

Svetlana Sylkina¹, Dana Baitukayeva²

¹candidate of juridical sciences, associate professor of the international law chair
al-Farabi Kazakh National University, Almaty, Kazakhstan, e-mail: sylkina.sv@mail.ru, tel.: +7 701 350 0027

²PhD student of the specialty of international law al-Farabi Kazakh National University,
Almaty, Kazakhstan, e-mail: baitukaeva_dana@mail.ru, tel.: +7 777 211 8444

INTERNATIONAL LEGAL FEATURES OF COMMERCIALIZATION OF SPACE ACTIVITY

The article is dedicated to the study of the problem of commercialization of space activity in the outer space. The world market of the outer space services has been formed relatively recently, but it is developing very rapidly. With technology development, the humankind came to realization of the fact that it has become within its powers to bring artificial objects and then people to the outer space. The number of states leading their own research in the sphere of production of satellites, missile carriers, developing their own space programs and space tourism programs. Achievements in the research and exploitation of the outer space are one of the most important indices of the country development level. International cosmic organizations are organizations of production and commercial type that possess own space complexes, provide services on commercial basis, and pay high dividends to investors. The perspectives of commercialization of outer space activity, undoubtedly, will have positive impact to the economy and further exploration of outer space by states. The objective of this work is a study of outer space activity commercialization issues. The international space law is on the stage of active perfecting now. In connection with the development of outer space activity commercialization and space tourism, the legal sphere of outer space activity is in the process of reformatting. The international space law must provide the adequate basis for cooperation of states and their entities in commercial use of this utmost (and perspective for investors) space, and, correspondingly, provide more efficient outer space activity regulation. Commercialization of outer space activity results in increase of the importance of protection of data (information) having commercial value, and for this purpose creation of relevant international legal mechanism is deemed expedient. The scientific significance of the work is determined by the fact that the analysis of peculiarities of the process of outer space activity commercialization is made in it for the first time. Methodological and theoretical bases. The method of istorism is used in the work as the principal one. The method of analysis is an important instrument of the study of peculiarities of outer space activity in their inextricable connection with the key principles of international space law, discovery of problematic aspects of the commercialization process. The method of synthesis provided the possibility to expose in a successive order the obtained results and their correlation with the general objective.

Key words: outer space research, innovation technology, commercialization, priorities of outer space activity, «Baikonur» cosmodrome.

Светлана Сылкина¹, Дана Байтукаева²

¹заң ғылымдарының кандидаты, әл-Фараби атындағы Қазақ ұлттық университетінің
халықаралық қатынастар факультеті халықаралық құқық кафедрасының доценті,
Алматы қ., Қазақстан, e-mail: sylkina.sv@mail.ru, тел.: +7 701 350 0027

²халықаралық құқық мамандығының докторанты, әл-Фараби атындағы Қазақ ұлттық университеті,
Алматы қ., Қазақстан, e-mail: baitukaeva_dana@mail.ru, тел.: +7 777 211 8444

Ғарыштық қызметті коммерцияландырудың халықаралық-құқықтық ерекшеліктері

Мақала ғарыш саласындағы ғарыштық қызметті коммерцияландыру мәселесін зерттеуге арналған. Әлемдік ғарыш қызметтерін көрсету нарығы салыстырмалы түрде жуырда ғана пайда болғанымен, өте жылдам дамып келеді. Технологиялардың дамуымен адамзат баласы жасанды нысандарды және артынша адамдарды ғарышқа шығаруға шамасы келетінін ұғын-

ды. Жерсеріктер және зымырантасығыштар өндіру өз зерттеулерін жүргізіп жатқан, ғарыштық бағдарламаларды және ғарыштық туризм бағдарламаларын әзірлеп жатқан мемлекеттердің саны өсуде. Ғарышты зерттеу мен пайдаланудағы саласында жетістіктер елдің даму деңгейінің аса маңызды көрсеткіштерінің бірі болып табылады. Халықаралық ғарыш ұйымдары өндірістік-коммерциялық ұйымдар болып табылады және меншікті ғарыш кешендерін иемденеді, коммерциялық негізде қызметтер ұсынады, капитал салушыларға жоғары дивидендтер төлейді. Ғарыштық қызметті коммерцияландырудың келешегі мемлекеттердің экономикасына және ғарыш кеңістігін әрі қарай игеруіне оң әсерін тигізеді сөзсіз. Жұмыс мақсаты ғарыш қызметін коммерцияландыру мәселелерін кешенді қарау болып табылады. Бүгінгі таңда халықаралық ғарыш құқығы белсенді жетілдіру сатысынан өтуде. Ғарыш қызметін коммерцияландыру және ғарыш туризмінің дамуына байланысты ғарыш қызметінің құқықтық өрісі қайта қалыптау процесінен өтуде. Халықаралық ғарыш құқығы мемлекеттер және ең үлкен кеңістікті (инвесторлар үшін тиімді) коммерциялық пайдалану ісіндегі бетке ұстар тұлғалардың арасында барабар ынтымақтастықтың негізін және ғарыш қызметінің неғұрлым тиімді реттелуін қамтамасыз етеді. Ғарыш қызметін коммерцияландыру коммерциялық құндылығы бар деректерді (мәліметтерді) қорғау маңыздылығын арттыруға әкеп соғады, ол үшін тиісті халықаралық құқықтық механизмін құру орынды болып табылады. Бұл жұмыстың ғылыми маңыздылығы, алғаш рет ғарыш қызметінің коммерциялау процесінің ерекшеліктеріне талдау жасалған. Әдіснамалық және теориялық негіздері. Жұмыста тарихи, сондай-ақ ғарыш қызметінің ерекшеліктерін зерттеуде маңызды құрал болып табылатын талдау әдісі де қолданылды. Синтез әдісі алынған қорытындылар мен олардың арақатынасы туралы мәліметтерді жеткізуге мүмкіндік берді.

