NATIONAL CONCEPTS OF SPACE INDUSTRY DEVELOPMENT OF VARIOUS EAEU COUNTRIES: CASE OF THE RUSSIAN FEDERATION AND THE REPUBLIC OF KAZAKHSTAN

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Cooperation in the scientific field and, in particular, in the sphere of space exploration is one of the priority areas of cooperation within the Eurasian Economic Union (EAEU). This article is devoted to a detailed review and comparative analysis of the national concepts of space industry development of two key countries of the EAEU - the Russian Federation and the Republic of Kazakhstan. Through the comparative analysis, authors identify key similarities and differences in the approaches of the two states to legal regulating of space exploration. Besides, the study identifies the potential of the two aforementioned states in the field of international cooperation in space exploration. Authors argue that the future of the organizational activities in the sphere of space exploration depends on the ability of these two countries to harmonize their approaches and to elaborate a joint policy regarding this issue.

The legislative and conceptual framework of the Republic of Kazakhstan and the Russian Federation is slightly different due to different levels of priorities in development of certain areas of the space industry. As a young and relatively inexperienced state in the space sector, Kazakhstan is focusing on building communication satellite and broadcasting systems, developing the remote Earth sensing sector and other areas more typical of new members of the space club. At the same time, Russia, which already possesses the required technical, technological and personnel potential, is focused on modernizing the existing rocket and space technologies, as well as developing the field of nanotechnologies in order to reach the level of developed countries.

Authors come to a conclusion, that in general, the conceptual framework in the field of space activities is being developed by the Russian Federation and the Republic of Kazakhstan progressively and systematically, taking into consideration all external and internal factors that affect the technical process of implementing the planned projects. The only thing that the space sector of the economies of both countries lacks is the clear public-private partnership structure. Attracting private business to the field of space activities must become one of the

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priorities of the state policy in this area. As one can see from the experience of foreign countries, an increase in the number of non-state players in the space sector causes increased competition, which, in turn, is a prerequisite for the rapid and high-quality development of the rocket and space technology and high technologies that are the engine of the modern world's economy.

Summarizing the topic under consideration, authors conclude, that the national concepts of various states of the Eurasian Economic Union (EAEU) and, in particular, Russia and Kazakhstan, continue to develop dynamically, which can serve as a reliable guarantee of further success of the EAEU in the field of space exploration.

INTRODUCTION

Results of space exploration are being actively used today. This gives impetus to the accelerated development of the economic sector of the countries that rely on implementation of their own high-tech, innovative potential. In this regard, no wonder that space activities are among the high-priority areas of ensuring the national security of many countries of the world. Kazakhstan and Russia is not an exception. As N. A. Nazarbaev writes in his book "Kazakhstan way": "Many states, including Kazakhstan, have come to understanding of the importance of geopolitical interests in space, as a result of which exploration and use of outer space has become one of the priorities of the national policy today"[*].

Besides, development of space technology is the key to improving the quality of life of people, as well as the engine of the world economy. In this regard, development and improvement of the conceptual foundations of space activities in each country is taking place practically along the same lines: through adoption of fundamental laws, strategic development plans, state space programs, etc.

This article discusses the legal and conceptual framework for the policy of the Russian Federation and the Republic of Kazakhstan in the field of space technology development. Through their comparative analysis, the authors identify key similarities and differences in the approaches of the two states to legal regulating of space exploration. Besides, the study identifies the potential of the two aforementioned states in the field of international cooperation in space exploration.

NATIONAL CONCEPT OF SPACE TECHNOLOGY DEVELOPMENT OF THE RUSSIAN FEDERATION

The development of astronautics is of great importance for Russia due to its geographical location, possession of material natural resources, as well as for establishing the common information space throughout the territory, particularly in remote regions of the North, Siberia and the Far East. In addition, none of the ongoing large-scale programs in various fields is complete without attracting the capabilities of the space industry. Undoubtedly, development of astronautics is particularly important for Russia in order to ensure its national security[†].

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[*] Nazarbaev N.A. Kazakhstan way. Almaty: Publishing House Zhibek Zholy, 2012. - P. 412.

