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The Russian-Indian Scientific and Technological Cooperation in the First Decade of the 21st Century

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Abstract. The article examines the development of the scientific and technical strategic partnership between the Russian Federation and the Republic of India in the first decade of the 21st century. It analyses the main directions, goals and already achieved results of this partnership, as well as prospects for its future. The authors use official documents and materials pertaining to bilateral relations, international Russian-Indian acts, and declarations on scientific, technological cooperation various fields, including exact sciences, biology, biotechnology, oceanography, environmentally friendly technologies, pharmaceuticals, military-technical production, space exploration, and meteorology. They illustrate a diverse array of forms of Russian-Indian cooperation aimed at mutual understanding and progress of both states and peoples. The article is a part of a research project on Soviet-Indian cooperation in the field of science and technology as a resource of the so-called "soft power." The article's primary focus is on the distinctive characteristics of the prospects of bilateral cooperation between Russia and India, which commenced in the 20th century, within the context of the cultural and civilizational aspects of international relations system. From a historical perspective, the authors examine the problems of enhancing the effectiveness of cooperation between the two countries at the present stage, given the need for interaction in the scientific, technological, innovative and educational spheres. This is to enable the countries to collectively address the emerging challenges associated with human-induced, climatic and socio-cultural threats, as well as terrorism and religious extremism. The subject is an analysis of the legal framework and content of Russian-Indian cooperation in scientific and technological fields. The constructivist approach is used to study the social processes, which reveal the connection between society and politics, and the influence of international cooperation on the institutionalization and development of scientific and educational cooperation between the USSR/Russia and India at the intergovernmental and interinstitutional levels. When considering the cultural and civilizational specifics of Russia and India, the civilizational and modernization approaches are employed. The authors conclude that the consolidation of the two countries not only strengthens the economic position of Russia and India, but also increases their authority in the international arena. This cooperation between Russia and India is an illustrative example of

interstate understanding and friendship in the context of modern geopolitical processes, meeting the national interests of both powers and their respective societies.

Key words: strategic partnership, Vladimir Putin, Atal Bihari Vajpayee, Manmohan Singh, technologies, economic cooperation, defense cooperation, partnership in space research

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Российско-индийское научно-техническое сотрудничество в первом десятилетии XXI в.

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Аннотация. Рассматриваются развитие научно-технического стратегического партнерства между Российской Федерацией и Республикой Индия в первом десятилетии XXI в., основные направления, цели и достигнутые результаты, а также перспективы этого партнерства. Авторы используют официальные документы и материалы, посвященные двусторонним отношениям, международные российско-индийские акты, касающиеся научного, технологического сотрудничества в области точных наук, биологии, биотехнологии, океанографии, экологически чистых технологий, фармацевтики, военно-технического производства, исследования космоса, метеорологии, и демонстрируют спектр форм российско-индийского сотрудничества, направленных на взаимопонимание и прогресс обоих государств и народов. Статья является частью научно-исследовательского проекта, посвященного советско-индийскому сотрудничеству в сфере науки и технологий как ресурсам так называемой «мягкой силы». Цель исследования — охарактеризовать перспективы двусторонней кооперации России и Индии, начавшейся в XX в., в рамках культурно-цивилизационных аспектов системы межгосударственных отношений. Авторы анализируют проблемы повышения результативности сотрудничества двух стран на современном этапе, обусловленного необходимостью взаимодействия в научно-технологической, инновационной и образовательной сферах, для противодействия новым вызовам, связанным с техногенными, климатическими и социокультурными угрозами, а также терроризмом и религиозным экстремизмом. Предметом статьи является российско-индийское сотрудничество в научной и технологической сферах, его международная законодательная база и реальное наполнение. Для исследования социальных процессов, демонстрирующих связь социума и политики, использован конструктивистский подход, раскрывающий влияние международного сотрудничества на институционализацию, развитие научного и технологического сотрудничества СССР и Индии на межгосударственном и межинституциональном уровнях. При рассмотрении культурно-цивилизационной специфики России и Индии используются цивилизационный и модернизационный подходы. Авторы приходят к выводу, что сотрудничество России и Индии в научно-технической сфере является показательным примером межгосударственного взаимопонимания и дружбы в контексте современных геополитических процессов, согласуясь с национальными интересами обеих держав и их обществ.

Ключевые слова: стратегическое партнерство, Владимир Путин, Атал Бихари Ваджпаи, Манмохан Сингх, технологическое взаимодействие, экономическое сотрудничество, оборонное сотрудничество, партнерство в космических исследованиях

Заявление о конфликте интересов. Авторы заявляют об отсутствии конфликта интересов.
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Introduction

The first decade of the 21st century ushered in a new era in the development of bilateral cooperation between Russia and India in a multipolar world: it reached a new level of interaction — a special privileged strategic partnership (Shavlay, 2020). Bilateral economic, scientific and technical cooperation has become an important vector of such partnership. The countries interact in areas of primary value to them. The special privileged strategic partnership of the two states and their leaders — President Vladimir Putin and Prime Minister Narendra Modi — is aimed at developing and renewing bilateral cooperation, which is based on the stable traditions laid down in the second half of the 20th century and continues to define relations in the 21st century.