Түйін сөздер: ғарыштық зерттеулер, инновациялық технологиялар, коммерцияландыру, ғарыштық қызметтің басымдықтары, «Байқоңыр» ғарыш айлағы.

Светлана Сылкина¹, Дана Байтукаева²

¹кандидат юридических наук, доцент кафедры международного права, факультет международных отношений, Казахский национальный университет имени аль-Фараби, г. Алматы, Казахстан, e-mail: sylkina.sv@mail.ru, тел.: +7 701 350 0027

²докторант специальности «Международное право», Казахский национальный университет имени аль-Фараби, г. Алматы, Казахстан, e-mail: baitukaeva_dana@mail.ru, тел.: +7 777 211 8444

Международно-правовые особенности коммерциализации космической деятельности

Статья посвящена исследованию вопроса коммерциализации космической деятельности в космической сфере. Мировой рынок космических услуг сформировался относительно недавно, но развивается очень быстро. С развитием технологий человечество пришло к осознанию того, что ему стало посылно выводить искусственные объекты, а затем и людей в космос. Растет число государств, ведущих собственные изыскания в области изготовления спутников, ракет-носителей, разрабатывающих космические программы, программы космического туризма. Достижения в исследовании и эксплуатации космоса являются одним из важнейших показателей уровня развития страны. Международные космические организации представляют собой организации производственно-коммерческого типа, которые владеют собственными космическими комплексами, предоставляют на коммерческой основе услуги, выплачивают высокие дивиденды вкладчикам капитала. Перспективы коммерциализации космической деятельности, несомненно, окажут положительный эффект на экономику и дальнейшее освоение космического пространства государствами. Целью работы является рассмотрение вопросов коммерциализации космической деятельности. Международное космическое право проходит стадию активного совершенствования. В связи с развитием коммерциализации космической деятельности и космического туризма происходит переформатирование правового поля космической деятельности. Международное космическое право должно предоставлять адекватную основу сотрудничества государств и их лиц в деле коммерческого использования этого самого большого (и перспективного для инвесторов) пространства, и, соответственно, обеспечивать более эффективное регулирование космической деятельности. Коммерциализация космической деятельности влечет за собой повышение важности защиты данных (информации), имеющих коммерческую ценность, для чего целесообразным представляется создание соответствующего международно-правового механизма. Научная значимость определяется тем, что в работе проведен анализ особенностей процесса коммерциализации космической деятельности. Методологические и теоретические основы. В работе в качестве основного используется метод историзма, а также метод анализа, который является важным инструментом изучения особенностей космической деятельности в их неразрывной связи с основными принципами международного космического права, выявление имеющихся проблемных сторон процесса коммерциализации. Метод синтеза предоставил возможность последовательно изложить полученные итоги и их соотношение с общей целью.

Ключевые слова: космические исследования, инновационные технологии, коммерциализация, приоритеты космической деятельности, космодром «Байконур».

Introduction

The outer space is so vast that there is no sense to recourse to such convenient in the Earth units of distance measurement as meters and kilometers. Instead of this, we measure outer space distances by light speed [1].

Rapid growth of scientific and technological progress has provided scientists and researchers with the possibility of new discoveries. The outer space has become a powerful thruster of this progress. The global character of the outer space activity called for uprising and development of international space law – a new area of jurisprudence regulating relations of states in the process of outer space exploration both on the national and on the international levels [2].

In the modern world, the space branch is one of the most priority-oriented and science-intensive spheres of human activity. States keep up playing the key role in the legal regulation of applied kinds of outer space use, since only states and international organizations created by them carry on law-making and law-enforcement activity on the international level [3].

A strong political motivation has always been essential for the space sector to evolve. Participation in the space activity determines, to a significant degree, political prestige of a modern state, its economic, scientific, technical, and defensive power. Analysis of modern tendencies and factors of development of the outer space activity witnesses that leading countries of the world put out considerable effort to increase their space potential. If initially the USA and the USSR dominated in this sphere for a long time, then now more than 30 countries possess space industry and more than 100 countries develop their space programs [4]. With growth of commercial use of the outer space, for example, development of space tourism [5], this factor resulted in inflow of different non-state subjects into the sphere of international space law. The scales of international cooperation and competition in the area of applied research and outer space exploration have increased. In the modern space law, alongside with general principles and norms, special contract rules regulating scientific and technical cooperation of states exist. Though many of these rules bear not general, but concrete character, they are an important constituent of the international space law. The legal framework of cooperation of states in use of the outer space are: the main principles and norms of the international law, including the principles of the United Nations Charter; the main principles of the international space law; special norms of the in-

ternational space law regulating different issues of international cooperation of states in outer space exploration. These principles act as criteria of legality of special norms of the international space law [6] and observance of these principles is obligatory in commercial outer space activity as well.

