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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 second issue presents an overview of recent Russian and international initiatives aimed at combating the coronavirus pandemic and at promoting economic recovery, as well as a number of relevant OECD recommendations.

Russia

National development goals 2030 approved by the President

The Presidential Decree No. 474 of 21 July 2020 approved 5 national goals, along with relevant target indicators to assess their implementation. For the R&D sphere, the Decree sets one of the six indicators designed to measure progress in accomplishing the national goal "Creating opportunities for self-realisation and development of talents". The target for 2030 is "to ensure Russia's presence among the top ten countries in terms of research and development, in particular by creating an efficient higher education system". The emphasis is placed on increasing the scale of the national R&D sector generally, and its higher education segment in particular, as well as on improving the quality of human capital.

"Digital transformation" is positioned as a separate area, with the following target indicators – achieving "digital maturity" of key economic sectors and of the social sphere, including healthcare, education and public administration; increasing the share of socially significant public services available in electronic format to 95%, and the share of households with broadband internet access to 97%; increasing investments in the development of domestic information technology solutions four-fold compared with the 2019 level.

Russian and US scientists signed an agreement on COVID-19 research

On 30 July, the Russian Academy of Sciences signed an agreement with the US National Academies of Sciences, Engineering, and Medicine on cooperation in research related to the coronavirus – its nature, treatment, proliferation, prevention, and consequences. The protocol provides for cooperation in such areas as epidemiology, virology, molecular biology, mathematics, and computer modelling.

Information about ongoing clinical trials will be sent to the US National Library of Medicine's database which serves as a source for creating the Map of Global COVID-19 Research, featuring, *inter alia*, studies performed in Russia.

Russia, the EU and 5 other countries started assembling the ITER reactor

In accordance with the 2007 intergovernmental agreement, Russia, jointly with the EU countries, China, India, Japan, South Korea, and the United States (35 countries in total) participates in a megascience project to build the international thermonuclear experimental reactor (ITER). The ultimate goal is to prove the possibility of generating large amounts of energy through a thermonuclear reaction.

The official ceremony marking the start of the ITER assembly took place on 28 July. The construction of the reactor is scheduled to be completed in 2025. Russia not only inspired the project, but also actively participates in the development of the reactor components. Rosatom acts as a project coordinator on the Russian side. Russia's contribution to the project will be at least 10% of its cost.

Grants to fund major research projects awarded

The Russian Ministry of Science and Higher Education announced the results of the call for proposals to support major research projects in priority S&T development areas in 2020-2022. 41 out of 367 applications will receive support in the amount of 300 million roubles (ca. $4 million) for three years. 12.2 billion roubles (ca. $160 million) was allocated in total.

The beneficiaries are the Russian Ministry of Science and Higher Education's research institutes supervised by the Russian Academy of Sciences, the Russian Ministry of Health and Rosatom (Russian Federal Nuclear Center – E.I. Zababakhin All-Russian Scientific Research Institute of Technical Physics), and a group of leading universities, including M.V. Lomonosov Moscow State

University, Pirogov Russian National Research Medical University, Lobachevsky State University of Nizhny Novgorod, Moscow Aviation Institute, Mendeleev University of Chemical Technology of Russia, and “Sirius”.

Research topics cover areas such as countering viral epidemics, supercomputers and IT, genetics, nuclear physics, quantum research, etc.

Grants to establish and upgrade engineering centres

The Government adopted Regulation No. 1156 of 1 August 2020 which sets the rules for awarding grants to universities and R&D organisations to establish and upgrade engineering centres.

Organisations which have their own programmes for creating/upgrading engineering centres will be able to receive grants in the amount of up to 300 million roubles (ca. $4 million) for 3 years. The programmes must include performance indicators consistent with the targets set in the National Project “Science”, specify the impact the subsidy is expected to bring about, and secure at least 30% of the total funding from non-public sources. Public funds can be used to procure equipment and software (at least 50% and 60% of which, respectively, must be of Russian origin), patent, transport, and marketing services; to repair premises; to train staff; and to organise exhibitions.

The initiative’s expected impact includes the strengthening of research and production cooperation between universities, R&D organisations and industrial enterprises, and the expansion of engineering centres network, which will contribute to the implementation of industry-specific government programmes and import substitution plans.