The centenary of the formation of the USSR, the 75th anniversary of the Indian independence and the establishment of the Soviet-Indian diplomatic relations, celebrated in 2022, emphasize the relevance of studying the history of the cooperation in science and higher education, its conceptualization, realities and relevance for Russia and India in the 21st century.

The purpose of this study is to identify the stages of development of scientific and technical strategic partnership between the Russian Federation and the Republic of India in the changed geopolitical conditions of the new millennium. To achieve this goal, the authors focus on solving the following tasks: to characterize the inter-institutional and interstate levels of cooperation and its perception by the societies of the leaders of the two states, as well as to reveal the content and priority traditional and innovative areas of bilateral scientific and technical cooperation.

To study social processes demonstrating the connection between society and politics, a constructivist approach was used, revealing the influence of international cooperation on institutionalization, development of scientific and educational cooperation between Russia and India at the interstate and interinstitutional levels. To understand the role of historical ties in the period under consideration, conceptual aspects of dialogue and dialogism are used, developed in the theoretical constructions of V.S. Bibler and used in the humanities, including history. V.S. Bibler develops the idea of a dialogue of cultures and emphasizes that the idea of mutual understanding but not the idea of understanding the world as an object of knowledge, which was central in the New Age, should become dominant at the current stage (Bibler, 1991).

The study is based on the works of modern historians studying Soviet-Indian and Russian-Indian relations. For understanding the foundations of strategic partnership, the article by S.I. Lounev (2017) was useful. The author notes “a certain similarity between the two countries, despite all the colossal differences in civilizations: they are characterized by the middle path of civilizational development, and spirituality, immanently inherent in the two civilizations, opposes the materialism and consumerism spirit of developed countries” (Lounev, 2017, p. 24).

In the collective work of specialists from the Institute of Oriental Studies of the Russian Academy of Sciences “India Today” the authors point out that with the collapse of the USSR, the forward movement in bilateral relations “was interrupted” and “many areas of cooperation were curtailed,” the authors nevertheless emphasize that by the beginning of the 21st century “political trust began to be restored.”

A.A. Kutsenkov believes that the most important basis for this process is the "commonality of approaches" of Russia and India "to current international problems of a global and regional nature, the national interests of the two countries" (Kutsenkov, 2005, p. 412).

In contemporary Russian and foreign historiography, an in-depth analysis of the ongoing processes of the two powers scientific and technical collaboration is gradually being carried out. Leading experts contribute to this important research. Thus, B.N. Kuzyk, T.L. Shaumyan and S.I. Lounev in their works show that India undergoing rapid development and demonstrating the potential for cooperation with Russia in a number of areas, including politics, economics, military-technical and scientific-technical matters (Kuzyk & Shaumyan, 2009; Lounev, 2023). T.N. Zagorodnikova, V.P. Kashin and T.L. Shaumyan analyze the civilizational component of bilateral relations (Zagorodnikova & Kashin & Shaumyan, 2011). F.N. Yurlov and E.S. Yurlova analyze the history of India in the 20th century, emphasizing the importance of Indian-Russian economic, scientific, technical, political, and military-technical relations in 2000–2006 (Yurlov & Yurlova, 2010; Yurlov, 2019).

Additionally, the Indian and other foreign scientists analyze the trends and content of the Soviet-Indian and modern Russian-Indian partnership. The article provides data and from a range of authors, including P.G. Altbach and P. Jalote,[1] G. Diesen (2019), R.E. Ericson (2008), C. Matthieu (2010), A. Mohanty (2017), M. Raianu (2021), A. Valiani (2011), etc.

The principles of objectivity, historicism, and systematicity are the basis of the study.

The New Phase of Cooperation

The Concept of Russia's foreign policy, dated June 28, 2000, proclaims that Asia is the region of the "important" and "growing" significance for the country, and that one of the most important areas is the partnership with India, which "needs to be deepened, including in the sphere of international affairs."[2] The Concept of Russian foreign policy of July 15, 2008 supplements and develops the provisions of the 2000 document and, with regard to India, states that "by deepening the strategic partnership with India, Russia is pursuing a principled line of strengthening interaction on current international issues and the comprehensive strengthening of mutually beneficial bilateral relations in all areas, especially to ensure a significant upswing in the trade and economic sphere."[3]

This foreign policy approach has given a new impetus to the Russian-Indian relations. Several months after the adoption of the 2000 Concept, from October 2 to 5, the first visit of the Russian President Vladimir Putin to India took place.[4] The negotiations between Vladimir Putin and Prime Minister Atal Bahari Vajpayee took place in New Delhi. The negotiations resulted in the signing of one of the most important documents, namely the Declaration on Strategic Partnership between the Russian Federation and the Republic of India.[5] The agreement provided for the development of cooperation in many important sectors. It was supposed to deepen the cooperation in the agricultural sciences, medicine, oceanology, meteorology, in the environmental technologies. The two countries have also historically prioritized nuclear energy and space exploration as core areas of scientific research.

[1] Altbach P. G., Jalote P. When Will India Build World-Class Research Universities? // University World News. September 26, 2020. URL: https://www.universityworldnews.com/post.php?story=20200921112203767 (accessed: 17.04.2024).