Methods

The historical method is used in the work as the principal one. The method of analysis is an important instrument of the study of peculiarities of outer space activity in their inextricable connection with the key principles of international space law, discovery of problematic aspects of the commercialization process. The method of synthesis provided the possibility to expose in a successive order the obtained results and their correlation with the general objective.

The outer space activity is being sweepingly commercialized. Commercialization of space activities are actions involving buying, selling and exchanging of space goods and services. Many of researchers M. Harr, R. Kohli [7], H. L. van Traa-Engelman [8], Z. Meyer [9] see the most significant feature of the expression «commercialization» in its central objective: «to make a profit». That is true. For example, inter-governmental organization INTELSAT, created in 1964, became a private company providing a wide specter of services in the area of satellite telecommunication: with the help of satellites, INTELSAT (the largest satellite company in the world) compasses more than a half of the volume of international telephone communication and practically all international television broadcasting. The company renders services in the sphere of data transfer, video conferences, telecommunication, etc [10].

On the basis of the International Maritime Satellite Telecommunications Organization INMARSAT (the company has one of the largest in the world satellite telecommunication networks), created in 1979, a public joint-stock company with limited liability was created in 1998. Inmarsat was transformed into Inmarsat Ltd. From 2000, the company is called Inmarsat Ventures Ltd. Today Inmarsat is the largest provider of mobile satellite telecommunication services, furnishing its subscribers with telephone and facsimile communication, data transfer both in the sea and on the earth and in the air [11].

International inter-governmental organization INTERSPUTNIK, formed in 1971, changed its status as well. In April 1997, Lockheed Martin

Corporation (American company, specializing in the area of aircraft industry, aerospace engineering, shipbuilding, mail service automation, and airport logistics) and INTERSPUINIK made a contract on creation of a joint venture for realization of a satellite communication project, including the whole technological cycle of providing satellite communication services from production and launch of a satellite to the geostationary orbit to its long term operation and in June 1997 a joint venture «Lockheed Martin-Intersputnik» was created [12].

In connection with fierce competition on the space communication market, most of these organizations have been privatized since the late 1990s. Growing contribution of the private sector to the outer space activity was noted, for example, by the Third Conference of the United Nations on Research and Use of the Outer Space for Peaceful Purposes (UNISPACE III) that took place in 1999. The Report of the Conference accentuated increase of the level of commercialization of applied space developments and the process of privatization in the space economy. The number of states involved in the activity on exploration and economic use of the outer space has increased as well: among them, along with the traditional leaders – the Russian Federation and the United States of America – China as well as states-members of the European Space Agency achieved serious success. India, Japan, Singapore, Korea, and the United Arab Emirates have made their names as perspective subjects of economic activity in the outer space. It was also noted in the conference of UNISPACE-III that the existing international space law was not ready to impetuous commercialization of the outer space investigation and use. According to the preliminary estimates, the commercial market will supersede the state sector and will become the biggest customer of the space industry in the nearest future [13].

Globalization hales commercialization of almost all processes. Even the armed forces are involved in this process, and they have always been prerogative of the state. But now private military companies exist, and whole segments of life-sustaining activity of the armed forces are commercialized. At the present stage, the main goal for many states is not study of the outer space or search for life in the interstellar vastitude, but gaining profit from this industry. The tendency of the modern time space activity is use of space research works for commercial purposes. Commercialization of the outer space is a logical process. An immense market is connected with the outer space. Space activity is a perspective sphere of activity, making significant contribution to the

economy of different counties and regions right now. Rapid formation of the world market of space goods and services is due, first of all, to large-scale changes that have come to life for the last decade in international relations. The presence of own aerospace activity, possession of advanced space technologies and scientific prospects in the area of space research have become principal parameters of states' development.

Results

Integration into global economic relations is one of the main factors stimulating intensity of innovation processes in outer space activity. Leading space powers treat innovations as the basis of stable functioning of the state. Creation of research and development works that will be able to satisfy all needs of the humankind in the future is the main purpose of the commercial space. Many private space companies try to find application of research and development works used before for space in medicine, mining industry, and machine-building industry as well as in any other branches. It should be noted that the state not always assumes risks in the space industry: it is the issue of rising finance, and what is more, testing and inspection of space equipment sometimes takes many years. But, owing to private finance and increase, consequently, of the space industry budget, one can suppose that this process should accelerate.

Innovation is the result of two processes: gaining new knowledge and its transfer for economic use, i.e. commercialization. Innovational development in the world is the most typical for high-tech branches of the economy, first of all, atomic and space-rocket industries. In the area of space activity, commercialization is relatively recent phenomenon (for the first time in the 60s of the last century, with launch of the first commercial telecommunication satellites). The result of development of various trends of the outer space activity, upgrading of space technique, and growth of members of the outer space activity came out as rethinking of the goal of outer space exploration: from satisfaction of yearning for scientific investigation of the outer space – to use of its potential for the sake of «earthly» economy. Such change of priorities of the outer space activity, dictated by the practice of the states, was fixed in the international space law and, therefore, was recognized as a global tendency [14].