Specific rules for funding innovation projects have been clarified

The concepts of “venture and/or direct funding of an innovation project” and “innovation development institution” have been introduced into the legislation (Federal Law No. 309-FZ of 31 July 2020 “On Amending the Federal Law ‘On Science and State Science and Technology Policy’”). Furthermore, the document has clarified risks associated with innovation projects specific rules for their expert evaluation, monitoring of implementation, and assessment of the effectiveness and appropriateness of the use of allocated funds. These modifications will help address some of the problems arising with venture and public financing of such projects.

It is, however, too early to assess the potential effects of these legal novelties, since the Russian Government has yet to develop a number of implementing documents. Among other things, criteria and procedures for monitoring and control need to be developed that will ensure that the funds allocated as financial support for innovation projects are spent appropriately; procedures for determining the acceptable level of risks and basic criteria for their management need to be elaborated; and requirements for relevant expert assessment and evaluation need to be designed.

Transition to common Eurasian patents began

On 24 July, the RF Government approved the draft Federal Law “On Ratification of the Protocol on Protection of Industrial Designs to the Eurasian Patent Convention of 9 September 1994” (the protocol was signed by Rospatent on behalf of the Russian Government according to Instruction No. 2010-r of 7 September 2019). The adoption of the draft law will contribute to harmonising intellectual property legislation of the countries – signatories to the Eurasian Patent Convention.

The advantages of common Eurasian patents include lower patenting costs and reduced time needed to obtain patents; adopting them will also promote the development of market economy and strengthen international economic ties.

Adoption of the new procedure will allow to provide legal protection of industrial designs for applicants in all countries – members of the Eurasian Patent Convention. Applicants will receive common Eurasian patents using the convenient “single window” format.

Preliminary search and patentability assessment legalised

Russia introduces procedures for preliminary information search and patentability assessment of applications for inventions and utility models, conducted with participation of relevant Russian research institutes, including those of the Russian Academy of Sciences and leading universities

accredited by Rospatent (Federal Law No. 262 of 31 July 2020-FZ "On Amendments to Part Four of the Civil Code of the Russian Federation"). These organisations will be accredited free of charge, taking into account their specialisation in particular technology areas and the availability of qualified professionals specialising in information retrieval and assessment of technological solutions' patentability.

Applicants will be able to use preliminary information search services on a voluntary basis. Prices will be set depending on the complexity, volume and duration of each information search. The new procedures are expected to improve the quality and reliability of patents.

RVC will support projects aimed at combating COVID-19

RVC JSC has launched an anti-crisis grant support programme for developers of technological solutions aimed at combating the COVID-19 pandemic and its consequences, in the framework of the National Technology Initiative (NTI).

Grants up to 50 million roubles (ca. $700 thousand) (with the 30% co-financing requirement) will be allocated for projects expected to be ready for pilot testing and market entry within 6 months from the date of receiving the grant. Grants will support projects aimed at combating the coronavirus pandemic – from medical products to remote services. It is planned that NTI working groups (which comprise representatives of relevant authorities) will help the selected project teams to deal with administrative barriers.

Key requirements for projects include: focus on solving a specific acute problem caused by the COVID-19 pandemic; compliance with one of the NTI roadmaps; availability of a prototype; Russian jurisdiction of the applicant organisation; and having a customer willing to provide co-financing from non-public sources and to place an order for pilot testing.

Roadmap for hydrogen energy development until 2024 is completed

The Ministry of Energy has developed and on 23 July, submitted to the Government the roadmap "Development of Hydrogen Energy in Russia in 2020-2024". The document envisages three areas of work – improving the legal framework and technical regulation of production, transportation, storage, and use of hydrogen and methane-hydrogen mixtures; supporting priority pilot hydrogen production projects, including creation of prototype installations; and strengthening international cooperation. The Ministry of Economic Development, Ministry of Energy, Ministry of Industry and Trade, Ministry of Science of Higher Education, Ministry of Transport and other relevant agencies and companies, such as the Rosatom, Gazprom, and NOVATEK, will contribute to the implementation of the roadmap.