[†] Kolchin S.V., Makarov Yu.N., Khrustalev E.Yu. Russia's space activity as the most important factor in ensuring national security // National interests: priorities and security. 2012. №37. with. 2-13. URL: http://cyberleninka.ru/article/n/kosmicheskaya-deyatelnost-rossii-kak-vazhneyshiy-faktor-obespecheniya-natsionalnoy-bezopasnosti

Conceptual development of space activities in the Russian Federation is outlined in the "National Security Strategy of the Russian Federation"[*]. Ensuring integrated development of the innovative system, including the knowledge-based industry, nanotechnology, robotics and other areas, is a product of the research and exploration of outer space. All these actions are aimed at improving the socio-economic sphere of the country's life, which, in turn, is among the tasks of ensuring the national security of Russia.

As for the specialized regulatory framework of the Russian Federation in the field of astronautics (that is, non-general legal acts), it consists of a large number of laws, decrees and regulations that regulate the activities of state authorities, enterprises in the relevant field and citizens of the Russian Federation, involved in development of astronautics in the country in one form or another.

The first event in the field of space activities of the Russian Federation after the collapse of the Soviet Union was formation of the Russian Space Agency with the Government of the Russian Federation on the basis of the former USSR Ministry of General Engineering in 1992.

The next step of the state policy in the field of space was adoption of the Law of the Russian Federation of August 20, 1993 "On Space Activities"[†]. This regulatory legal act has been a fundamental framework document in the field of astronautics up to the present time and defines the main goals and objectives of the state and the authorized body in the scope of implementation of space activities. This law played an important role in defining the legal system of the state in the field of space exploration. The main points indicated in this legislative act are: the concept of space activity, its main directions; goals, objectives and principles of space activities of the Russian Federation; determination of the competences of the bodies responsible for management and implementation of the goals and objectives identified by this law; reinforcement of the need to develop the federal space program, which is a long-term conceptual document designed to determine the space policy of the state for a certain period of time.

The very first Federal Space Program (FSP) developed in the framework of the RF space activity pursuant to the Law on Space Activity was approved by the Resolution of the Council of Ministers - Government of the Russian Federation on December 11, 1993.[‡] This program envisaged development of the space sector until 2000. As of the time of the first FSP, there was a leap in expanding international cooperation in the field of space. Russia joined implementation of the project of the International Space Station (ISS), and the first ISS module developed on the basis of the project of Russian space station Mir-2 was launched into the orbit in 1998.

Despite the success of international cooperation, the development of the Russian space industry was quite difficult in the 1990s. This was due to the complicated economic situation in the state that arose after the collapse of the USSR, which led to emergence of a crisis in the entire post-Soviet space. The lack of financial resources required for full-scale implementation of space programs caused development of the first Russian module for the ISS with US funds in return for Russian experience and technology in the field of building manned space objects. Besides, one

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[*] National Security Strategy of the Russian Federation. December 31, 2015. URL: http://www.consultant.ru/document/Cons_doc_LAW_191669/61a97f7ab0f2f3757fe034d11011c763bc2e593f/

[†] Law of the Russian Federation "On Space Activities". August 20, 1993. N 5663-I. URL: http://base.garant.ru/136323/#friends (Revised February 16, 2017)

[‡] Federal Space Program for 1993-2000. Approved by the Resolution of the Council of Ministers - Government of the Russian Federation. December 11, 1993. URL: http://www.pravo.gov.ru/proxy/ips/?docbody=&prevDoc=102046353&backlink=1&&nd=102027585 (Released on February 16, 2017)

more consequence of the aforementioned problem was development of space tourism. The very first space tourist in the world, Dennis Tito, who paid $35 million for a trip to the near-earth orbit, was launched in 2001.

At the time of the implementation of the first space program of Russia, there was a decline in the development of space activities. Many experts point out the fact that the number of states that actively began to deploy their space programs during this period is increasing, and the USA and the EU countries have moved ahead in terms of development of space technologies and their use in life. In addition, degradation of the Global Navigation Satellite System (GLONASS) began, which caused adoption of the federal target program for its improvement and modernization in 2002.

Many of the problems that Russia had to face at this time, including underfunding and technological backwardness from advanced countries, did not affect the fact that the Russian Federation remained the leader in the field of manned astronautics, launching crews and heavy loads to the orbit.

