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Contents

HSE Institute for Statistical Studies and Economics of Knowledge (ISSEK) continues to monitor public science, technology and innovation policy. The newsletter presents an overview of recent Russian and international initiatives aimed at promoting the development of science, technology and innovation, at mitigating the consequences of the coronavirus pandemic, and at facilitating economic recovery, as well as a number of relevant OECD recommendations.

Russia

The government is working on an Integrated National Goals Plan

In line with the Presidential Decree No. 474 of 21 July 2020 "On the National Development Goals of the Russian Federation until 2030", the RF Government is developing an Integrated National Goals Plan until 2024, and for the planning period until 2030. Essentially, it's a roadmap describing mechanisms for accomplishing the national development goals. The key ones include national projects (programmes), along with the federal projects they comprise, and major initiatives of state programmes aimed at accelerating the country's S&T and socio-economic development. Expert discussions are currently being held, in the format of strategic sessions with representatives of R&D organisations, universities, business associations, and business community. The Integrated National Goals Plan should be completed in October.

National Project "Science" will focus on promoting cooperation of R&D organisations and universities

The Russian Ministry of Science and Higher Education is revising the National Project "Science" to link it with the national goal "Creating opportunities for self-realisation and development of talents". This national goal, inter alia, provides for the Russian Federation to become one of the world's top ten countries as regards the quality of general education and in terms of research and development; it also envisages the creation of an effective system to identify, support, and develop children's and young people's abilities and talents (in line with the Presidential Decree No. 474 of 21 July 2020).

One of the national project's revised priorities will be promoting modern integration formats for R&D organisations and universities, inter alia, by introducing a clearer legal status for such consortia. World-Class Research Centres that are currently being established (or are operating already) can serve as examples of a successful integration of this kind. Further effort will be made to create attractive working conditions for leading Russian and international scientists, as well as for promising young researchers; in addition, there are plans to increase domestic R&D expenditures.

Results of the call for proposals to create World-Class Research Centres announced

The results of the call for proposals to create World-Class Research Centres (WCRCs) were announced on 28 August at a meeting of the Council for State Support for Creation and Development of World-Class Research Centres performing R&D in priority S&T areas. 10 projects were selected out of 60 proposals submitted.

WCRCs will be created in the following 6 promising research areas:

- advanced digital technologies and artificial intelligence, robotic systems, next-generation materials (WCRC "Photonics Centre" and WCRC "Advanced Digital Technologies");
- environmentally friendly resource-saving energy, efficient regional-level management of mineral and biological resources (WCRC "Efficient Management of the Planet's Liquid Hydrocarbon Reserves");
- personalised medicine, high-tech healthcare and health-preserving technologies (WCRC "Digital Biodesign and Personalised Healthcare", WCRC "National Centre for Personalised Treatment of Endocrine Diseases", WCRC "Pavlovsk Integrative Physiology Centre for Medicine, High-Tech Healthcare, and Stress Resistance", WCRC "Personalised Medicine Centre");
- highly productive, environmentally friendly agriculture and aquaculture, development of safe, high-quality, and functional food products (WCRC "Agrotechnology of the Future");

- intelligent transport and telecommunication systems, research and efficient exploitation of the Earth's geosphere and of the surrounding Universe (outer and air space, the oceans, the Arctic and the Antarctic) ("Supersonic" WCRC);
- humanities and social sciences: studies of the interaction between man and nature, man and technology, social institutions as the society's effective responses to grand challenges (WCRC "Human Capital Multidisciplinary Research Centre").

The centres are being created as consortia in the framework of the Federal Project "Development of Research and Science-Industry Cooperation", which, in turn, is part of the National Project "Science". In 2020-2024, WCRCs are expected to receive the total of 15,46 billion roubles (ca. 203 million USD) in funding.