The roadmap is harmonised with the Energy Strategy. The plan is for Russia to export about 200 thousand tons of hydrogen in 2024, and 2 million tons in 2035. As a result, the country will be able to more actively develop one of the "green" alternatives to oil and gas in line with leading foreign countries' practices.

Subsidies to conduct S&T groundwork in electronics

The RF Government approved the rules for allocating subsidies to Russian organisations to cover some of the costs of conducting S&T groundwork required to develop basic production technologies for priority electronic components and radio electronic equipment (Regulation No. 1065 of 16 July 2020). The funds will be allocated in the framework of the anti-crisis plan for the electronic and radio-electronic industries.

The list of digital technologies for regulatory sandboxes will be approved separately

To speed up market entry of new products and services based on digital technologies, the Federal Law No. 258-FZ of 31 July 2020 "On Experimental Legal Regimes for Digital Innovations in the Russian Federation" was adopted. To implement it, the Russian Ministry of Economic Development prepared a draft list of technologies for application in the framework of experimental legal regimes in the following 10 areas (more than 40 technologies in total):

- neurotechnology and artificial intelligence;
- big data technologies;

- quantum technologies;
- new production technologies;
- robotic and sensory components;
- distributed ledger systems;
- wireless communication technologies;
- virtual and augmented reality technologies;
- industrial internet (Internet of Things);
- industry-specific digital technologies.

An IT cluster created in the Ryazan Region

The Government of the Ryazan Region, jointly with the autonomous non-profit organisation "Agency for Production Systems and Competencies Development", and 16 heads of the region's leading enterprises, organisations, and individual entrepreneurs specialising in information technologies, signed an agreement to establish an IT cluster. Members of the new association can apply for public support, in particular for subsidies to cover costs of participation in Russian and international exhibitions, training, and certification of products and services.

Global agenda

A strategic foresight of the COVID-19 crisis

On 10 June 2020, OECD experts presented the report "Strategic Foresight for the COVID-19 Crisis and Beyond: Using Futures Thinking to Design Better Public Policies" prepared in the framework of the OECD initiative to globally join forces to fight the pandemic. The report includes recommendations for the OECD member states to develop policies related to COVID-19 and its consequences according to three scenarios built using foresight tools, ranging from optimistic (the pandemic will be stopped by the fall of 2021) to the worst-case one (morbidity and mortality rates will increase, some regions will face a humanitarian catastrophe). Using these scenarios, experts analysed how various economic sectors and social groups will develop, including technology, environmental protection and public administration at the national and international levels.

The following issues were highlighted as the most relevant for S&T policy:

- *Implications for medical science and technology:* more active and more effective cooperation (including internationally) to directly respond to COVID-19, against the background of reduced trust in science due to faulty forecasts, inadequate treatment recommendations and incorrect assessments of drugs' and vaccines' effectiveness.
- *Development of digital technologies as the basis of social life*: replacing the usual social activity formats with digital ones (virtual reality technologies, gaming products, telecommunication platforms, etc.), followed by increased annoyance with them due to the forced isolation, up to rejection.
- *New global health culture:* dissemination of health monitoring and screening practices using mobile devices, big data analysis, and personal tracking devices, along with growing threats associated with the "digital divide", vulnerabilities and technological imperfections of relevant digital products.
- *New challenges for privacy:* massive application of surveillance technologies to track people's behaviour, movement, and contacts to protect health and maintain safety, with heavier sanctions against evaders, accompanied by increased public discontent, growing civil and legal nihilism, and development of technologies for maintaining privacy.

European Commission's manifesto on maximising the accessibility of research results in the fight against COVID-19

On 28 July 2020, the European Commission issued a Manifesto aimed at dramatically increasing the availability of research results in the fight against Covid-19. The document provides guidelines for beneficiaries of EU research grants for prevention, testing, treatment, and vaccination of the coronavirus.

The set of guidelines is as follows.