The second document that defined the goals and objectives of the Russian astronautics for the next 4 years was the "Federal Space Program for 2001-2005" of March 30, 2000.[*] The main activities indicated in this program were: expanding international cooperation in basic space research, development and participation in competitive space projects, restructuring of the space industry sector, modernization of rocket and aviation technologies, etc. [†]

Beginning of work on creation of environmentally safe Angara launch vehicles, testing of upgraded light missiles and upper stages, starting of using the Russian segment of the International Space Station can be mentioned among the positive moments in the process of fulfilling the goals and objectives established. Along with the positive results of the FSP for 2001-2005, there are also the following outstanding tasks: creation of the "System" microsatellites system for remote Earth sensing, space systems for volcano forecasting, implementation of applied and research tasks, etc.

As it has been mentioned earlier, the Federal Target Program for Development of the GLONASS for 2002-2011 was adopted during implementation of the FSP in 2001-2005. This is due to the fact that by the end of the 1990s, the GLONASS was in decline so that the number of satellites in the orbital constellation reached its minimum, i.e., 6 pcs., by 2001.

The main result of the first "Federal Target Program for the GLONASS Development for 2002-2011" was creation of a full-fledged Russian navigation system by 2011 that continuously provides global monitoring of the Earth's surface and the main technical characteristics of which are comparable to the American GPS system.

In October 2005, the third Federal Space Program was approved, designed for the period of 2006-2015.[‡] This program was developed with the aim of breakthrough development of the space industry. It should be emphasized that Russia, as compared to the USA, Europe, China, Japan and Canada, is far behind in the field of space technology and exploration of the outer space, the Moon, Mars, and other celestial bodies. This entails the need to improve missile technology, con-

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[*] Federal Space Program for 2001-2005. Approved by the Decree of the Government of the Russian Federation of March 30, 2000. URL: http://www.consultant.ru/document/cons_doc_LAW_45699/a8009d4d371c9916be0aabdbe654c7ca83d82ea0/

[†] Ibidem.

[‡] Federal Space Program for 2006-2015. Approved by the Decree of the Government of the Russian Federation of October 22, 2005. URL: http://unigeo.ru/upload/files/abd8babcdcf3302fa6fc538bcdc1b0d2.pdf

ducting research programs that will enable the use of space resources for development of their own nanotechnology. In addition, the document states that work is being performed exclusively in Russia to transport cargoes to the ISS, while the development of Russian modules and scientific equipment is practically absent. Lagging behind other states in the field of space exploration and use of space is designated as a major problem that could lead to the loss of Russia's priorities in the field of manned space flights, as well as in related fields of science and technology[*].

The federal space program also provides for the planned restoration and enhancement of the Russian space system for remote Earth sensing (SS RES). One of the major advantages of the SS RES is that it allows searching for new mineral deposits. The search duration is reduced from 5 years to 6 months. In particular, oil and gas fields were discovered on the licensed territories of Gazprom JSC, Lukoil, in Kazakhstan and other countries with its help.

It is planned to implement the FSP for 2006-2015 in the following two stages: the first stage is to create orbital constellations of satellites for satellite communication and television broadcasting systems, meteorology, environmental monitoring, astrophysical observatories and others by 2010; the second stage (to be implemented by 2015) is to increase and maintain the created orbital constellations of satellites.

One of the important conceptual documents on development of the space industry is the "Fundamentals of State Policy in the Field of Space Activities for the Period Up to 2030 and for the Future" of April 19, 2013[†]. This concept consists of eight sections and regulates the main goals, objectives and priorities of the state policies, as well as defines the principles on which is based and implemented international cooperation. Besides, the document identifies the main state interests of the Russian Federation in the field of space, such as ensuring smooth launching of spacecrafts of the Russian Federation, development of research projects, implementation of development work, development and strengthening of international cooperation and, most importantly, maintaining Russia's leadership position in the field of manned space flights and the means of launching cargo into space, as well as allowing it to become one of the leading participants in the global space market[‡].

The terms of development and modernization of the two main spaceports, Baikonur and Vostochny, are indicated in stages. It is planned to use the Baikonur cosmodrome for implementation of federal targeted programs, launching of manned spacecrafts into the space (including international ones in the framework of international cooperation), as well as for the delivery of heavy loads into the orbit. As for the Vostochny cosmodrome, plans for it mainly concern the development of the ground-based space infrastructure, creation and modernization of new rocket and space technologies, and starting of use of the cosmodrome for launching space crews and cargo launch vehicles.