Through a review of government legislations of the USA over the last many decades, it demonstrates that, space activities for commercial

purposes are not new, and private sector firms engaged in commercial activity have had public, private and government support for decades [15]. Space-commercialization activities were grouped into five categories: private sector development from existing technology for private sector use; pure privatization; private sector development for US government use; private sector development from novel technology for private sector use; and, finally, full commercialization [16].

As of today, the outer space activity has significantly expanded its trends, composition of participants, volumes, and opportunities. However, extreme complexity of the global outer space activity as an object of investigation predestinates the absence of its stable definition as a scientific category up to now, though legislative acts of different countries and international organizations as well as some researchers have tried for a number of years to eliminate this gap [17]. The legal subcommittee of the Committee for Space of the United Nations, having analyzed space legislation of different countries of the world, developed a standard scheme of the future national normative and legal regulation for new states-participants of the outer space activity [18].

One of the key drivers of the modern economic progress is innovation technologies in the area of digital and information systems, telecommunications, microelectronics, etc. Most of these research and development works originate from various spheres of the space industry. A significant part of space research and development works is blackout and is referred to government affairs in the sphere of national security. Many production and services branches in the world economy directly depend on the outer space activity development. Expansion of the market stimulates growth of finance turnover in the branch. NASA (Institute of Space Policy of George Washington University), European Space Agency (ESA) and significant number of space organizations of different countries today manifest special interest to the outer space activity for the purpose of its use in commercial direction. One mechanism, which is now currently used by NASA, CNES, and ESA, is the public-private partnership (PPP) concept whereby commercially oriented technologies are developed and verified – often the most costly part of the development – by the space agencies in order to be later applied in commercial ventures [19]. Concentration of resources and cooperation of different states is practiced more and more during realization of projects in the space sphere. European Space Agency can be an

example. It is accepted that the date of foundation of European Space Agency is 1964. For the first years, the Agency launched satellites using American carrier rockets. In its present shape, European Space Agency was formed in 1975. This year, ESA launched its first large scientific mission, Cos-B, an orbital observatory. The satellite permitted to get detailed maps of Galaxy radiation in the hard gamma range [20]. ESA had never possessed its own orbital station, but it actively participated in international cooperation with the USSR and the USA before. Now ESA has its own segment in the international space station (ISS). Since 1975, ESA has remained the only international organization in the territory of Europe that has been involved in provision and realization of the European space policy.

The national space policy is an instrument of development of outer space activity commercialization in the USA. For full-fledged use of this instrument, a special structure – Office of Space Commercialization (OSC) was formed at the US Department of Commerce (DOC), which bears responsibility for efficient realization of commercial space activity. The Office of Space Commercialization is the principal unit for the coordination of space-related issues, programs, and initiatives within the Department of Commerce. The mission of the OSC is to stimulate creation of conditions for market-oriented economic growth and technological superiority of commercial space industry of the USA. For realization of this mission, the OSC is focused on three priority directions of commercial space activity that have significant influence upon the American economic power, national security and competitiveness; navigation; commercial sector of the ERS; meteorology (National Oceanic and Atmospheric Administration, NOAA) and civil space operations. Measures taken in support of commercialization consist of transfer of a certain segment of outer space activity to commercial structures. OSC continued to participate in ongoing talks between the United States and Europe on potential cooperation in satellite navigation, helping develop negotiating strategies led by the Department of State (DoS). OSC also participated in a round of GPS-related consultations with Russia (again led by DoS) and a number of outreach missions to Belgium, Denmark, Sweden, Finland, Spain, and Portugal. During these international meetings, OSC provided educational briefings to Government and industry representatives on international GPS markets and applications [21]. The result of all these measures is stable growth of commercial space activity of the USA.

Discussion

For the last years, all that is connected to the outer space has become the focus of close attention of the world community. The interest is warmed up by rapid development of technologies in this sphere, including those related to efforts of private business. For example, the American company of Ikon Mask realized return of the first stage launcher of Falcon 9. This event theoretically can completely change the world markets connected with the space branch. In addition to it, Mask intends to realize the program of a manned flight to Mars [22].

Business and the outer space have already become inseparable concepts. Modernization and development of global navigation satellite systems as well as outreach of services provided on their basis: American GPS, Russian GLONASS, turns into one of the key vectors of West European astronautics. Russian global navigation system GLONASS is one of the two in the world fully-featured global navigation systems alongside with American GPS. Russia is the leader in the manned astronautics and in launches to the orbit, and preserves parity with the USA in the area of space navigation. Special strategic role is played by European project of global satellite navigation Galileo. New opportunities for attracting private and corporate investments and capital into the cosmic sphere have sprung up. The most attractive for investments today are systems of satellite telecommunication and navigation with rendering services on their basis. They significantly exceed the rest sphere of astronautics in volume, commercialization degree, and growth rate. It is due to greater profitability and quick payback of communicative technologies and navigation systems.