[2] The Concept of Foreign Policy of the Russian Federation of June 28, 2000 // Electronic Fund of Legal and Regulatory Documents. (In Russian). URL: http://docs.cntd.ru/document/901764263 (accessed: 25.04.2024). See also: (Lewis, 2018; Diesen, 2019).

[3] The Concept of Foreign Policy of the Russian Federation of July 15, 2008 // President of Russia. URL: http://kremlin.ru/acts/news/785 (accessed: 30.05.2024).

[4] Vladimir Putin Held Talks with Prime Minister of India Atal Bahari Vajpayee on December 2–5, 2000 // President of Russia. October 3, 2000. (In Russian). URL: http://kremlin.ru/events/president/news/39450 (accessed: 27.10.2023).

[5] The Declaration on Strategic Partnership Between the Russian Federation and the Republic of India. October 5, 2000 // Electronic Fund of Legal and Regulatory Documents. (In Russian). URL: http://docs.cntd.ru/document/901783728 (accessed: 27.10.2023).

A total of 17 documents, including those related to science and technology (for example, Comprehensive Long-Term Program of Scientific and Technical Cooperation for 2001–2010[6]) were signed at the New Delhi meeting. Biotechnologies, engineering sciences, space research, computer engineering and electronics are listed among the priority areas of cooperation. Fundamental sciences such as mathematics, mechanics, physics and astrophysics, earth sciences, chemistry, life sciences, etc., have been highlighted as a separate area of Russian-Indian cooperation.

India is a center of the successful scientific research in the technical field; it has one of the most advanced scientific and technical infrastructures in the world. The program focused on the fundamental and applied sciences, and both sides could eventually reach the latest developments that can compete in the foreign market (Mohanty, 2017, pp. 348–349; Lebedeva, 2018). Concurrently, the internal risks to the Indian economy include the country's inefficient agricultural sector, which undermines the country's food security; the financial sector with its large public debt; as well as many social problems, such as the contrast between the rich and poor, low living standards and corruption. As for the main external limiting factors for the Indian state, they are the decline in growth in the developed countries — the traditional trading partners of India, the volatility of global financial markets and the dependence of the Indian economy on the energy import (Umgaev, Lanchinov & Basangov, 2019, p. 53). It is therefore evident that India would benefit from closer cooperation with Russia.

71 institutes in Russia and 55 institutes and laboratories in India were involved in the implementation of the Comprehensive Long-Term Program. All of them jointly realized about 286 programs in the specified areas as well as the new areas of cooperation: computerization, robotics, and information technology.[7] The most important projects were developed in the fields of the space research, civil aviation, medicine, energy, mathematics, and physics (Malyarov, 2010, p. 666; Raianu, 2021, pp. 125, 269).

The subsequent meeting between the President of Russia and the Prime Minister of India took place in November 2001, when the Indian Prime Minister Atal Bahari Vajpayee arrived in Moscow on an official visit.[8] The meeting resulted in the 17 documents, including the Joint Russian-Indian statement.[9] The points on scientific and technical relations highlighted the importance of further collaboration in science and technology. Both sides expressed their agreement on the participation of the Indian Commission in the implementation of the *Sakhalin-1* oil and gas project. The Memorandum on the implementation of the Kudankulam nuclear power plant (NPP) project was also signed. The partners also thought the bilateral scientific and technical cooperation had reached a new level, beyond the trade in weapons and military equipment. India and Russia implemented some new projects and joint research in the following areas: ferrous metallurgy, mechanical engineering, and energy. The prospects for the implementation of the following projects were outlined: the construction of thermal power plants in India estimated at USD 3 billion, the construction of seawater desalination complexes in Chennai estimated at USD 1 billion. There were also plans to renew the bus fleet in Chennai. The partners also agreed to equip and train special

[6] Comprehensive Long-Term Program of Scientific and Technical Cooperation Between the Russian Federation and the Republic of India. December 21, 2010 // Electronic Fund of Legal and Regulatory Documents. (In Russian). URL: https://docs.cntd.ru/document/902264225 (accessed: 27.10.2023).

[7] Laser Sees the Future. Hundreds of Bilateral Scientific and Technical Projects Have Been Implemented // RSCF. August 15, 2016. (In Russian). URL: https://rscf.ru/news/media/lazer_vidit_budushchee_realizovany_sotni_dvustoronnikh_nauchno_tekhnicheskikh_proektov/ (accessed: 11.03.2024).

[8] The Press Statement and Answers to Questions on the Results of Negotiations with Prime Minister of India Atal Bihari Vajpayee // President of Russia. November 6, 2001. (In Russian). URL: http://kremlin.ru/events/president/transcripts/21390 (accessed: 05.04.2024).