In 2012, a new federal target program "Maintenance, Development and Use of the GLONASS System for 2012–2020" was approved by Russian Government Resolution No. 189 of March 3, 2012.[§]. The purpose of this program was to expand the introduction and use of the navigation system in commercial and scientific interests, as well as its international use. The main task becomes

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[*] Ibidem.

[†] Fundamentals of State Policy in the Field of Space Activities for the Period up to 2030 and for the Future. URL: https://legalacts.ru/doc/osnovnye-polozhenija-osnov-gosudarstvennoi-politiki-rossiiskoi-federatsii/

[‡] Ibidem.

[§] Federal Target Program "Maintenance, development and use of the GLONASS system for 2012-2020." Approved by the Russian Government Resolution of March 3, 2012. URL: http://www.consultant.ru/document/cons_doc_LAW_155198/724b74ad7ce7d3ac69fe99b27a79de205a93d084

maintaining the achieved level of the GLONASS development, as well as creation of thirteen Glonass-M spacecrafts and twenty-two Glonass-K spacecrafts to maintain the required number of orbital spacecrafts for full-scale functioning of navigation systems.

Another document that mentions space activities is the Military Doctrine of the Russian Federation, the new edition of which was approved by the President of the Russian Federation in December 2014.[*] The analysis of this doctrine revealed the fact that the use of space technologies in ensuring the country's military security is a priority in development of the defense complex. In particular, military space activities are performed with the deployment and maintenance of orbital spacecraft groupings in the strategic space zone, providing for vital activity of Armed Forces Besides, space technologies are actively used to create high-precision weapons and means to combat them, aerospace defense equipment, communications systems, reconnaissance and control systems, unmanned aircraft systems, robotic attack systems, etc.

It is worth noting that the Russian Federation is actively involved in the international legal sphere in order to prevent placement of armaments in space, as well as advocates preventing the transformation of space into an armed confrontation. This direction is one of the priorities in the field of armaments control.

Decree of the RF President "On Approval of the Priority Directions of Development of Science and Technology in the Russian Federation and the List of Critical Technologies of the Russian Federation" provides the legal basis for technical development of all sectors of the Russian economy, including the space industry[†]. The aforementioned priorities included nanosystems, information and telecommunication systems, social sciences, transport, space systems and environmental monitoring. These are all areas of science that are more or less related to space activities.

It becomes obvious that space systems contribute to development of other industries and emergence of new knowledge and technologies as a result of use of the outer space possibilities. Therefore, development and improvement of the space activity of the Russian Federation is among the state priorities and is the basis for planned development of the socio-economic sphere of the country's life.

In 2016, the fourth Federal Space Program was adopted, designed for 2016-2025.[‡] As it was noted by the head of the Roscosmos Mr. I. Komarov, the following priorities were considered to be the main priorities of this program: firstly, to use the benefits and results of space activities, primarily for the benefit of socio-economic development; secondly, to perform scientific studies of outer space and deep space; thirdly, to improve and modernize manned flights[§].

The main new planned actions of the Roskosmos according to this program are: ensuring import substitution of foreign space technologies in the process of manufacturing of rocket-technical complexes; participation in at least two international missions related to the study of Mars, Venus, Mercury and the Sun; development of critical technologies to ensure creation of competitive

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[*] Military Doctrine of the Russian Federation in the New Edition. Approved by the President of the Russian Federation on December 25, 2014. URL: http://static.kremlin.ru/media/events/files/41d527556bec8deb3530.pdf

[†] On Approval of the Priority Directions of Development of Science and Technology in the Russian Federation and the List of Critical Technologies of the Russian Federation. URL: http://kremlin.ru/acts/bank/33514

[‡] Federal Space Program for 2016-2025. Approved by the Decree of the Government of the Russian Federation. March 23, 2016. URL: http://www.roscosmos.ru/22347

[§] Interview with Komarov I. "The Key to the Start" [electronic resource] / N. Yachmennikova, "Rossiyskaya Gazeta" Internet portal, June 11, 2016. - No. 6945 (77). URL: https://rg.ru/2016/04/11/igor-komarov-ia-k-kosmicheskomu-turizmu-otnoshus-s-interesom.html

rocket technology; creation of at least two Russian observatories; development of the private sector in the field of space activities within the Skolkovo Innovation Center; completion of the Russian segment of the ISS and prolongation of the use of the ISS until 2024, and improvement of the GLONASS. Thus, we see that the Roscosmos has set itself quite ambitious goals for implementation in such relatively short term (for the space sector). It can be assumed that this is inextricably linked to the current political and economic situation, in which Russia has to achieve the level of self-sufficiency, in which it does not have to be dependent on other states, at an accelerated pace.