The Ministry of Science and Higher Education approved a procedure for developing integrated plans for agricultural research

The Russian Ministry of Science and Higher Education approved a procedure for drafting integrated research plans (IRP) in the areas specified in the Federal Science and Technology Agricultural Development Programme for 2017-2025 (a related Ministry Order No. 501 was registered by the RF Ministry of Justice on 7 September 2020). IRPs are drafted to generate R&D results for the agricultural sector by conducting basic, applied and exploratory research, as well as through experimentation.

Representatives of R&D and business communities, development institutions and technology platforms, federal and regional authorities are expected to take part in drafting these plans. The key objective is to identify promising (breakthrough) and industry-relevant R&D areas, and to conduct related research. IRPs are implemented by R&D and educational organisations, as well as by companies of the real sector of economy interested in obtaining research results, new technologies and innovative solutions for launching mass production of agricultural products. An inter-agency council and an S&T committee will be established to coordinate the drafting of IRPs.

Science foundations introduce flexible operation schemes in times of the pandemic

In the context of the coronavirus pandemic, Russian Science Foundation (RSF) plans to abolish a number of sanctions that are currently applied to project leaders (foreign and Russian citizens alike), who have encountered problems implementing projects funded by RSF. In particular, the foundation's grant agreements specify that long absence of project leaders or their inability to conduct their duties entail the termination of project funding and cancellation of the grant agreement, or, alternatively, a replacement of the project leader (which is also specified in the employment contract).

There's also a plan to postpone until 2021 the obligations to organise visits by leading foreign scientists participating in the projects supported by RSF through the foundation's call in the priority area "Basic and exploratory research in line with specific instructions (directives) of the RF President".

A research and educational centre to be created in Tatarstan

A research and educational centre (REC) will be established in the republic in the framework of the National Project "Science", to cover areas such as petrochemistry, information and telecommunication technologies, medicine, and biotechnology. The REC will comprise 25 organisations, including 11 leading universities and research institutions and 14 enterprises operating in the real sector of economy. The REC's key participants (Kazan Federal University and Kazan Research Centre of the Russian Academy of Sciences) will receive federal budget grants to upgrade their facilities and equipment (in the amount of 212 and 238 million roubles (ca. 2,8 and 3,1 million USD), respectively), which will significantly improve the quality of their educational services and research.

Funds have been allocated to build a training and laboratory complex in Tomsk

The Russian Government Regulation No. 1317 of 31 August 2020 allocated 1,5 billion roubles (ca. 19,7 million USD) to Tomsk State University to build a teaching and laboratory complex with a total area of 13 thousand square metres. The construction is planned to be completed in 2023. The building

designed to accommodate more than 1,300 people will have classrooms, staff rooms, meeting rooms, specialised classes, and several conference rooms. The project was approved by a state expert panel.

Technology projects will be supported in the Far East

Far East High Technology Fund supported by the RF Ministry for the Development of the Russian Far East announced an open call for high-tech projects throughout Russia, for their subsequent implementation in the Far East. The #GoEast call for projects will be open for at least 3 months. The fund will allocate up to 500 million roubles (ca. 6,6 million USD) to support the most promising projects, which can be used to make investments and conduct R&D. According to the terms of the tender, some of the funds must be spent on business localisation and development in the Far East.

The call is open to all technology companies with a proven efficiency record and revenues of at least 30 million roubles (ca. 394 thousand USD) over the past 12 months. Priority R&D areas include information technology (consumer and financial services, cloud technologies, technologies for creating a comfortable urban environment, etc.); energy technologies (alternative energy industry and energy sources); medical and biotechnologies, including technologies for the agricultural sector; industrial technologies (autonomous transport, robotics, Internet of Things); and educational technologies.

Russia exports equipment to counter COVID-19

In August 2020, Russian Promobot company (a Skolkovo resident) started to supply contactless temperature measurement devices to the US, Germany, Greece, and the Middle East. Promobot Thermocontrol autonomous devices can operate in the basic (displaying temperature measurement results) and more complex modes (facial recognition, which allows to identify potential virus carriers and restrict their access to the building/premises). The terminals have demonstrated high accuracy and capacity (300-500 people per hour). The equipment can be installed at crowded facilities such as train stations, airports, bus stations, subways, hospitals, shopping malls, educational institutions, etc.

