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THE CURRENT STATE OF COOPERATION BETWEEN CHINA AND PAKISTAN IN THE FIELD OF SPACE EXPLORATION

АКТУАЛЬНИЙ СТАН СПІВПРАЦІ КИТАЮ ТА ПАКИСТАНУ В СФЕРІ ДОСЛІДЖЕННЯ КОСМІЧНОГО ПРОСТОРУ

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Abstract. *The article analyzes the cooperation between China and Pakistan in the field of space research at the present stage from the perspective of the dynamic development of a comprehensive partnership between the two countries. The paper identifies the main institutions of both countries responsible for space cooperation and the level of their interaction in the exchange of experience and technological developments. The study contains examples of relations between the private and public sectors of the Chinese and Pakistani economies in the field of space technology. In combination with an institutional and systemic approach, methods of analysis, content analysis, and comparison were used to study space issues in relations between China and Pakistan. China remains the main base for launches of Pakistani orbital satellites, which indicates a certain imbalance in the level of infrastructure development. Meanwhile, 2026 has every chance of becoming a period of another breakthrough in the space dimension of the China-Pakistan partnership.*

Keywords: *Space Silk Road, China-Pakistan space cooperation, SUPARCO, CNSA, lunar exploration, satellite launch, space station.*

Анотація. *У статті аналізується співпраця між Китаєм і Пакистаном у галузі космічних досліджень на сучасному етапі з точки зору динамічного розвитку всебічного партнерства між двома країнами. У роботі визначено основні установи обох країн, відповідальні за космічну співпрацю, та рівень їх взаємодії в обміні досвідом і технологічними розробками. Дослідження містить приклади відносин між приватним і державним секторами економік Китаю та Пакистану в галузі космічних технологій. У поєднанні з інституційним та системним підходом для вивчення космічних питань у відносинах між Китаєм і Пакистаном були використані методи аналізу, контент-аналізу та порівняння. Китай залишається основною базою для запусків пакистанських орбітальних супутників, що свідчить про певний дисбаланс у рівні розвитку інфраструктури. Водночас 2026 рік має всі шанси стати періодом чергового прориву в космічному вимірі партнерства між Китаєм і*

Пакистаном.

***Ключові слова**: Космічний шовковий шлях, Китайсько-пакистанська співпраця в сфері космосу, SUPARCO, CNSA, освоєння Місяця, запуск супутника, космічна станція.*

Introduction. The current state of relations between China and Pakistan is characterized by the rapid development of economic, political, and military partnerships. At the same time, both countries are doing significant work on technical and scientific development in the field of space research and exploration. China's global project, the New Silk Road or One Belt, One Road, gave rise to the Silk Road of Health during the COVID-19 pandemic, which involved cooperation with partners aimed at combating the consequences of the large-scale spread of the disease. Today, there is another branch of progress in this comprehensive project, namely the Space Silk Road, under which China is strengthening cooperation with other countries in the field of space exploration, including Pakistan. The results and achievements of this cooperation are already finding practical application, including in another project that was born as part of the Belt and Road Initiative, namely the China-Pakistan Economic Corridor.

Purpose of the Study. The article aims to examine the current state of cooperation between China and Pakistan in the field of space exploration, review the main structural units of both countries involved in this field, and the achievements that have been made in the process of interaction.

Literature Review. The structured research by Hassan Mujtaba and Dr. Usman W. Chohan, specialists at the Centre for Aerospace & Security Studies in Pakistan, serves as valuable literature in terms of substantive analysis of Chinese-Pakistani cooperation. Arooj Fatima Kazmi devotes considerable attention to Pakistan's progress in the space industry in her article "Pak-China Space Cooperation: Why it Fuels, Not Hinders, Pakistan's Space Autonomy," links this process, among other things, to the successful partnership with China and logically concludes that the joint lunar mission of both countries has the potential to become another milestone in the evolution of Pakistan's scientific and technical movement toward space exploration. The material by Chinese researchers Kuang-Ho Yeh and Ni Guihua was selected for the study as one of the works describing the connection between the Belt and Road Initiative and space cooperation between China and Pakistan.

Methodology. The heterogeneity of interactions between the public and private sectors and individual institutions established to work on space research in both countries became a prerequisite for applying a structural approach and institutional analysis, which primarily concerned Pakistan's Space and Upper Atmosphere Research Commission and China's National Space Administration. Content analysis was used to identify statements made by political and scientific figures as a description of the “rhetorical” side of Chinese-Pakistani cooperation in the field of space.

Main Results of the Research. Cooperation between China and Pakistan in the space sector has now taken on a more formal status following the establishment of the Space Silk Road initiative. Kuang-Ho Yeh and Ni Guihua claim that the Space Silk Road initiative began to take shape in 2014 and aims to identify prospects for the development of space exploration in countries participating in the One Belt, One Road project. Additionally, according to these scientists, it should promote cooperation between partner countries within the infrastructure project in matters of improving space technologies *(Kuang-Ho, Ni, 2023)*.