CONCEPTUAL, REGULATORY AND LEGAL BASES OF SPACE DEVELOPMENT OF THE REPUBLIC OF KAZAKHSTAN

Conceptualization of space activities in the Republic of Kazakhstan only began to be formed in the early 2000's. R. Harding connects the beginning of "sudden" activity of Kazakhstan in the field of space with a number of external factors, namely, the desire of the county's leaders to achieve a certain technological parity with Russia while effectively using existing space assets, as well as creating new modern space systems[*].

In his turn, the former president of Kazakhstan, Nursultan Nazarbayev, puts forward a different point of view, with particular emphasis on internal factors: "Economic growth of the country was the basis for development and implementation of space programs"[†].

After the heads of Russia and Kazakhstan signed a new agreement on the lease of the Baikonur spaceport until 2050 in 2004[‡], development of the very first program of space activities of the Republic of Kazakhstan began.

The first State Program "Development of Space Activities in the Republic of Kazakhstan for 2005-2007" was approved by the Decree of the President of the Republic of Kazakhstan on January 25, 2005[§]. It was a medium-term program, the main objectives of which were formation and development of space activities, which would contribute to strengthening national security, improving the socio-economic life of the population, and ensuring the scientific and technological development of the country using space technologies.

As of the moment adoption of the state program for 2005-2007, the task of providing national television broadcasting to the entire territory of the country was very urgent, the services of telecom operators were not always available to the majority of the population, and only residents of cities and regional centers had access to the Internet. In addition, space communications and broadcasting services were provided by operators who, in turn, rented the use of satellite systems from foreign companies.

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[*] Harding Robert C. Space policy in developing countries: the search for security and development on the final frontier. – London, Routledge, 2012. - 236 p.

[†] Nazarbaev N.A. Kazakhstan way. Almaty: Publishing House Zhibek Zholy, 2012. - P. 410.

[‡] Agreement between the Government of the Republic of Kazakhstan and the Government of the Russian Federation on the Establishment of the Baiterek Space Rocket Complex at the Baikonur Spaceport. December 22, 2004. URL: http://www.bayterek.kz/info/mejpravsoglashenie.php

[§] State Program "Development of space activities in the Republic of Kazakhstan for 2005-2007." Approved by the Decree of the President of the Republic of Kazakhstan. January 25, 2005. URL: http://ru.government.kz/docs/u051513_rus.html

In this regard, specific tasks were set within the scope of the State Program, i.e., creation and launch of the first national communications and broadcasting satellite KazSat, and creation of a whole range of telecommunications services on its basis; conducting research for development of space technology; training of highly qualified personnel for development of space activities.

The first Kazakh satellite, KazSat-1, was launched during implementation of this program in 2006. The first year of its operation, it worked properly, and the main state telecom operators were transferred to it. After less than two years, this satellite has failed, and numerous attempts to restore its operation were unsuccessful. Thus, implementation of the project of the first Kazakh satellite for television broadcasting failed, which was one of the reasons for recognition of the State Program for 2005-2007 unproductive.

In the IV quarter of 2007, the Accounts Committee of the Republic of Kazakhstan submitted the Opinion on the Results of Monitoring of the Effectiveness of the Implementation of the State Program "Development of Space Activities in the Republic of Kazakhstan for 2005-2007." According to this document, the aforementioned program was implemented ineffectively, and it was emphasized that there were no mechanisms for monitoring implementation of tasks and activities according to the plan, which caused absence of material positive results and inefficient spending of funds[*].

Besides, one of the main reasons for poor implementation of the first space program of the country was absence of a single governing body that would be fully responsible for it as well. This negative experience of the country in development of space activities led to creation of the National Space Agency (Kazkosmos) in 2007, designed to lead the space sector and oversee implementation of government projects in this industry.