[9] The Joint Russian-Indian Statement. November 6, 2001 // Electronic Fund of Legal and Regulatory Documents. (In Russian). URL: http://docs.cntd.ru/document/901810961 (accessed: 05.11.2023).

police units to combat terrorist groups, supply high-quality pipes from Russia, and build gas and oil product pipelines, and supply equipment to India for work in the energy sector.[10]

The next summit was held in New Delhi on December, 3–5, 2002.[11] Two documents were signed by the leaders: The Protocol to the Agreement Between the Government of the Russian Federation and the Republic of India on the Protection of Intellectual Property[12] and The Joint Declaration on the Strengthening and Enhancing the Economic, Scientific and Technical Cooperation between the Russian Federation and the Republic of India.[13] The first document dealt with the concept of intellectual property, which in this context refers to the latest developments of the two countries, previous intellectual property, which was also protected by this law, even if the development was carried out outside the project framework. This Protocol guaranteed the use of scientific and technical achievements only by Russia and India, the exclusion of penetration into the system of bilateral developments by third parties, spoke about the material benefits of the parties' contributions to scientific developments, and pledged to protect the authorship of the project. The partners agreed that intellectual property rights would remain inviolable even after the Protocol ceased to apply.[14]

The second document primarily addressed the issue of economic cooperation between the two countries. Special attention was paid to the high-tech and advanced research areas and their practical applications, including telecommunications, computers, information technologies, and space research, as well as its practical applications.

In 2002, the Russian Federation reached an agreement with India to invest part of the Indian debt (in rupees) in the Indian economy, in particular in the development of the information technology, metallurgy and coal industry. The plans were to be implemented and the relevant documents signed in 2003. The representatives of the two countries met in Moscow in November 2003.[15] It should be noted that that year the trade turnover increased up to USD 2 billion, which is comparable to the volume of the Soviet-Indian cooperation in the 1980s, when the trade turnover with India was USD 3.5 billion (Umgaev, Lanchinov & Basangov, 2019). This dynamism has opened up good prospects for the expansion of cooperation not only in science and technology, but also in other areas.

One of the most important documents for the Russian and Indian science was the Agreement on the scientific cooperation and exchange of scientists from the Institute of the Russian Academy of Sciences (RAS) and the Indian National Academy of Sciences (INAS).[16]

[10] The Press Statement and Answers to Questions on the Results of Negotiations with Prime Minister of India Atal Bihari Vajpayee // President of Russia. November 6, 2001. (In Russian). URL: http://kremlin.ru/events/president/transcripts/21390 (accessed: 05.04.2024).

[11] The Joint Statement of the President of Russia and Prime Minister Atal Bahari Vajpayee // President of Russia. December 3, 2002. (In Russian). URL: http://www.kremlin.ru/supplement/3549/print (accessed: 06.12.2023).

[12] The Protocol Between the Russian Federation and the Republic of India on the Protection and Use of Intellectual Property Rights to the Agreement between the Government of the Russian Federation and the Government of the Republic of India on scientific and technical cooperation dated June 30, 1994. December 4, 2002 // Electronic Fund of Legal and Regulatory Documents. (In Russian). URL: https://docs.cntd.ru/document/901866487 (accessed: 06.05.2024).

[13] The Joint Declaration on Strengthening and Enhancing Economic, Scientific and Technical Cooperation between the Russian Federation and the Republic of India. December 4, 2002 // Electronic Fund of Legal and Regulatory Documents. (In Russian). URL: http://docs.cntd.ru/document/901857451 (accessed: 06.02.2024).

[14] The Protocol Between the Russian Federation and the Republic of India on the Protection and Use of Intellectual Property Rights to the Agreement between the Government of the Russian Federation and the Government of the Republic of India on scientific and technical cooperation dated June 30, 1994. December 4, 2002 // Electronic Fund of Legal and Regulatory Documents. (In Russian). URL: https://docs.cntd.ru/document/901866487 (accessed: 06.05.2024).

[15] Russian-Indian Interregional Cooperation // The Ministry of Foreign Affairs of the Russian Federation. August 16, 2010. (In Russian). URL: https://www.mid.ru/ru/maps/in/1675631/ (accessed: 05.07.2024).

[16] The Agreement on Scientific Cooperation and Exchange of Scientists between the Russian Academy

The parties agreed that national academies would act as intermediaries for scientists who would be able to exchange information, ideas, hold meetings and symposiums, organize international scientific conferences, and, if necessary, travel to another country to conduct research. It was an innovative document, detailing the new conditions for the cooperation between scientists of the two countries. The Protocol on the Cooperation between the RAS and the IAS was also signed. According to the Protocol, it was supposed to expand the contribution of scientists to promoting scientific and technological progress. The work was to be carried out in the form of lectures, technology exchange, scientific researches on the territory of both countries, to work on the joint scientific projects for the interests of Russia and India.[17] The Protocol stipulated the conditions for the scientists to stay on the foreign territory, the financing of their activities and so on. This Protocol was designed for 5 years until 2008.

In 2003, a special Memorandum was signed between the *Rosaviakosmos* (*Roscosmos*) and the Indian Space Research Organization (IORC),[18] that planned establish interaction on the restoration and operation of the *GLONASS* navigation system, and also cooperation in the framework of the Indian program for studying the Moon, *Chandrayan-1*, the research of space engines and other devices. In 2004 and the following years, the legal framework for cooperation between *Roscosmos* and IORC has been significantly expanded (Vorobyeva, 2016; Titarenko, 2012, p. 400).