Another Skolkovo resident, Efferon, is also expanding its exports. Efferon CT and Efferon LPS sorption columns are designed to relieve various sepsis manifestations and septic shocks, including severe complications caused by the “cytokine storm” syndrome, bacterial and viral pneumonia, and acute respiratory distress syndrome, as well as to prevent COVID-19.

In Russia, dozens of medical institutions in Moscow, St. Petersburg, Kaliningrad, Siberia, the Urals, the Stavropol Region, and the Far East actively use Efferon products. So far, the bulk of the exports goes to Latin America, but the products are in the process of being registered in Europe (CE mark), which will allow to export them to various countries.

Agreement on developing new manufacturing technologies

The Russian Government, jointly with state corporations Rosatom and Rostech, demonstrated an intention to develop cross-cutting digital technology “New manufacturing technologies” (NMT), to contribute to the implementation of the Federal Project “Digital Technologies” (National Programme “Digital Economy”). A related agreement was signed on 27 August 2020. It provides for the elaboration of an NMT development roadmap by 30 November 2020. The document’s objectives include developing breakthrough NMTs as a basis for technological leadership; creating world-class domestic solutions and implementing them at industrial enterprises; promoting demand for NMTs in high-tech industries; and eliminating regulatory, technological, financial, personnel-related, and other barriers. In particular, it is expected that by 2024, the share of domestic software used by state corporations and military-industrial organisations will increase to 60%, and for some software classes – to 80%.

Russian Railways launched an accelerator jointly with GenerationS

In July-August 2020, Russian Railways, jointly with the corporate accelerator GenerationS (a corporate innovation development platform, an inter-industry RVC-owned accelerator operating since 2013), held the second call for projects for admission to the corporate acceleration programme in the rolling stock production area (locomotive and multi-unit complexes; carriage facilities; high-speed lines; special-purpose rolling stock). The main goal is to radically improve safety, operation parameters and management in this area.

The call was open to start-ups from Russia and the CIS countries offering promising technological solutions related to technical aspects and digitalisation of the transport industry. All solutions must contribute to saving fuel and energy resources; improving the technical characteristics of the rolling stock; optimising repair and maintenance procedures; and implementing robotics-, artificial intelligence-, and AR/VR-based solutions. The new accelerator will help to scout and pilot innovative projects more efficiently, by reducing the participants' time and costs.

A dedicated project and a regulatory concept to promote the development of artificial intelligence approved

The Federal Project "Artificial Intelligence" is approved in Russia (the Government Commission on Digital Development's Protocol No. 17 of 27 August 2020), aimed at promoting application of domestic artificial intelligence-based solutions. A total of 29,4 billion roubles (ca. 386 million USD) will be allocated for the project implementation in 2021-2024 from the federal budget, and another 6,9 billion roubles (ca. 90,6 million USD) will be attracted from other sources. Funding priorities include education, research and development, promoting young people's employment, and supporting start-ups. There are also plans to support artificial intelligence research centres and small businesses.

Earlier in the summer, the RF Government Instruction of 19 August 2020 No. 2129-r approved the Concept for Regulation of Artificial Intelligence and Robotic Technologies until 2024. The document is aimed at creating favourable conditions for the development of new AI-based technologies and reducing existing barriers; respecting people's rights and ensuring their safety; formulating basic principles of, and identifying ways to improve regulatory policy, including provision of new financial incentives; creating simplified product application mechanisms; ensuring systems' security, removing industry barriers, improving data circulation regimes, etc.

The concept provides for the development of regulatory legal acts and strategic planning documents in areas such as medicine, industry, transport, public administration, urban planning, space activities, and finance. Federal projects "Normative Regulation of the Digital Environment" and "Digital Technologies" play a pivotal role here.