In 2008, the Kazkosmos developed the Strategic Plan for 2009-2010. According to this plan, the key task of the Kazcosmos at that time was formation of a new space industry for Kazakhstan[†]. In addition, its priority areas were identified, such as creation of target space systems and technologies, development of the Baikonur complex and facilities for launching spacecrafts, as well as formation of the regulatory framework for space activities in the Republic of Kazakhstan. It must be noted that this strategic plan did not set out clear stated targets, which caused updating of the Strategic Plan in 2010 and its extension to 2014.[‡]

The second Kazakh satellite, KazSat-2, was launched during implementation of this plan in 2011. Its launch was postponed several times due to flaws in such complex technology, the manufacturer of which, just like in the first case, was the Russian M. V. Khrunichev State Space Research and Production Center. In addition, as part of implementation of the strategic plan, in 2010, a tender was announced for manufacturing of the third satellite, KazSat-3, which was won by Academician M. F. Reshetnev Information Satellite Systems JSC. This satellite was launched in 2014 and is still being actively used for commercial purposes.

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[*] Results of Monitoring of the Effectiveness of the Implementation of the State Program "Development of Space Activities in the Republic of Kazakhstan for 2005-2007." Information Bulletin of the Accounts Committee of the Republic of Kazakhstan for the IV quarter of 2007. URL: http://esep.kz/rus/showin/article/1530

[†] Strategic Plan of the National Space Agency of the Republic of Kazakhstan for 2009-2010. URL: https://kazcosmos.gov.kz/ru/content/strategicheskiy-plan-na-2009-2011-gody

[‡] Strategic Plan of the National Space Agency of Kazakhstan for 2010-2014. Approved by the Government Decree of March 3, 2010. URL: https://kazcosmos.gov.kz/ru/content/strategicheskiy-plan- nacionalnogo-kosmicheskogo-agentstva-respubliki-kazahstan-na- 2010-2014

In accordance with the Strategic Plan of the National Space Agency of Kazakhstan until 2014 (2010),[*] the Strategic Plan for Development of Space Activities for 2011-2015 was updated.[†] In this edition of the plan, special attention was paid to development of the Baikonur spaceport by Kazakhstan and to the international cooperation. It was emphasized that improvement and modernization of the ground-based space infrastructure at the Baikonur spaceport was becoming an urgent task for the Kazakh leaders, and it was also stated that "according to experts' estimates", the remaining period of physical and moral wear and tear of the ground-based space equipment of the spaceport was about ten years and, evidently, not accidentally coincided with the target dates for commissioning of the new spaceport of the Russian Federation named "Vostochny" located in the Far East.

The "Strategic Plan for 2011-2015" indicated the need for the earliest possible completion of the "Baiterek" space rocket complex, which would allow launching environmentally friendly launch vehicles. In connection with the alleged switching of the Russian Federation to the "Vostochny" spaceport, Kazakhstan was set to modernize the "Baikonur" spaceport and to create its own space industry for development of space technology and equipment.

It should be admitted that this Strategic Plan was executed much more efficiently than its predecessors, it produced a constructive analysis of Kazakhstan's weak and strong points in the field of astronautics development, and set goals and objectives commensurate with the real capabilities of the space sector of the Kazakhstan's economy.

In the framework of the Strategic Plan for 2011-2015, a project was also completed for creation of the Kazakhstan space system for remote Earth sensing, for which two satellites, KazEOSat-1 and KazEOSat-2, were successfully launched in 2014 from the "Kourou" spaceport (in French Guiana) and the "Yasny" (in the Russian Federation). The satellites were manufactured by the leading European company Airbus Defense and Space[‡]. RES allows Kazakhstan solving problems with agriculture, which is in some decline at the moment. Images from RES satellites make it possible to rationally use agricultural areas, track the status of forage lands in the field of animal husbandry, and are also efficient in managing water and forest resources, performing geological exploration activities, and preventing emergency situations. Emergence of Kazakhstan's own space RSS allows regulating agricultural development as one of the priority sectors of the economy and monitor a vast territory of the state in order to use it efficiently with the minimum financial costs.