The agreement signed in New Delhi in December 2004 in the field of the joint development and use of the GLONASS satellite system.[19] It was implemented on the Ministry of Information Technology and Communications of the Russian Federation, the Ministry of Defense of the Russian Federation and the Federal Space Agency and on the Indian side by the Indian Space Research Organization. The forms of cooperation included the exchange of scientific and technical documentation, joint work on it, and the exchange of scientists. Forms of cooperation included the exchange of scientific and technical documentation, joint work on it, as well as the exchange of scientists.[20] Another Protocol signed by the Ministries of Foreign Affairs was devoted to the preparation of the joint collection of archival (diplomatic) documents related to the ties between the two states.[21] This document demonstrates that, over the past years of cooperation, a lot has been done to reorganize relations, which led to the deployment of a documentary and historical base (Valiani, 2011, pp. 156, 200).

On December 6, 2005, the leaders of Russia and India met again at the highest level.[22] The

of Sciences and the Indian National Academy of Sciences. November 12, 2003 // Electronic Fund of Legal and Regulatory Documents. (In Russian). URL: http://docs.cntd.ru/document/901882110 (accessed: 07.11.2023).

[17] The Protocol on Scientific Cooperation Between the Russian Academy of Sciences and the Department of Science and Technology of the Government of India. November 12, 2003 // Electronic Fund of Legal and Regulatory Documents. (In Russian). URL: http://docs.cntd.ru/document/901882116 (accessed: 15.07.2024). See also: (Shubkina, 2009).

[18] Memorandum of Understanding Between the Russian Aviation and Space Agency and the Indian Space Research Organization on Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes. November 12. 2003 // Electronic Fund of Legal and Regulatory Documents. (In Russian). URL: http://docs.cntd.ru/document/901882118 (accessed: 02.02.2024).

[19] Agreement Between the Government of the Russian Federation and the Government of the Republic of India on Granting the Indian Side Access to Part of the Radio Frequency Spectrum of the Russian Global Navigation Satellite System GLONASS. January 25, 2007 // Electronic Fund of Legal and Regulatory Documents. (In Russian). URL: http://docs.cntd.ru/document/902029758 (accessed: 02.27.2024).

[20] Ibid.

[21] The Protocol Between the Ministry of Foreign Affairs of the Russian Federation and the Ministry of Foreign Affairs of the Republic of India on the Preparation of a Joint Collection of Archival (Diplomatic) Documents. November 12, 2003 // Electronic Fund of Legal and Regulatory Documents. (In Russian). URL: http://docs.cntd.ru/document/901882129 (accessed: 08.04.2024).

[22] Vladimir Putin and Prime Minister of India Manmohan Singh Held Talks in the Kremlin // President of Russia. December 6, 2005. (In Russian). URL: http://kremlin.ru/events/president/news/34612 (accessed: 08.05.2024).

agenda included important issues in the field of science and technology. Negotiations on the development, operation and use of the GLONASS satellite system continued. An agreement on cooperation in the field of solar physics and solar-terrestrial relations, which was and remains very important for science, was also signed within the framework of the well-known *Koronas-Photon* project.[23]

The most important issue for India is energy supply, the demand for which is steadily increasing due to its rapidly growing economy. The need to purchase gas contributed to the emergence of the idea of creating the Iran — India — Pakistan gas pipeline (Kutsenkov, 2005, p. 416). Russian specialists took part in the creation of not only this pipeline, but also other gas and oil pipelines in various regions of the country. Work was carried out on the construction of the Kudankulam NPP in the state of Tamil Nadu (Kutsenkov, 2005, p. 416), which was built with the help of the Russian side and was commissioned in 2007–2008.[24] It is evident that there are promising prospects for the implementation of joint Russian-Indian projects in the field of peaceful nuclear energy. The Russian energy companies, namely *Rosatom* and *Rosatomexport*, have involved the Indian partners in their energy projects in the South Asian region, for example in the construction of the Rooppur nuclear power plant in Bangladesh (Pechishcheva, 2018, p. 153).

The next Russian and Indian leaders' summit took place on July 17, 2006, in St. Petersburg.[25] Later, on January 25, 2007, in New Delhi, Vladimir Putin and Prime Minister Manmohan Singh held talks and signed an Agreement related to India's use of part of the radio frequency spectrum of the Russian global satellite system *GLONASS*.[26]

Thus, in the first decade of the 21st century the countries actively cooperated in the fields of science and technology in the following areas.

1. The Space program, implemented in the framework of the *Photon* project. This project had been developed since Soviet times but was slowed down in the 1990s and was only resumed in 2000. By 2009, the *Koronas-Photon* device had been created with a device for measuring and recording x-rays.[27] The project was aimed at the studying the processes of energy accumulation and its transformation into the energy of the accelerated particles during the solar flares, and the interaction of these particles in the atmosphere.

2. Civil aviation: the joint project for the creation of *Saras-Duet* or M-102 (*Duet*) aircraft was launched, and the Indian specialists were trained in the project laboratory. In the future, the modernization of this type of aircraft is engaged in Experimental Machine-Building Plant named after V. M. Myasishchev (Kuzyk & Shaumyan, 2009, p. 759).