IT companies will receive compensation for cancelled VAT benefits

The Ministry of Digital Development, Communications and Mass Media of the Russian Federation is preparing additional measures to support the IT industry, aimed at reducing companies' costs due to the cancellation of VAT benefits. As a result of the tax manoeuvre, insurance premium rates and income tax rates for IT companies will be reduced as of 1 January 2021. At the same time, due to the drop in the budget revenues, the Ministry proposes to introduce VAT on software sales, which in 2021 alone, will allow to bring more than 40 billion roubles (ca. 525 million USD) back to the federal treasury.

Necessary amendments to the Tax Code are planned to be introduced by the end of this year; in addition, measures will be taken to provide compensation in the form of subsidies to Russian companies included in the special registry.

Smart city, IoT and digital manufacturing standards approved

Preliminary national standards for the development of smart cities, the Internet of Things, and digital manufacturing have been approved by the Russian Federal Technical Regulation and Metrology Agency (Rosstandart). The documents were developed by the Technical Committee 194 "Cyber-Physical Systems", jointly with the state authorities and companies. The smart city standards are aimed at ensuring the compatibility of urban systems, planning methodology and technical equipment of various urban infrastructure facilities based on big data mining. The standards are adopted with the goal to integrate digital systems into municipal management, to increase urban infrastructure's efficiency, and to improve the quality of life.

The IoT standards will help improve the IT product development, thus promoting the emergence of sustainable digital platforms and bringing alternative solutions to the market. The new smart manufacturing and digital twin standards will contribute to a more efficient application of various digital technologies by industrial companies.

Global agenda

European Union: supporting innovation to tackle the consequences of COVID-19

The European Commission will allocate 128 million euros to support 23 CovidTech research projects under the EU Horizon 2020 Research and Innovation Programme. The projects are aimed at manufacturing vital medical equipment and materials using additive technologies (3D printing); developing digital tools to improve diagnostics, treatment, and patient care, deeper understanding of the behavioural and socio-economic consequences of the pandemic, and educating large groups of patients across Europe. The projects involve 347 research groups from 40 countries, including 34 participants from 16 countries outside the EU.

As part of the implementation of the European Commission's Digital Education Action Plan, a new version of the SELFIE schools' digital maturity assessment system was presented. The tool allows to assess the level of use of digital technologies by schools, by collecting and analysing the opinions of students and teachers. The updated version of SELFIE will allow to monitor the digital transformation of education in Europe caused by the COVID-19 pandemic.

Russia and China have launched Years of Science, Technology and Innovation Cooperation

The Years of Science, Technology and Innovation Cooperation (2020-2021) have successfully started in Russia and China. A joint work plan was presented, which includes various events in areas such as artificial intelligence, robotics, information technologies, biotechnology, etc. More than 1,000 events will be held in total under the aegis of this bilateral initiative, including conferences, exhibitions, fora, call for S&T projects, and educational workshops, in particular in the area of S&T personnel training.

A roadmap for Russia-China Science, Technology and Innovation Cooperation for the period of 2020-2025 was signed as part of the official opening ceremony. In October 2020, the Russian Ministry of Economic Development, jointly with the PRC Ministry of Science and Technology, are planning to hold the IV Russian-Chinese Dialogue on Innovation in the framework of Moscow International Open Innovations Forum.

Joint India-Russia call for innovative projects

On 23 July 2020, joint India-Russia call for innovative projects was officially launched through video conferencing. The call is implemented by the Russian Foundation for Assistance to Small Innovative Enterprise (FASIE) in collaboration with the Department of Science and Technology of the Government of India.

The initiative is aimed at supporting companies that carry out promising R&D jointly with foreign partners, with an emphasis on increasing product competitiveness and commercialising S&T results. Priority thematic areas include information and communication technologies (e.g., artificial intelligence), medicine and pharmaceuticals, renewable energy sources, aeronautics and space, alternative technologies, environment, new materials, biotechnology, robotics, and unmanned aerial vehicles.

FASIE will accept applications until 8 October 2020, and the Indian partner – until 30 September 2020. The Russian Foundation will provide grants of up to 15 million roubles (ca. 197 thousand USD), subject to co-financing from own/borrowed funds in the amount of at least 30% of the total grant size. The Indian Department of Science and Technology will provide funding of up to 150 million Indian rupees (ca. 2 million USD). The timeframe for implementing selected R&D projects will be 18 or 24 months.

