentable and commercially significant results, mentoring, attracting investments from the institutes for development, venture funds, private investors, programs for incubation and acceleration. The results of patenting, licensing, startups establishment and mentioning will be recognized based on criteria designed by the CEI and included into the personnel assessment framework. Students will be provided diverse opportunities and incentives to engage in translational research as a part of the development program. Policies related to intellectual property and startups will be revised or developed from scratch to align with Skoltech priorities.

Entrepreneurship & innovation curriculum

In addition to the flagship Innovation Workshop, the CEI delivers courses in technology...
entrepreneurship, foundations of commercialization, financial aspects of new enterprises, courses addressing applications and practices in specific fields (e.g. healthcare).

The Startup Funnel, guiding students from a ‘white page’ to the projects ready to go to Skolkovo residency, piloted in 2020, will be embedded in the student development program (also see “Fostering student success”). The specialization tracks of “Global E&I tools and practices”, “Academic E&I”, continuing journey after the Innovation Workshop will be extended with new courses.

Students’ involvement in creating startups will be transferred into credit bearing activities, also providing possibilities to have a thesis on the relevant theme. Criteria for eligibility and procedures will be designed by the CEI team.

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**Metrics of progress**

- number of Skoltech associated startups, including share of companies established by students or with students’ involvement, alumni startups, licensing agreements and revenue.
National ‘think tank’ for science & technology

Skoltech has established a strong position in a number of research intense technology areas, contributing to developing national research, education and innovation agenda. The examples of such areas of strengths include Artificial Intelligence, Photonics, 5G and Internet of Things, emerging 6G and associated technologies, Energy storage.

Skoltech expertise is delivered through three major types of R&D programs as shown in the chart below covering various formats - R&D projects, counselling and membership in national trustworthiness working groups and technical committees (e.g. National Technology Infinitive, Digital Economy Program).

On a five years horizon, Skoltech aims to become the best in Russia source of expertise in the following areas of technology excellence:

- 5G and emerging 6G, Technologies of Wireless Communication and Internet of Things
- Artificial Intelligence and Communications
- Agro technologies
- Energy Efficiency and ESG agenda (energy storage, e.g. cathode materials, Li-ion batteries, conversion, diversified energy systems)
- Photonics (photonic ICT, THz and RF photonics, polaritons, nanomaterials)
- New materials (mathematical methods in new materials design).

Project Centers (refer to section “Target size and shape”) will specifically focus on rapid deployment of capacities to attain the leadership in Russia.
Applied research and development

Projects for high tech industry and startups
- Formats: R&D projects, joint laboratories / centers. Expert and technical support for technologies development and implementation, industry seminars, internships and site visits.

Long-term programs required business and support from the state (guarantees / allowances)
- Projects on the markets of technology shifts on development of perspective products and technologies. Skoltech role is technology architecture of a project, shaping a technology core, localization of solutions.

Strategic initiatives ensuring technology competitiveness
- Programs aimed at long-term development of economy under priority areas, presence of the Russian Federation in the global technology agenda.

Examples of topics
- Technologies for unconventional and hard-to-recover hydrocarbon reserves
- AI technologies in industry
- Energy storage, including development of cathode materials and batteries of a new generation
- Energy transition and ESG
- Genomic technology for accelerated selection (agriculture)
- Photonics technologies, new generation of telecommunications (5G and 6G)
Skoltech will become the intellectual core of large-scale national programs by providing expertise on programs architecture, defining major direction for development, attracting resources, embedding and promoting technology results on the international level (also see “Global standing”).

**Task forces**

The main goal is viewed in setting strong expertise (task forces or Project Centers) for building core technology-oriented programs (projects) of the national level. In this capacities Skoltech will define the priorities, monitor the agenda and amend priorities, organize consortia involving industry partners to ensure technology scaling (stages 3 and 4). Among the issues to be addressed on a short-term horizon are bringing into operations the Project Centers (refer to “Target size and shape”), including incentives framework, balancing workload (research versus teaching) for faculty involved in task forces.
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The principal purposes of a university is serving society by producing educational, scholarly and economic impact. Leveraging the human and financial resources, being committed to giving back to society, our faculty and students are engaged in a wide variety of activities for the Skolkovo Innovation Center and wider community – public lectures, research intense programs, scientific workshops and master classes for school kids, laboratory visits, expert support on organizing national technological contests, volunteer projects. The diversity and intensity of engagement require alignment with Skoltech priorities and capacities available.