3. Medicine: Russia and India were engaged in collaborative research in a number of scientific fields, including immunology, epidemiology, biophysics, biochemistry, oncology, endocrinology, and cardiology. For India, this is a very important sector. It spent 2/3 of its expenditures on research, development of medicines and medical technologies. The Russian company *Medexport* (Moscow) purchased goods from the Indian company *State*

[23] On the Talks Between Russian President Vladimir Putin and Indian Prime Minister Manmohan Singh, Moscow, Kremlin, December 6, 2005 // The Ministry of Foreign Affairs of the Russian Federation. December 7, 2005. (In Russian). URL: https://www.mid.ru/ru/detail-material-page/1679308/ (accessed: 05.04.2024).

[24] Kudankulam: How a Nuclear Power Plant is Built // RIA Novosti. December 3, 2008. (In Russian). URL: https://ria.ru/20081203/155923367.html (accessed: 24.05.2024).

[25] On the Meeting of Russian President Vladimir Putin with Chinese President Hu Jintao and Indian Prime Minister Manmohan Singh, St. Petersburg, Strelna, July 17, 2006 // The Ministry of Foreign Affairs of the Russian Federation. July 18, 2006. (In Russian). URL: https://www.mid.ru/ru/maps/cn/1748264/ (accessed: 10.02.2024).

[26] Russia and India Agreed to Cooperate in the Use of GLONASS // RIA Novosti. January 25, 2007. (In Russian). URL: https://ria.ru/20070125/59674944.html (date accessed: 23.03.2024).

[27] KORONAS-PHOTON Spacecraft // Russian Academy of Sciences. Space Council. URL: http://stp.cosmos.ru/index.php?id=1163&tx_ttnews%5Btt_news%5D=2152&cHash=b1fad8b517b61a91474ff4e8115a7d3b (accessed: 22.04.2024).

Trading Corporation of India (Kuzyk & Shaumyan, 2009, p. 759).

4. Mathematics and Physics: the design of electro-nuclear installations for nuclear waste treatment, the creation of special filters for the drinking water purification in India, the production of heat-resistant structures, the creation of an electron accelerator ILU-6 (Kuzyk & Shaumyan, 2009, p. 760).

5. Information technology is one of the most important areas of the cooperation, especially for Russia. The parties agreed that India would provide Russia with the use of the *Param-10,000* supercomputer developed in Puna, and on the basis of the Russian Academy of Sciences the Russian-Indian computer research center was established, which was equipped with the Indian computers (Kuzyk & Shaumyan, 2009, p. 760).

6. Fuel: in the 2000s, the *Sakhalin-1* project, an oil and gas project for the extraction of raw materials, was continued (Kuzyk & Shaumyan, 2009, p. 761).

7. Ferrous metallurgy, where, within the framework of the modernization and reconstruction of metallurgical enterprises, work was carried out in the following cities: Bhilai, Rourkela, Durgapur, Bokaro, Visakhapatnam, Burnpur (Kuzyk & Shaumyan, 2009, p. 761).

8. Military industry: work was carried out within the framework of the BrahMos project to create an anti-ship missile. The project was launched in 1998, and the first launch of the missile took place in 2001. There are several modifications of the missiles, for air and land carriers: the first category is called *BrahMos-A*,[28] the second is *BrahMos-2*.[29]

9. Energy: an agreement on the supply of low enriched uranium for the Indian nuclear power plant in Tarapur was reached (Kuzyk & Shaumyan, 2009, p. 760).

In 2005, the Indian company *ONGC Videsh LTD* began investing in the implementation of the Russian *Sakhalin-1* project, investing USD 2,700 million.[30] In 2007, a Memorandum on the additional construction of four power units at the Kudankulam NPP was signed.[31] In 2008, Imperial Energy Company invested in the development of oil fields in the Tomsk region.[32]

10. Mechanical engineering and automotive industry: Indian company *TATA MOTORS* worked on assembling medium-duty trucks in Novouralsk (2007).[33]

11. Pharmaceuticals: many pharmaceutical companies from India have worked in Russia, such as *Aurobindo Pharma*, which produces pharmaceutical products in Moscow.[34]

Moreover, in the first decade of the 21st century, India proved itself to be an attractive student donor country for Russia and other major players in the international education market, which invested heavily in expanding scientific cooperation, using numerous scholarship programs to attract Indian students. The strengthening of the role of the state, both

[28] Military-Technical Cooperation Between Russia and India // Business Council for Cooperation with India. January 12, 2016. (In Russian). URL: https://russiaindiabusiness.com/ru/voenno-tekhnicheskoe-sotrudnichestvo-rossii-i-indii/ (accessed: 17.04.2024).

[29] India Wants to Buy a New Version of the BrahMos Missile System // Izvestia. February 2, 2010. (In Russian). URL: https://iz.ru/news/465756 (accessed: 03.04.2024).

[30] S. Rakha: Investments in Sakhalin-1 Are Just the Beginning // Neftegaz.ru. November 28, 2005. URL: https://neftegaz.ru/news/gas/297030-s-rakha-investitsii-v-sakhalin-1-eto-tolko-nachalo/ (accessed: 04.04.2024).

[31] Memorandum of Intent Between the Federal Atomic Energy Agency, Russian Federation, and the Department of Atomic Energy, Government of the Republic of India, on the Development of Cooperation in the Construction of Additional Power Units at the Nuclear Power Plant at the Kudankulam Site, As Well As the Construction of Nuclear Power Plants Based on Russian Designs at New Sites in the Republic of India. January 25, 2007 // Electronic Fund of Legal and Regulatory Documents. URL: http://docs.cntd.ru/document/902029774 (accessed: 22.05.2024).