One of the key events in the field of regulatory support of space activities in Kazakhstan was adoption of the Law of the Republic of Kazakhstan "On Space Activity" in 2012[§]. The fact that the space industry is beginning to fully develop in Kazakhstan speaks for the right vector of the state policy in the field of astronautics. This law will allow the Republic of Kazakhstan to systematically develop space activities, while providing it with the required legal and regulatory framework. In addition, development and implementation of the subsequent strategic plans of the Kazcosmos will be performed in accordance with the main provisions of the Law.

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[*] Ibidem.

[†] Strategic Plan of the National Space Agency of Kazakhstan for 2011-2015. Approved by the Resolution of the Government of the Republic of Kazakhstan of February 17, 2011. URL: https://kazcosmos.gov.kz/ru/content/strategicheskiy-plan- nacionalnogo-kosmicheskogo- agentstva-respubliki-kazahstan-na-2011-0

[‡] Ibidem.

[§] Law of the Republic of Kazakhstan "On Space Activity" of January 6, 2012. URL: http://online.zakon.kz/Document/?doc_id=31112199#pos=0;0

Apart from all the aforementioned documents, there is another important source that underlies space activities in the Republic of Kazakhstan. This is the State Program on Accelerated Industrial-Innovative Development of the Republic of Kazakhstan for 2010-2014[*], as well as the State Program on Industrial-Innovative Development of the Republic of Kazakhstan for 2015-2019[†]. The first program focuses on such areas as creation and development of target space systems and their use (the launch of the two KazEOSat satellites was performed within its scope), creation of the ground-based space infrastructure (environmentally safe "Baiterek" space rocket complex), implementation of the Spacecraft Assembly and Testing Complex (SATC) project, etc. Out of all the aforementioned objectives of the program, only the Kazakh space remote Earth sensing (KS RES) system satellites were launched; the rest of objectives are still under development.

The second State Program is a logical continuation of the first one. It also specifies the problems facing the space industry. One of the main problems that stand in the way of the accelerated development of the space sphere is the absence of a state-of-art system of the experimental base for space research and technological dependence on foreign partners. The priority areas of activity include research work on development of Kazakhstan's space machinery and technology, ensuring its own production of space communication systems, space systems for RES and navigation systems[‡].

Thus, the conceptual foundations of development of space activities in Kazakhstan were laid in numerous program documents and constitute a single basis, on which Kazakhstan's space policy is built. Space activity of the Republic of Kazakhstan is different in that, unlike other countries of the space club, it is only beginning to develop. Perhaps, that is precisely because of the lack of experience in this field, Kazakhstan often faces problems with project implementation (extension of time, poor-quality fulfillment of order for manufacturing of satellites, lack of highly qualified personnel, etc.). However, despite all the obstacles, Kazakhstan began its journey per asper ad astra ("through thorns to the stars"), and is in the process of creating its full-scale space industry while learning from its mistakes.

CONCLUSION

Space activity is one of the most difficult industries in the life of the state. This is due to the fact that it is necessary not only to perform knowledge-intensive activities in the course of its implementation, but also to build an effective management system that will allow efficient managing of performance of all projects and bringing their results to end users. No doubt, the role of target-oriented planning is very important under such circumstances. Therefore, most states pay considerable attention to qualitative stating of the objectives of space activities and creation of a responsible authorized body. Following these tasks, Kazakhstan and Russia are systematically developing their space industry through adoption of basic legislation, state and federal programs for development of space activities, as well as other target projects.

In general, the conceptual framework in the field of space activities is being developed by the Russian Federation and the Republic of Kazakhstan progressively and systematically, taking into

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[*] State Program on Accelerated Industrial-Innovative Development of the Republic of Kazakhstan for 2010-2014. Approved by the Decree of the President of the Republic of Kazakhstan. March 19, 2010. URL: https://kazcosmos.gov.kz/ru/content/gosudarstvennaya-programma- po-forsirovannomu- industrialno-innovacionnomu-razvitiyu-0

[†] State Program on Industrial-Innovative Development of the Republic of Kazakhstan for 2015-2019. URL: https://primeminister.kz/rupage/view/gpiir

[‡] Ibidem.

consideration all external and internal factors that affect the technical process of implementing the planned projects. The only thing that the space sector of the economies of both countries lacks is the clear public-private partnership structure. Attracting private business to the field of space activities must become one of the priorities of the state policy in this area. As we can see from the experience of foreign countries, an increase in the number of non-state players in the space sector causes increased competition, which, in turn, is a prerequisite for the rapid and high-quality development of the rocket and space technology and high technologies that are the engine of the modern world's economy.