Commercialization and privatization of outer space activity bring about increase of the importance of protection of data (information) having commercial value, and for this purpose creation of a relevant international law mechanism is deemed expedient. The problem here may be that protection of intellectual property rights can to a certain degree conflict with the principle of research and use of the outer space for the sake and in interests of all countries. This contravention can be solved through preservation on the international law level of the obligation of states and private companies realizing applied use of the outer space to make deductions from their profits to a special fund. The facilities of such fund can afterwards be used for financing different programs of assistance to developing countries in build-up of their own space projects

or, at least, assistance to access of such countries to benefits from outer space activity [23].

In spite of different approaches of the Americans and the Europeans to commercialization of insertion of useful loads to the orbit, they have one common trait: state financing of rocket systems creation, but private financing of space vehicles launches. In all space powers, including the United States of America, management of programs' and rocket systems' designs is centralized on the basis of state organizations of NASA, NAEDA, ESA type with attraction of private firms. Financing of programs that, after their confirmation by sovereigns, become state ones is made owing to the country budget. It is easy to understand, since any program of such kind costs hundreds millions and billions dollars. Such sums are unmanageable for private investments with taking into account of great risk, as for any new business. State sources bear monopoly in this sphere. But big programs cannot be realized without mobilization of country resources. Take for example Manhattan Project, Apollo Program in the USA and programs of the Soviet Union in the sphere of defense. Concentration is inevitable [24].

The presence of spaceports in a country, the degree of their equipping and intensity of use depend, first of all, on goals and objectives that are set by the state before the space branch, general technical potential of the country and the economy on the whole, i.e., on the outer space research and use state program.

There are not so many states in the world being able to realize space projects. Russia has a cosmodrome in Plisetsk, famous Baikonur is used in Kazakhstan, the French have Kuru, the Americans – Cape Canaveral. The Chinese, who explore the outer space by leaps and bounds, realize their launches from all these countries. Location of spaceports relative to the astronomic equator plays its role. The nearer the take off point is to the equator, the less power engines are needed to insertion of a space vehicle into orbit. The Earth itself helps to take run with its rotation, that is why the floating spaceport «Sea Start» prospers: it permits to perform rocket vehicle firing from the most advantageous point – from the Earth's equator [25].

At latest, great changes have happened relative to increase of the scales of international cooperation in the area of exploration and use of the outer space, rapid globalization and commercialization of the space activity. Many states, including Kazakhstan, have come to understanding of the importance of geopolitical interests in the outer space, in consequence of which exploration and use of the

outer space have become one of the priorities of the national policy today [26].

Baikonur Cosmodrome is an emblematic object of cooperation and mutual relations between Kazakhstan and Russia. On June 18, 2006, Republic of Kazakhstan became a space power. On that historical day, the first Kazakhstani satellite «KazSat» was launched from Baikonur Cosmodrome. At the same time general direction of the space industry development demands search by the Republic of Kazakhstan of the place in the world space market which is caused by the increasing competition by the main participants of space activity (the Russian Federation, Japan, the USA, the People's Republic of China, Israel, India) [27].

One of the priority directions outlined in Strategy-2050 is the program of forced innovation industrialization of Kazakhstan (SP FIIR). In the framework of realization of the SP FIIR, one of the principal tasks is creation of full-value space branch as a science-intensive and high-tech sector of the economy. Creation of the Space Vehicles Assembly and Testing Complex in Astana will facilitate the space branch development in the Republic of Kazakhstan. The enterprise will produce different purpose satellites, from the idea to its implementation into design and concrete products [28].

For the years of independence, the republic has significantly advanced in space exploration, having realized the first National Short-Term Space Programme 2005-2007 and moving to the second one, planned for a long-term period up to 2020. The main stress will be laid upon development of Baikonur Cosmodrome; a full-scale space cluster based on it will be created. It is expected that processes of diversification and expansion of the export potential of the economy of Kazakhstan will get a powerful impulse with the help of investments. In parallel, it is planned that 30 high-tech enterprises of the aerospace branch will have been created by 2020. Kazakhstan quite smoothly fits into the total structure of the space market, step by step materializing the aspiration of the country for leadership in the aerospace sphere. Measures on aeronautics development taken on the top level are aimed at achievement of the final result – the status of a space power [29].

Conclusion

Three main political factors: national prestige, national security and strategic independence have always been keys to the development of the space industry. The space industry has become one of the