[32] India's Largest Oil Company Has Decided to Buy a Second Asset in Russia // Kommersant. July 15, 2008. (In Russian). URL: https://lenta.ru/news/2008/07/15/imperial/ (date accessed May 23, 2024).

[33] "AMUr" Has Started Assembling Trucks of the Indian Company TATA // Autonews. April 7, 2004. (In Russian). URL: https://www.autonews.ru/news/5825a1b29a79474743123c3b?from=copy (accessed: 27.05.2024).

[34] Indian Pharmaceutical Companies Strive to Become Domestic Producers in Russia // Izvestia. September 18, 2011. (In Russian). URL: https://iz.ru/news/500937 (accessed: 01.06.2024).

Russia and India, in the sphere of international educational partnership contributed to the revival and development of a favorable environment for Russian-Indian scientific cooperation by creating an interstate platform for dialogue on subsidizing educational exchanges between Russian and Indian universities, attracting major industrial partners, and mutual recognition of diplomas and degrees. According to P.G. Altbach and P. Jalote, "India has several important advantages for conducting large-scale scientific and technological research as it becomes an academic power. The widespread use of English means that India immediately becomes part of global scientific communication. It also has a significant corps of experienced scientists and researchers — both within the country and in the diaspora. Creating a productive academic environment for the most talented scientists requires careful attention, good organization and adequate funding."[35]

These advantages served as the basis for interaction with Russian science through joint research projects and their implementation. Subsequently, with the coming to power in India of a new party, the *Bharatiya Janata Party*, and the new Prime Minister Narendra Modi, several changes took place in the relationship. India initiated the revival of its own industrial sector under the slogan "Make in India," which was an important step towards import substitution and support for domestic production. India was interested not only in finished materials, but also, above all, in foreign technologies. Expenditures on the military and energy sectors increased.

Russia under President V.V. Putin, in the process of sovereignty of all sectors of the economy, science and technology, has become one of India's most important partners, continuing the historical traditions of cooperation between the two countries, which has been especially evident in times of crisis and aggravation of the international situation (Konovalova, 2015; Mohanty, 2017, pp. 362–363). Meetings of the leaders of the two countries are regularly held on the sidelines of multilateral forums, where the parties recognize the importance of accelerating the creation and implementation of joint projects between Russia and India in a number of priority areas, including metallurgy, automotive industry and pharmaceuticals (Mohanty, 2017, p. 361; Akarashov, 2018).

According to Indian historian Arun Mohanty, "India and Russia are perhaps the only two major powers in the world that draw confidence from each other's growing strength. These relations between the two countries are notable for their continuity and dynamics, consistency, stability, and they have avoided the sharp deterioration that is possible during political crises in both countries. In an increasingly multipolar developing world where the G-2 of the U.S. and China plans to lead, India and Russia cannot afford to downgrade their partnership... It is in India's broader interest to be sensitive to Russian concerns" (Mohanty, 2017, pp. 362–363).

Conclusion

The first decade of the 21st century saw the expansion of cooperation between the two powers in various sectors, on equal terms and with a positive effect. The relevance of scientific and technical cooperation between Russia and India does not diminish in view of new challenges of our time: the need to protect the sovereignty and independence of states, ensure their competitiveness in the global market of scientific discoveries, high technologies and practice-oriented technological services. The partnership between Moscow and Delhi is focused on the latest, breakthrough know-how in the fields of natural, applied and humanitarian sciences, including nano- and biotechnology, space and ocean exploration, in terms of personnel training, as well as the operation, assembly and repair of equipment. Both countries pay much attention to innovative

[35] Altbach P. G., Jalote P. When Will India Build World-Class Research Universities? // University World News. September 26, 2020. URL: https://www.universityworldnews.com/post.php?story=20200921112203767 (accessed: 17.04.2024). See also: (Ustyuzhantseva, 2016; Matthieu, 2010).

approaches to solving problems, expand the legal basis for investment in science, and conduct joint scientific research. The expansion of the range of areas of scientific and technical cooperation of especially privileged strategic partners is based on the principles of mutual respect for the national interests of the parties, international law, recognition of the polycentricity of the modern world, while maintaining the openness and attractiveness of the cultures of both countries. The consolidation of the two countries not only strengthens the economic position of Russia and India, but also increases their authority in the international arena.