RUSNANO supports international cooperation in industrial research and development

In July-November 2020, the RUSNANO Foundation for Infrastructure and Educational Programmes and Israel Innovation Authority (through the Israeli Industry Center for R&D) will hold a call for joint innovative projects in the field of nanotechnology, aimed at developing new production technologies,

mechanisms and tools. The initiative is held in the framework of the long-term Russian-Israeli intergovernmental agreement on industrial R&D cooperation.

Key selection criteria include commercialisation of developed technologies within the next 3-5 years, as well as significant potential markets in Russia, Israel, and other countries. The originality and validity of proposals are also assessed, along with their technical feasibility, expertise of the project team, and availability of (preliminary) agreements on project costs sharing and intellectual property ownership.

Priority is given to technology proposals in areas such as quality of life; new materials and coatings; energy efficiency; nanoelectronics, optoelectronics, photonics; advanced manufacturing technologies; neurotechnology, and artificial intelligence.

The Foundation for Infrastructure and Educational Programmes plans to provide grants in the amount of up to 50% of the total Russian part of the project budget.

Brazil: Agriculture 4.0

The Brazilian Industrial Development Agency, jointly with the Ministries of Agriculture, Economy, Science, Technology, and Innovation, have launched the Agro 4.0 programme, in the framework of which 4,8 million reals (ca. 877 thousand USD) will be allocated to support 14 pilot projects on the application and dissemination of 4.0 technologies among farms and agro-industrial enterprises. It is expected that the initiative will help identify promising technological solutions and business models, new ways to improve agricultural companies' efficiency and reduce their costs. Support in the amount of 300 thousand reals (ca. 54,8 thousand USD) is available to companies that are ready to implement innovations in one of the three production chain segments – resources and means of production (fertilisers, pesticides, machinery, equipment), primary sector (agriculture, fishing, livestock, fish farming) and secondary sector (food production). In addition, the programme will support two projects by firms whose activities are related to the integration of the above segments, including provision of information and communication services, logistics, etc. Each of these projects will receive 600 thousand reals (ca. 110 thousand USD). The projects' timeframe must not exceed 7 months. Projects' results will be monitored not only during the implementation phase, but also for a year upon their completion.

New Zealand: from technology communication to marketing

Callaghan Innovation agency, in partnership with Beca, a leading engineering consultancy, and the Employers and Manufacturers Association (EMA), have launched a series of events to showcase the potential of new manufacturing technologies. Beca will deliver the mobile showcase to demonstrate how advanced technologies (from robotics to data analysis, augmented reality, and artificial intelligence) can increase productivity and help master new business formats. The EMA, part of the BusinessNZ network, will deliver a network of site visits and smart factory tours by manufacturers to demonstrate the benefits of Industry 4.0. A total of 5,04 million New Zealand dollars (ca. 3,6 million USD) will be allocated for the implementation of this four-year programme.

Australia: stepping up defense S&T potential

By adopting the Defence Science and Technology Strategy 2030, Australia presented to the public its vision of the prospects for modernising various means and methods of warfare, as well as approaches to making an effective use of the innovation ecosystem that has emerged in the country for the needs of the military-industrial complex. A major emphasis was made on using the potential of universities, start-ups and small businesses for defence purposes. The Strategy provides for launching integrated projects in eight research areas (STaR Shots), including remote underwater reconnaissance, digital twins to increase the reliability of weapons, development of quantum systems for spatiotemporal and navigational support, etc. An integrated plan for investing in research and development for military purposes, improving the quality of human capital (business leaders, researchers, staff members) and granting access to advanced research infrastructure, including digital one, is being developed in the framework of the Strategy.