Organization of function

A centralized function will facilitate and promote engagement inside and outside Skoltech, as well as support faculty and staff in delivering engagement programs. Mechanisms for recognition or faculty, students and staff contribution to community engagement will be established (also see “Favorable environment and operational sustainability”). To increase internal and external awareness, a dedicated webpage will be launched on Skoltech website, allowing to share highlights with Skoltech community and beyond.

Science outreach

Visible programs such as Lecture Hub on YouTube, open lectures in the Arhe, Tochka kipeniya, Polit. ru and Technopark already promote Skoltech competencies. These activities will be further continued and expanded to establishing Skoltech points of presence in the national outreach projects. Increasing public awareness of Skoltech impact will be achieved by organizing public events on campus. We envision that events...
to explain Skoltech value will be embedded into the Skolkovo ecosystem agenda, also to increase a public coverage and recognition of bigger Skolkovo brand.

Educational outreach

Skoltech is running a wide range of educational activities for schoolkids at Skolkovo Gymnasium, Letovo School, Children’s University of the Polytechnic Museum, Sirius Center, STEM oriented schools in Moscow and beyond. These activities contribute to raising kids’ knowledge and curiosity to cutting-edge science concepts. The portfolio will grow in terms of topics, delivered by the Centers. New formats, such as online classes, VR classes will be offered. The target audience will be enlarged by top national STEM schools. The other direction of development is the outreach to regional universities to promote Skoltech practices in education, research and innovation.

Metrics of progress

Outreach, service, and engagement activities with schools and other units. Learning hours and total number of external partnerships with underserved communities, sponsored funding for community-engaged research initiatives with external partners that addresses key quality of-life indicators. Media stories featuring Skoltech community engagement impact. Social engagement of alumni.
IV. Measuring progress
 Targets 2025

Being at the forefront of science and technology agenda, tracking most advanced technological achievements, striving to ensure a progress in high technologies, Skoltech considers as the key strategic indicators the economic effect of implementation and scaling of research and development results, establishment of startups and creation of new jobs, training personnel for high-tech sector of the national economy.

<table>
<thead>
<tr>
<th>100</th>
<th>Skoltech economy, bln Rub (cum.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>Skoltech affiliated startups (cum.)</td>
</tr>
<tr>
<td>140</td>
<td>Papers in Nature Index journals and A* conferences (annual output)</td>
</tr>
<tr>
<td>70%</td>
<td>Graduates involved in innovation activities</td>
</tr>
</tbody>
</table>
## Skoltech economy

### Structure of the overall effect

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core impacts (A)</td>
<td>Direct effect (Income minus expenditure on suppliers)</td>
</tr>
<tr>
<td></td>
<td>Suppliers effect (Including value chains in industries – multiplier effect)</td>
</tr>
<tr>
<td></td>
<td>Staff spending effect (Consumption plus its effects on adjacent industries) Students spending effect (Consumption plus its effects on adjacent industries)</td>
</tr>
<tr>
<td>Graduate premium (B)</td>
<td>Increase in earnings due to having a Skoltech degree for all graduates currently working in RF</td>
</tr>
<tr>
<td>Commercialization effects (C)</td>
<td>Licenses</td>
</tr>
<tr>
<td></td>
<td>Research contracts</td>
</tr>
<tr>
<td></td>
<td>Vocational programs</td>
</tr>
<tr>
<td>Startups (D)</td>
<td>Value added by startups created by university or graduates</td>
</tr>
</tbody>
</table>

## Skoltech affiliated startups (cumulative)

Startups founded by Skoltech personnel, students or alumni (1) with a status of Skolkovo residency, (2) startups received support from other national institutes for development.

## Papers in Nature Index and A* conferences

Skoltech affiliated publications journals of Nature Index, conferences A* (units per year).