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References

Akarashov, I. S. (2018). Russia — India: New horizons of the strategic alliance. *Vestnik RUDN. International Relations,* 18(1), 148–161. (In Russian). https://doi.org/10.22363/2313-0660-2018-18-1-148-161; EDN: YVXKMA

Bibler, V. S. (1991). *From the science of science to the logic of culture. Two philosophical introductions to the twenty-first century*. Moscow: Politizdat publ. (In Russian). EDN: TMAILB

Diesen, G. (2019). The geoeconomics of Russia's Greater Eurasia initiative. *Asian Politics & Policy*, 11(4), 566–585. https://doi.org/10.1111/aspp.12497

Ericson, R. E. (2008). The Russian economy: From Lenin to Putin. *Comparative Economic Studies*, 50, 713–716. https://doi.org/10.1057/ces.2007.37

Konovalova, J. A. (2015). Present condition of Russia and India trade and economic cooperation. *Internet-Zhurnal Naukovedenie*, 7(2), 1–12. (In Russian). http://dx.doi.org/10.15862/157EVN215; EDN: UHMJRT

Kutsenkov, A. A. (2005). Russian-Indian Relations In T. L. Shaumyan (Ed.), *India today* (pp. 412–420). Moscow: Institut vostokovedeniya RAN publ. (In Russian). EDN: QKFKLR

Kuzyk, B. N., & Shaumyan, T. L. (2009). *India-Russia: Partnership strategy in the 21st century.* Moscow: Institut ekonomicheskikh strategii publ. (In Russian). EDN: SUPYON

Lebedeva, N. B. (2018). *Indian Ocean: Challenges of the 21st century and India*. Moscow: Institut vostokovedeniya RAN publ. (In Russian). EDN: YURHRR

Lewis, D. G. (2018). Geopolitical imaginaries in Russian foreign policy: The evolution of "Greater Eurasia". *Europe — Asia Studies*, 70(10), 1612–1637. https://doi.org/10.1080/09668136.2018.1515348

Lounev, S. I. (2017). Soviet-Indian relations (1955–1971): The birth of a friendship. *MGIMO Review of International Relations*, (2), 24–51. (In Russian). https://doi.org/10.24833/2071-8160-2017-2-53-24-51; EDN: YZHWUL

Lounev, S. I. (2023). Russia and India. In D. V. Streltsov & K. A. Efremova (Eds.), *The countries of the East in Russia's foreign policy* (pp. 138–174). Moscow: Aspekt Press publ. (In Russian). EDN: ABGYKB

Malyarov, O. V. (2010). *Independent India: The evolution of the socio-economic model and the development of the economy* (in 2 books). Book 1. Moscow: Vostochnaya literatura publ. (In Russian). EDN: QUQBJR

Matthieu, C. (2010). Assessing Russia's space cooperation with China and India — opportunities and challenges for Europe. *Acta Astronautica*, 66(3–4), 355–361. https://doi.org/10.1016/j.actaastro.2009.07.026

Mohanty, A. (2017). Indo-Russian relations under UPA rule. In A. Mohanty & A. Patnaik (Eds.), *Eurasian states. Socio-economic and political processes* (pp. 353–363). New Delhi: KW Publishers Pvt Ltd.

Pechishcheva, L. A. (2018). Russia — India: A new "nuclear alliance". *Bulletin of Moscow Region State University. Series: History and Political Sciences*, (4), 151–156. (In Russian). https://doi.org/10.18384/2310-676X-2018-4-151-156; EDN: YMJSJV

Raianu, M. (2021). *Tata: The global corporation that built Indian capitalism*. Cambridge: Harvard University Press. https://doi.org/10.2307/j.ctv1p6hq95

Shavlay, E. P. (2020). India's innovation policy: Current state and features of the Indian model. *MIR (Modernization. Innovation. Research),* 11(4), 370–383. (In Russian). https://doi.org/10.18184/2079-4665.2020.11.4.370-383; EDN: RKNXGI

Shubkina, N. P. (2009). Dialogue between Russia and India in order to build peace and the protection of Outer Space. *Vestnik Moskovskogo Universiteta MVD Rossii,* (10), 177–181. (In Russian). EDN: LDHPJJ

Titarenko, M. L. (2012). *Russia and its Asian Partners in a Globalizing World. Strategic cooperation: Problems and prospects*. Moscow: Forum publ. (In Russian). EDN: QPVUBV

Umgaev, S. A., Lanchinov, I. V., & Basangov, S. V. (2019). Russia and India: Development of trade and economic cooperation. *Nauchnaya Mysl' Kavkaza*, (4), 52–54. (In Russian). EDN: AWCONF

Ustyuzhantseva, O. V. (2016). Cooperation in education between Russia and India. *Siberian Historical Research*, (3), 43–64. (In Russian). https://doi.org/10.17223/2312461X/13/3; EDN: WWYWJZ

Valiani, A. A. (2011). *Militant publics in India: Physical culture and violence in the making of a modern polity*. New York: Palgrave Macmillan. https://doi.org/10.1057/9780230370630

Vorobyeva, M. A. (2016). Leading Indian business-groups. *MGIMO Review of International Relations*, (3), 265–272. (In Russian). https://doi.org/10.24833/2071-8160-2016-3-48-265-272; EDN: WEZRUL

Yurlov, F. N. (2019). Russia and India in the Changing Global World. *Humanities Researches of the Central Russia***,** (1), 36–45. (In Russian). EDN: NIKJFB

Yurlov, F. N., & Yurlova, E. S. (2010). *The history of India. 20th century*. Moscow: Institut vostokovedeniya RAN publ. (In Russian). EDN: QPSGWR

Zagorodnikova, T. N., Kashin, V. P., & Shaumyan, T. L. (2011). *The image of Russia in the public consciousness of India: Past and present*. Moscow: Institut vostokovedeniya RAN publ. (In Russian). EDN: OPMCRQ

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