largest industry branches in the world. At the present stage of development of states, great changes related to increase of the scale of international cooperation in the area of exploration and use of the outer space, sweeping globalization and commercialization of the outer space activity have happened in the world space industry. Space commercialization is the logical consequence of the progress of space activities. Most of the current commercial actors themselves are often: privatized governmental or intergovernmental bodies (e.g. Intelsat, Eutelsat); companies created with commercial purposes, but with some governmental control through shareholding (e.g. Arianespace); private companies but largely dependent on governmental contracts. Commercialization will necessarily mean competition with other developed areas, most notably Europe and Japan. On the other end of the spectrum, commercialization may increase the cost of space technology until it is inaccessible for developing countries [30]. The commercialization on a competitive basis is necessary for generalising the products of space activities at a reasonable price. Commercialization of outer space activity stimulates states to make large investments into development of space projects, and also dictates the necessity of development of new international law norms. Advent of new organizational forms and kinds of commercialization of outer space activity raises new requirements to the international space law system. Wider guarantees and more efficient system of international space law in comparison with those that are entrenched in the national legislation for investment of large resources into space are needed. Influence of globalization upon the world market of space launches is seen in two main directions: securing of demand (global systems of telecommunication, navigation, etc. generate demand for launches of satellites that provide services to these systems); change of the composition of participants: as globalization deepens, more and more countries can take part in space programmes and research and development works, since their companies can become subcontractors for space orders [31]. At international level it is necessary to consider the regulation of commercial space activities under the aspect of legality and of jurisdiction. At internal level it is necessary to consider three important problems: inventions in space, product liability and governmental aid in space industrialization.

Many states, including Kazakhstan, attach particular importance to geopolitical interests in the outer space. Our activity on the Earth results in irreversible processes: depletion of natural

resources, ecological problems, overpopulation, hunger – and it is by no means all. So, the priority now is to maximally develop technological potency of the humankind to explore the outer space and to search resources useful for us. More and more planets suitable for life are discovered, spaceships that will be able to realize commercial flights from planet to planet are designed, costs of research and launch of rockets are shortened. The state financing of such research and development works is not sufficient, so the tendency of commercial space exploration is seen more and more. The cosmic sector of the global economy demonstrates dynamic and stable development, coming from the processes of powerful transfer of space technologies from the military sphere to the civil one and development on this foundation of the whole complex of commercial services related to the space industry and development works. All this encourages commercialization of the outer space activity and growth of space

services and at the same time generates a need for modernization of space law with the purpose of its adaptation to torrentially developing commercial activity, solution of the problem of legal safety of commercial services, the necessity of coordination of international cooperation in the space branch on a new level; review of the whole international space law abridgement in parallel with growing imperatives. These rules should point to transparency of risks and liabilities of the various space market segments. The future of scientific and industrial use of commercial space services depends on the development of fundamental international law conditions of outer space activity commercialization. On the whole, the following stable processes are seen in the cosmic sphere: widening of the circle of countries carrying on scientific research programmes in the industry of space services, and integration of states in issues of outer space exploration.

Литература

- 1 Sagan Carl. *Cosmos. The story of cosmic evolution, science and civilization.* – СПб.: ЗАО Торгово-издательский дом «Амфора», 2013. – С. 23.
- 2 Колосов Ю.М., Кривчикова Э.С. *Международное право: учебник / отв. ред. А. Н. Вылегжанин.* – М.: Высшее образование, Юрайт-Издат, 2009. – 1012 с.
- 3 Martinez, L. *Weaving a Legal Web in Space: Factors for Globalizing Governance / L. Martinez // «Project 2001» – Legal Framework for the Commercial Use of Outer Space.* – Köln: Heymann, 2001. – P. 307.
- 4 Gerardine M. *Dispute Settlement in International Space Law: A Multi-door Courthouse for Outer Space.* – Leiden, 2007. – P. 164.
- 5 Dunk F. *Private Commercial Manned Space-flight and Dispute Settlement, 2010.* Art 5. – P. 6-7.
- 6 *Interrelation between Rules and Principles of International Outer Space Law and General Rules and Principles of International Law.* – Proceedings of the XVIth Colloquium on the Law of Outer Space. – P. 45-48.
- 7 Harr M., Kohli R. *Commercial Utilization of Space: An International Comparison of Framework Conditions,* Batelle Memorial Institute, Columbus Ohio (1990).
- 8 Traa-Engelman, H. L. van. *Commercial Utilization of Outer Space, the Netherlands: Martinus Nijhoff Publishers, 1993.* – P. 20.
- 9 Zach Meyer. *Private Commercialization of Space in an International Regime: A Proposal for a Space District.* *Northwestern Journal of International Law & Business.* Volume 30. Issue 1. 2010.
- 10 *The Intelsat Globalized Network // www.intelsatcom* The globalized Network
- 11 *International Maritime Satellite Organization Inmarsat// http://www.marsat.ru/technologies*
- 12 www.prnewswire.com/news-releases/lockheed-martin-and-intersputnik-establish-joint-venture-company-to-provide-worldwide-communications-7575126
- 13 Вылегжанин А., Юзбашян М. *Космос в международно-правовом контексте.//Международные процессы. Журнал теории международных отношений и мировой политики.* – Т. 9. – №3(27), сентябрь-декабрь 2011. – С. 20.
- 14 Бодин Н.Б., Волынская О.А. *Правовое обеспечение инновационного развития космической деятельности (западный опыт и традиции востока) // Российский внешнеэкономический вестник – 1 – 2012. – С. 73.*
- 15 Bhavya Lal. *A Brief History of Government Policies to Promote Commercial Space.* *Journal of the Washington Academy of Sciences.* – Vol. 99. – No. 3 (Fall 2013).
- 16 Rose J.T., Stone B.A. *Commercialization of space. Electronics and Aerospace Conference, 1988. How will Space and Terrestrial Systems Share the Future? Conference Proceedings, IEEE EASCON '88, 21st Annual Year: 1988. P.11-15.*
- 17 Чуб Е.А. *Коммерциализация космической деятельности: мировой опыт и возможности его использования в Российской Федерации: дисс. канд. экон. наук.* – М., 2014. – 192 с.
- 18 *Draft Report of the Working Group on National Legislation Relevant to the Peaceful Exploration and Use of Outer Space. Committee on the Peaceful Uses of Outer Space, Legal Subcommittee. Fiftieth session. Vienna, 28 March-8 April 2011.*