## Graduates in national innovation sector

% of graduates, (i) employed in high tech companies or research institutions in Russia, (ii) established startups in Russia or employed in Skolkovo startups, or (iii) continue for PhD at Skoltech (applicable to MSc graduates), to the total number of graduates in a reporting year.
Appendix
SWOT results

The SWOT analysis was launched in May, 2020 within the strategy planning cycle to define internal and external factors which influence or may influence Skoltech performance over the next years. The process was organized in a way to involve both academic and administrative units. The CREIs and administration shared perceived strengths, weaknesses, opportunities and threats. Based on the inputs and discussions held, the following critical issues for Skoltech at large were identified.

**Strengths**

Skoltech is a multi-cultural community of highly qualified personnel. The world class faculty with extensive international experience, and high-level research groups demonstrate academic excellence — Skoltech publication output, per capita, is on par with the world top young universities (NTU, HKUST, KAIST). In 2019, Skoltech was ranked among top-100 young universities in Nature Index. The research and technology expertise is formed in a number of areas. In the grant activities, Skoltech is well positioned in chemistry and material science, physics and space, biology and life sciences. The industry-oriented groups established technological expertise in machine learning, oil production, hard-to-recover reserves and rock characterization, virtual testing for certification, quick conceptual design, energy storage, next generation of wireless networks. The majority of the heads of administration units stated having strong teams, capable to operate processes.

Skoltech is cultivating favorable teaching and learning environment for students. The educational programs have a flexible curriculum, providing a wide choice of courses for cutting-edge knowledge. Students are offered with career development opportunities, e.g. industrial immersions, travel grants for top international conferences, participation in faculty grants and R&D projects, mentorship on startups. Skoltech students are visible in national and international contests, receiving top prizes (e.g. Eurobot, Aramco Technathon, Yandex Prize, etc.).

The internationally awarded campus is a new building with state-of-the-art research facilities, modern multifunctional areas for teaching, learning, working, community building.

**Weaknesses**

Skoltech lacks a strong identity in the sense of vision, values and goals jointly defined, agreed and articulated by the community. The community building which could gradually address the issue is not systematic and require improvement.

Though the majority of CREIs stated having core faculty in their teams, in some areas the critical mass is not achieved. The absence of HR strategy,
aligned with the strategy, influences on faculty hiring which is weakly focused on candidates with solid industrial and entrepreneurial experience. The SWOT participants also raised concerns for certain operational processes which are immature or not introduced – planning, internal control, IT solutions (select functions), grants and contracts management, HR management processes, contracts approval procedures.

Skoltech educational offer is limited with the absence of dormitory in Skolkovo as well as non-recognition of Skoltech PhD degree in Russia.

Opportunities

The opportunities are envisioned in new funding programs in Life Sciences and Healthcare as a response to COVID. Skoltech can also leverage participation in large-scale national programs, to apply for other long-term projects with state committed funding. Catch-up with such programs will require adjustment of the CREIs programs to make them more focused. The high-profile Founders and Trustees provide opportunities to engage stakeholders in various programs (e.g. PR support, career programs for students, seed donations). Skoltech alumni, reaching 1000 in 2020, are the source of time, talent and treasure. The Alumni Association will keep communication lines open, as well as set traditions to support and promote the alma mater. The COVID quarantine was a stress test for digital readiness. The university showed ability to operate online in education, outreach and recruitment, administrative functions.

Threats

Skoltech will operate in the highly competitive environment. “Hunting” for talented students is growing nationally and internationally. Major competitors in Russia are Yandex, Mail.ru, Sberbank, Rosneft, providing more flexible educational offers (online programs, placement guarantees, and short-term studies).

Brain drain is another threat. About 20% of graduates leave Russia to continue studies abroad or work in international companies. The increase of brain drain will create a risk for Skoltech mission and fulfilling obligations under the state program, setting a KPI related to graduates employed in national high tech and entrepreneurial sector.

Skoltech financial stability is influenced by the trends in the national economy, since the major funding comes from the federal budget. Changes in state priorities, regulations or currency would affect funding. Simultaneously, external funding, sourced by high tech companies, strongly depends on sustainability of R&D programs. Due to Russia’s complex standing on the global scale, Skoltech may face barriers in entering large scale international projects and sector sanctions while planning contracts.

The COVID pandemic creates uncertainty for such teaching and learning, student recruitment, R&D contracts, requiring intense experimental research.