- The generated results, tangible or intangible, should be made publicly available without delay, e.g. on the Horizon Results platform, or on existing intellectual property or patent information sharing platforms.
- Academic papers and research data should be made available in open access without delay through preprint servers or public repositories in accordance with the principles of **F**indability, **A**ccessibility, **I**nteroperability, and **R**euse of digital assets (the FAIR principles). Research data on COVID-19 must be posted on the European COVID-19 Data Platform and made available to third parties (without, or with minimal restrictions) for use, adaptation, or dissemination.
- Within a year after the WHO announces the coronavirus is no longer a "public health emergency of international concern", it is recommended that limited-term royalty-free licenses are issued for use of intellectual property resulting from EU-funded research. Such licenses should be valid until 1 January 2022 at the latest, unless the beneficiary otherwise renews them. They should be granted in exchange for the licensees' commitment to rapidly and broadly disseminate received products and services related to prevention, diagnosis, and treatment of COVID-19 on fair and reasonable terms.

The manifesto aims to encourage voluntary support and endorsement from public and private stakeholders receiving financial support, and does not entail legal consequences.

The initiative is in line with other current international documents, namely the World Health Assembly resolution on COVID-19 (19 May 2020), and the World Health Organisation's Solidarity Call to Action to ensure equitable global access to health technologies to fight COVID-19 by bringing together knowledge, intellectual property and data.

Science and technology cooperation of BRICS countries

In July-August 2020, a coordinated interdisciplinary call for BRICS multilateral projects is being held. The call is organised under BRICS Framework Programme for Science, Technology and Innovation Cooperation and supports the development of diagnostic tools and treatments for COVID-19. International research consortia comprising at least three research teams from three different BRICS countries are eligible to apply.

The call covers the following thematic areas:

- research and development of new technologies/tools for diagnosing COVID-19;
- research and development of COVID-19 vaccines and drugs, including repurposing of available drugs;
- genomic sequencing of SARS-CoV-2, epidemiologic research, and mathematical modelling of the COVID-19 pandemic;
- AI, ICT and HPC oriented research for COVID-19 drugs design, vaccine development, treatment, clinical trials and public health infrastructures and systems;
- epidemiological studies and clinical trials to evaluate the overlap of SARS-CoV-2 and comorbidities, especially tuberculosis.

EU: supporting digital transformation and development of 5G networks

On 21 July, the European Union member states agreed to undertake the post-COVID-19 Economic Recovery Effort (Next Generation EU) which will supplement the EU budget for 2021-2027 in the amount of about €2 trillion (ca. $2.4 trillion). The Digital Europe programme to support digital transformation in the EU countries adopted as part of the agreement (with a budget of over €6 billion – or more than $7 trillion) will support the investment in priority digital technologies, such as development of next-generation 5G networks, high-performance computing, artificial intelligence, and cybersecurity.

US: developing innovative energy ecosystems

Since 2015, the Department of Energy's Office of Technology Transitions has been responsible for the commercialisation of R&D results created for the department. Its current objectives include developing regional innovation ecosystems in the energy sector, *inter alia,* in the framework of the Energy Programme for Innovative Clusters (the budget for 2021 is $5 million). Up to 20 "incubators" (accelerators, start-up communities, etc.) that focus on developing strong innovation clusters, energy

related technologies and entrepreneurship can apply for support under the programme. The size of one grant is $50 thousand. It is expected that one of the main immediate effects of participation in the programme will be increased visibility of incubators as an important innovation ecosystem component.

UK: taking new steps towards sustainable development goals

The UK government has created a £200 million ($260 million) Sustainable Innovation Fund to support companies' innovation and application of solutions based on disruptive technologies. Companies developing solutions for applying artificial intelligence in medicine, transport, housing and communal services, etc. will be supported.

This funding package administered by the Innovate UK agency is the next step taken under a large-scale programme to help innovative companies that was launched amidst the pandemic. The new fund will complement the support measures implemented by the Future Fund in the amount of £500 million (ca. $650 million).

South Africa: promoting industrial biotechnology

The South African Department of Science and Innovation, in collaboration with the Council for Scientific and Industrial Research (CSIR), launched a programme to support projects aimed at implementing waste beneficiation biorefinery technologies. Participants that offer technological solutions of this kind which are already at the prototype stage, can use engineering and technology refinement services based on specialised equipment available at the Biorefinery Industry Development Facility at the CSIR.

The South African Department of Science and Innovation and the Technology Innovation Agency have also announced a call for creating an Industrial Biocatalysis Hub – a technology platform for the development and commercialisation of biocatalysis technologies. 3 million rands (ca. $180 thousand) is allocated to support the hub's operations in 2020-2021. Leading universities and research centres are eligible to apply.