- 19 Organisation for Economic Co-operation and Development . General Secretariat International Space University . Project on the Commercialization of Space and the Development of Space Infrastructure: The Role of Public and Private Actors.EVALUATION OF FUTURE SPACE MARKETS, 7th May 2004. P.12-24. <http://www.oecd.org/futures/space/31825129.pdf>
- 20 Европейское_космическое_агентство // <https://ruorg/wi.wikipedia.ki/>
- 21 Department of commerce <https://history.nasa.gov/presrep00/pages/doc.html>
- 22 Сабитов Д. Доклад «Казахстанский космос: реальность и перспективы» / Институт мировой экономики и политики (ИМЭП) при Фонде Первого Президента Республики Казахстан – Лидера Нации. – Астана-Алматы 2016. – С. 6.
- 23 Golrounia, A. A. Legal Principles of Exploration and Use of Outer Space: Past Achievements and Future Challenges / A. A. Golrounia, M. Bahrami // Proceedings of the Forty-Sixth Colloquium on the Law of Outer Space, Bremen, Germany, 29 Sept. – 3 Oct. 2003. – Reston: American Institute of Aeronautics and Astronautics, 2003. – P. 159–163.
- 24 Губанов Б.И. Коммерция и космос. «Нью-Йорк Таймс» от 9 июля 1991 г. <http://www.buran.ru/hm/22.htm>
- 25 Тайны Вселенной. – М.: Бук Хаус, 2006. – С. 65.
- 26 Книга Нурсултана Назарбаева «Казахстанский путь» // http://www.inform.kz/en/kniga-nursultana-nazarbaeva-kazakhstanskiy-put_a2927754 [5.07.2016]
- 27 Sylkina S.M., Dosymbekova M.S., Baytukaeva D.U., Begzhan A.M., Toktybekov T.A. Development of Space Activity or the Republic of Kazakhstan: History and Modern (Political and Legal Aspect) Mediterranean Journal of Social Sciences MCSER Publishing, Rome-Italy .Vol 6. No 5 S1. September 2015. – P. 39.
- 28 Address by the President N. Nazarbayev, Leader of the Nation of the Republic of Kazakhstan «Strategy Kazakhstan-2050»: new political course of established state» of 14.12.2012. веб-сайт www.strategy2050.kz
- 29 Мусабаев Т. Космос здоровых амбиций. https://online.zakon.kz/Document/?doc_id=3037299
- 30 Angela Chen. Daily. April 28, 2016. Commercialization of space.
- 31 Бакланов А. Г. Рынок и маркетинг авиакосмической продукции в условиях нестабильности. – М.: КДУ, 2010.