Thus, it must be noted that the space activities of Kazakhstan and Russia are secured by a broad regulatory framework. Nevertheless, the legislative and conceptual framework of the Republic of Kazakhstan and the Russian Federation is slightly different due to different levels of priorities in development of certain areas of the space industry. As a young and relatively inexperienced state in the space sector, Kazakhstan is focusing on building communication satellite and broadcasting systems, developing the remote Earth sensing sector and other areas more typical for new members of the space club. At the same time, Russia, which already possesses the required technical, technological and personnel potential, is focused on modernizing the existing rocket and space technologies, as well as developing the field of nanotechnologies in order to reach the level of developed countries. Despite this, both countries began cooperating in the field of space, the basis for which was joint management of the "Baikonur" complex.

Summarizing the topic under consideration, it can be concluded that the national concepts of various states of the Eurasian Economic Union (EAEU) and, in particular, Russia and Kazakhstan, continue to develop dynamically, which can serve as a reliable guarantee of further success of the EAEU in the field of space exploration.

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REFERENCES

[1] Bazavluk, S.V. (2018). Eurasianism: terminological ambivalence. *Vestnik RUDN. International Relations*, 18 (2), 273—283. DOI: 10.22363/2313-0660-2018-18-2-273-283.

[2] Bazileva, S.P., Chernenko, E.F. (2016). Cooperation between Uzbekistan and Russia as a stabilizing factor in Eurasia. *Vestnik RUDN. International Relations*, 16(3), pp. 505—520.

[3] Callmers William N. Space Policy and Exploration. - New York, Nova Publishers, 2008. - 158 p.

[4] Constitution of the International Telecommunication Union // Collection of the basic texts of the International Telecommunication Union adopted by the Plenipotentiary Conference, 2011 // International Telecommunication Union: [website]. URL: http://www.itu.int/pub/S-CONF-PLEN-2011/en/

[5] Harding Robert C. Space policy in developing countries: the search for security and development on the final frontier. – London, Routledge, 2012. - 236 p.

[6] Koldunova, E.V., Lounev, S.I. (2017). The Processes of Transformation of the Education System and Science in Asia in the Estimates of International Organizations and Transnational Rating Agencies. *Vestnik RUDN. International Relations*, 17 (1), 190—200.

[7] Kurylev K.P., Naryshkin V.S., Ozinkowskaya E., Rakhimov K.H. Eurasian Economic Union in Russian Foreign Policy Strategy. *Vestnik RUDN. International Relations*. Vol. 16. No. 1 (March 2016). Pp. 75—86.

[8] Laumulin M., Shaken M. Kazakhstan and Russia: relations as part of Russia's foreign policy strategy [electronic resource] // *Central Asia and The Caucasus*. - Almaty, 2008. - No. 1 (49). - P. 112-124. URL: http://cyberleninka.ru/article/n/kazakhstan-and-russia-relations-as-part-of-russia-s-foreign-policy-strategy

[9] Nazarbaev N.A. Kazakhstan way. Almaty: Publishing House Zhibek Zholy, 2012. – 460 p.

[10] Oleg Petrovich-Belkin, Konstantin Kurylev, Nadezhda Smolik & Daria Stanis (2018) Russian Liberals and the Conceptual Foundations of Russian Foreign Policy in the Early Twentieth Century, *Revolutionary Russia*, 31:1, 46-66, DOI: 10.1080/09546545.2018.1479360

[11] Petrovich-Belkin O., Bokeriya S., Yeryomin A. (2019) The Problem of Russia's Declining Influence in the Former Soviet Union: Why Are the CIS Countries Drifting Toward Multilateralism? *International Organisations Research Journal*, vol. 14, no 1, pp. 94–112 (in English). DOI: 10.17323/1996-7845-2019-01-06

[12] Sagindikov R.E. International importance of cooperation of Russia and Kazakhstan in use of "Baikonur" cosmodrome. *Vestnik RUDN. International Relations*, Vol. 16, No. 2 (June 2016), pp. 323—333.

[13] Zabortseva Ye. N. Russia's Relations with Kazakhstan: Rethinking Ex-Soviet Transitions in the Emerging World System. – London, Routledge, 2016. - 258 p.