Poland: attracting world-renowned scientists

The Polish National Agency for Academic Exchange presented the NAWA Chair programme which aims to attract leading researchers in the humanities and social sciences. In the future, universities and research organisations specialising in other areas will also be able to participate in the programme. The maximum grant amount is 3 million zlotys (ca. $800 thousand), which can be used for paying the salary of world-class scientists (who are granted the visiting scholar status) for a period of 3-4 years, covering the costs of their academic mobility, and paying remuneration of their research team members.

Basic research expenditures can also be covered with funds allocated by the National Science Centre (NSC). Its grants provide up-front funding in the form of a "start-up package" that allows to immediately begin full-scale research.

Cooperation with the OECD

TIP project "Supporting Co-Creation for Resilient, Sustainable and Inclusive Futures"

This OECD project initiated by the Working Party on Technology and Innovation Policy (TIP) aims to investigate specific features of co-creation of knowledge by R&D organisations, universities and enterprises, and to develop more efficient mechanisms for managing these processes.

Cases of relevant initiatives from 13 countries participating in the project are already prepared (Belgium, the UK, Germany, Italy, China, Korea, Norway, Portugal, Russia, Finland, France, Sweden, and Japan), in a wide range of areas (such as autonomous vessels, managing floods in cities, consequences of illegal trade in wild animals and plants, etc.).

The ability to adapt to changes in the institutional environment; evolving roles of partners; making use of global challenges' potential to engage the public; effective management; joint complementary, integrated expert evaluation; dissemination of best practices; creating networks; and providing open

access to results were identified as key factors of successful co-creation. The project is scheduled to be completed by early 2021.

BNCT-US Workshop "Collaborative Platforms for Advancing Engineering Biology: Focus on the COVID-19 Pandemic"

On 29 July, the OECD Working Party on Biotechnology, Nanotechnology and Converging Technologies (BNCT) held an online workshop "Collaborative Platforms for Advancing Engineering Biology: Focus on COVID-19". The main topics included biofoundries' development areas; ways to build resilience to future epidemics; and developing roadmaps for research in engineering biology and COVID-19 to identify challenges and opportunities for international collaboration.

In particular, the experts suggested that civil public biofoundries should play the role of development accelerators in engineering biology. They should also serve as a unique environment for staff training and testing new intellectual property management models; for promoting a sustainable safety and responsibility culture; and for democratising the production of vaccines and drugs for COVID therapy. The future of such enterprises is associated with the development of artificial intelligence and machine learning.

Distributed bioprocessing facilities and mobile bioprocessing plants will support the development of necessary reagents and tools to combat COVID-19, ensure prompt delivery of vaccines, allow to reduce costs and create new jobs. To promote development of such facilities and plants, public procurement strategies should be changed, best practices replicated, and standards introduced for the development of modular principles of organising engineering biology activities, including international cooperation.

Commentary

In the context of the ongoing COVID-19 pandemic, many countries are improving their STI policies to accelerate technological development. Russia is also stepping up the effort to mobilise the national S&T potential. Support provided for R&D and innovation projects, researchers and technology entrepreneurs is increased, to more efficiently counter the coronavirus pandemic; development of high-tech industries and innovative infrastructure is being promoted.

A specific feature of managing S&T development in accordance with the new Presidential Decree No. 474 is targeting its long-term effects and societal benefits. Scaling up research and development, balanced development of high-tech and innovative businesses based on the potential of R&D organisations and universities, strengthening their competitiveness, and increasing their contribution to the economy are of key importance.

The national projects "Science" and "Digital Economy" approved in accordance with the Presidential Decree No. 204 of 07.05.2018 will be adjusted in the coming months. The main objective is to ensure continuity of the political agenda, consistency of target indicators, and increased contribution of the projects to accomplishing the country's long term development goals. Increasing support provided for innovation activities and strengthening international STI cooperation should be considered, among other things to more effectively counter the current and future epidemics.

Sources: official websites of the RF President, RF Government, Ministry of Education and Science, Rosatom, Rospatent, RAS, RVC, OECD, European Commission, BRICS, RBC, D-russia.ru; websites of foreign countries' governments, agencies, foundations, etc.

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