References

- 1 Address by the President N. Nazarbayev, Leader of the Nation of the Republic of Kazakhstan (2012) «Strategy Kazakhstan-2050»: new political course of established state»// Strategy 2050 – URL: www.strategy2050.kz
- 2 Angela Chen. (2016) Commercialization of space// Daily, April 28 – URL:<https://daily.jstor.org/commercialization-of-space/>
- 3 Annual report (1997)// Lockheed Martin – Accessed: www.prnewswire.com/news-releases/lockheed-martin-and-intersputnik-establish-joint-venture-company-to-provide-worldwide-communications-7575126
- 4 Baklanov A. G. (2010) Rynok i marketing aviakosmicheskoy produktsii v usloviyakh nestabil'nosti. [Market and marketing of aerospace products in conditions of instability]. М.: КДУ, 105 p.
- 5 Bhavya Lal. (2013) A Brief History of Government Policies to Promote Commercial Space. Journal of the Washington Academy of Sciences, vol. 99, No. 3, pp. 35-37.
- 6 Bodin N.B., Volynskaya O.A. (2012) Pravovoye obespecheniye innovatsionnogo razvitiya kosmicheskoy deyatel'nosti (zapadnyy opyt i traditsii vostoka) [Legal support of innovative development of space activities (Western experience and traditions of the East)]. Russian external economic gazette, p.73.
- 7 Chub Ye.A. (2014) Kommertsializatsiya kosmicheskoy deyatel'nosti: mirovoy opyt i vozmozhnosti yego ispol'zovaniya v Rossiyskoy Federatsii (diss.kand.ekonomicheskikh nauk) [Commercialization of space activities: the world experience and the possibilities of its use in the Russian Federation (diss. of economic sciences)]. Moscow, 192 s.
- 8 Committee on the Peaceful Uses of Outer Space, Legal Subcommittee. (2011) Draft Report of the Working Group on National Legislation Relevant to the Peaceful Exploration and Use of Outer Space. Fiftieth session. Vienna, 28 March-8 April, 101 p.
- 9 Demin V. (2006) Tainy Vselennoy [Secrets of the Universe]. М.: Buk Khaus, p. 65.
- 10 Department of commerce // JSC History Portal – URL: <https://history.nasa.gov/presrep00/pages/doc.html>
- 11 Dunk F. (2010) Private Commercial Manned Space-flight and Dispute Settlement, art 5., pp.6-7.
- 12 Evropeiskoe kosmicheskoe agenstvo [European space agency] // Wikipedia – URL: https://ruorg/wi.wikipedia.ki/Европейское_космическое_агентство
- 13 General Secretariat International Space University (2004) Organization for Economic Co-operation and Development. Project on the Commercialization of Space and the Development of Space Infrastructure: The Role of Public and Private Actors . EVALUATION OF FUTURE SPACE MARKETS, 7th May, pp. 12-24. – URL: <http://www.oecd.org/futures/space/31825129.pdf>
- 14 Gerardine M. (2007) Dispute Settlement in International Space Law: A Multi-door Courthouse for Outer Space, Leiden, p.164.
- 15 Golrounia, A. A. (2003) Legal Principles of Exploration and Use of Outer Space: Past Achievements and Future Challenges / A. A. Golrounia, M. Bahrami // Proceedings of the Forty-Sixth Colloquium on the Law of Outer Space, Bremen, Germany, 29 Sept. – 3 Oct. Reston: American Institute of Aeronautics and Astronautics, pp. 159–163.
- 16 Gubanov B.I. (1991) Kommertsiya i kosmos [Commerce and cosmos]. New York Times, 9 of July – URL: <http://www.buran.ru/hm/22.htm>
- 17 Harr M., Kohli R. (1990) Commercial Utilization of Space: An International Comparison of Framework Conditions, Batelle Memorial Institute, Columbus Ohio, 157 p.

- 18 International Maritime Satellite Organization// Official site of Inmarsat – URL: <http://www.marsat.ru/technologies>
- 19 Interrelation between Rules and Principles of International Outer Space Law and General Rules and Principles of International Law. – Proceedings of the XVIth Colloquium on the Law of Outer Space, pp.45-48.
- 20 Kolosov Yu.M., Krivchikova E.S.(2009) *Mezhdunarodnoe pravo: uchebnik / otv. red. A. N. Vylegzhanin. 26.2. Novye tendencii razvitiya mezhdunarodnogo kosmicheskogo prava* [New tendencies in the development of international space law] M.: High Education, Yurajt-Iedat, 1012 p.
- 21 Martinez, L.(2001) *Weaving a Legal Web in Space: Factors for Globalizing Governance / «Project 2001» Legal Framework for the Commercial Use of Outer Space*. Köln: Heymann, p.307.
- 22 Musabayev T. (2011) *Kosmos zdorovykh ambitsy* [The Space of Healthy Ambitions]. Information base Law – URL: https://online.zakon.kz/Document/?doc_id=3037299
- 23 Nazarbayev N.A. (2010) *The way of Kazakhstan*// Inform News – Accessed: http://www.inform.kz/en/kniga-nursultana-nazarbaeva-kazahstanskiy-put_a2927754
- 24 Sabitov D. (2016) *Doklad «Kazahstanskiy kosmos: real'nost' i perspektivy»*. [The report «Kazakhstan Space: Reality and Prospects»] Institute of world economy and politics (IMEP) at Fond of the First President of Republic of Kazakhstan – Leader of Nation. Astana-Almaty, p.6.
- 25 Sagan Carl.(2013) *Cosmos. The story of cosmic evolution, science and civilization*.- SPb: ZAO Trade edition house «Amfora», p.23.
- 26 Sylkina S.M., Dosymbekova M.S., Baytukaeva D.U., Begzhan A.M., Toktybekov T.A. (2015) *Development of Space Activity or the Republic of Kazakhstan: History and Modern (Political and Legal Aspect)* Mediterranean Journal of Social Sciences MCSER Publishing, Rome-Italy, Vol 6. No 5, p.39.
- 27 *The globalized network*// Official site of Intelsat – URL: <http://www.intelsat.com/>
- 28 Traa-Engelman, H. L. van. (1993) *Commercial Utilization of Outer Space*, The Netherlands: Martinus Nijhoff Publisher, p. 20.
- 29 Rose J.T., Stone B.A. (1988) *Commercialization of space*. Electronics and Aerospace Conference, 1988. How will Space and Terrestrial Systems Share the Future? Conference Proceedings, IEEE EASCON '88, 21st Annual Year, pp.11-15.
- 30 Vylegzhanin A., Yuzbashyan M. (2011) *Kosmos v mezhdunarodno-pravovom kontekste*. [Space in the international legal context]. International processes, journal of theory of International relations and world politics, vol.9, №3 (27), p.20.
- 31 Zach Meyer. (2010) *Private Commercialization of Space in an International Regime: A Proposal for a Space District*. Northwestern Journal of International Law & Business, vol. 30, issue 1, pp. 21-24.