Austria: facilitating search for unconventional scientific solutions

The second in a series of three calls planned under the Austrian Science Foundation's 1000 Ideas Pilot Programme is coming to an end, aimed at promoting unconventional thinking and supporting high-risk early-stage research. R&D organisations can apply for grants of up to 150 thousand euros for up to two years, on behalf of their current or potential (candidate) employees who propose breakthrough research projects. The actual success of the proposed project is not a criterion for making funding decisions. The requirements include publishing research results and providing a confirmation that the work is being carried out at one of the country's R&D organisations during the project, at least by part-time employees. As a result of the first call (which ended in January 2020), 24 projects out of 306 were selected with a total budget of 3,4 million euros.

Cooperation with the OECD

International COVID-19 policy monitoring

In the summer of 2020, in the framework of the STIP Compass initiative, the OECD launched the STIP COVID-19 Watch monitoring project. The goal of the project is to promptly collect, systematise and disseminate information about the member countries' (and a number of observer countries, including Russia) experience in implementing science, technology, and innovation (STI) policies aimed at combating the pandemic and its consequences. The STIP Compass platform, which is also supported by the European Commission, provides information on various countries' policies and relevant mechanisms an offers interactive tools for searching, processing and systematising data. Results of the monitoring project are published and updated in real time mode and in several subject areas:

- *application of research results in policy and international cooperation* (effective application of scientists' recommendations in COVID-19-related decision-making; coordination of STI policies on countering the pandemic at the international level; special mechanisms for disseminating researchers' recommendations to the public, and refuting inaccurate information about the pandemic);
- *cooperation and collaboration mechanisms*, including tools for bringing together various STI actors for effective cooperation to counter COVID-19 at the national and international levels;
- *information on dedicated STI policy initiatives* aimed at countering COVID-19 and the consequences of the socio-economic crisis;
- *the expected impact of the crisis on the STI sphere* in the short, medium, and long term; supporting this area as part of the planned measures to promote and support economic growth.

Project "Fostering and assessing students' creativity and critical thinking in Higher Education"

Fostering creative and critical thinking is an integral part of education in Russia and other countries. However, modern research shows that, despite the obvious importance of these skills, the level of critical thinking tends to decline towards the end of university studies. Since such skills are not innate, the organisation of the learning process becomes critical.

Project "Fostering and assessing students' creativity and critical thinking in Higher Education", implemented by the OECD Centre for Educational Research and Innovation, aims to support the development of national strategies for fostering creativity and critical thinking, teaching excellence, and tools for assessing such skills in students as part of formal education. The ultimate goal is to find effective methods of teaching creativity and critical thinking, as well as ways to measure them. About 40 universities from more than 10 countries joined the study in 2020.

Commentary

Russia is currently adjusting its national projects (programmes) to bring them in line with the new national goals approved by the Presidential Decree of 21 July 2020 No. 474, to target specific long-term socio-economic effects, and to find practice-oriented solutions in the medium- to long-term planning horizons.

The revision of the National Project "Science" is underway; changes are being introduced in several major aspects. The project's implementation period is extended by six years; the initiatives provided for by the Integrated National Goals Plan and the objectives that the R&D sector must accomplish in the post-crisis reality are being taken into account. Special attention is paid to supporting integration processes in science, higher education and industry; scaling up research and development in priority S&T areas; creating advanced research infrastructure, and training highly skilled personnel; developing human capital, inter alia, by expanding opportunities for acquiring modern skills and competencies and by improving working conditions in Russia for leading professionals and talented youth.

At the same time, an Action Plan is being drawn up to implement the second stage of the S&T Development Strategy of the Russian Federation (2020-2025). Thus, Russia's key strategic initiatives in the field of science, technology, and innovation are being relaunched.

Similar processes are also observed in the world's leading countries. The transformation of STI policies is associated with the need both to overcome the consequences of the pandemic and to adjust science, technology and innovation development priorities, as well as to increase the effectiveness of relevant management tools.

Sources: official websites of the RF President, RF Government, Ministry of Science and Higher Education, RSF, RUSNANO, Skolkovo, RVC, FASIE, OECD, European Commission, Russian information agencies; websites of foreign countries' governments, agencies, foundations, etc.

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