One of the main elements of the Space Silk Road is the gradual improvement of the BeiDou satellite system. Mohamad Zreik, a researcher at the Middle East Political and Economic Institute in Bucharest, in article defines the Space Silk Road as a logical element of the One Belt, One Road project *(Zreik, 2025).* He compares these processes to the logic that if, as part of the development of trade infrastructure, China creates momentum for the economies of the countries with which it works within the framework of the initiative, then space cooperation enables partners to improve their own space strategies.

For example, the importance of BeiDou satellites for Pakistan lies in the ability to obtain up-to-date images of agricultural areas *(CGTN, 2023)*, assess surface water levels, and obtain a tool for timely forecasting of natural disasters. Given the unstable climate situation in Pakistan and understanding the importance of agriculture for this country, the space sector can be identified as one of high value and relevance. The low level of urbanization and the inaccessibility of settlements in

Pakistan are to some extent due to the country's complex landscape and necessitate the search for new tools to establish television, radio, and network communications across as much of the country as possible. In this regard, the Space Silk Road similarly serves as a tool for resolving the pressing complex issue of communications within the country.

Another researcher at the Centre for Aerospace and Security Studies, Ramsha Shahid, notes in her analysis of the development of the space sector in Pakistan that cooperation with China under the auspices of the China-Pakistan Economic Corridor project has also led to increased structural interaction between the two countries in the field of space research *(Shahid, 2023)*. Among other things, this led to the establishment of a direct partnership between Pakistan's Space and Upper Atmosphere Research Commission (SUPARCO) and China's National Space Administration (CNSA) in 2019.

The researcher also noted that the dominance of the private sector in Pakistan's space sector is currently promising, as it makes investing in potential projects much easier, thus creating a basis for future grants. For comparison, a researcher at the Area Study Centre for Africa, North and South America, Quaid-i-Azam University in Islamabad provides figures on the distribution of the private sector in China's space industry as of 2022. They were divided into four groups, which included: 14 companies that were linked to the public sector; 9 companies that had ties to the Chinese Academy of Sciences; the third group had 42 companies that did not receive any funding at all; and the last group included 13 companies that were involved only in communications satellites and were funded by the private sector *(Kalhoro, 2022).* At the same time, state-owned enterprises play an important role in China's aerospace sector and cooperation with partners, as the state-owned China Great Wall Industry Corporation (CGWIC) was involved in the design of communications satellites for Pakistan.

Another important institution within which China and Pakistan are gaining experience in cooperation in space exploration is the Asia-Pacific Space Cooperation Organization (APSCO). The organization was founded in 2008 with the aim of advancing cooperation in space technology and its peaceful application. Its membership includes a number of countries from different regions of the world: Bangladesh, China, Iran, Mongolia, Peru, Thailand, and Turkey *(Pollpeter, Anderson, Wilson, Yang, 2015).* The organization pays particular attention to cooperation between technical institutions that specialize in or actively participate in the development of space technologies, strategies, and general space research. On November 16, 2022, a memorandum of understanding was signed between APSCO and Hong Kong Aerospace Technology Group Limited (HKATG) *(Space News, 2022).* It should be noted that at the time of signing the memorandum, the head of APSCO was Jose Antonio Garcia Morgan, who also held the position of head of the Peruvian Space Agency. This, in turn, may serve as an example of cooperation between China and Pakistan on a global scale. On January 23, 2026, an APSCO delegation led by the organization's Secretary General Jiang Hui visited the Harbin Institute of Technology (HIT) and held a series of discussions on the institute's current achievements and prospects in the field of space research, noting the importance of international cooperation and the exchange of best practices *(HIT, 2026).*

With regard to lunar exploration, in 2022 China invited its partners in the Asia-Pacific region to participate with their own satellite projects, and as a result, Pakistan was accepted with its own satellite, iCUBE-Q. During the preparation process for the launch of this satellite, namely in 2023, Pakistan joined the work of the Chinese international lunar research station. Finally, Pakistan's lunar satellite iCUBE-Q was launched as part of China's Chang'e 6 lunar mission on May 4, 2024. Both countries had their own tasks in this mission: while China's Change 6 took on the task of directly collecting samples from the moon's surface, iCUBE-Q, equipped with two optical cameras, photographed the moon's surface, both as a separate object and in conjunction with the sun. The Chinese National Space Administration assessed the mission as a complete success, with detailed images of craters and the moon's surface meeting the project's expectations. The images obtained were handed over by the Chinese side to the Pakistan embassy in China *(Chaudhary, 2024).*

On May 30, 2024, China launched a Long March-3B rocket into space, carrying the Pakistani satellite Paksat MM1 *(CGTN, 2024).* This satellite was designed as part of the Digital Pakistan initiative, and its main function is to provide Internet coverage to remote regions of the country *(MOFA, 2024).* However, M. M. Afnan, an expert at the University of Management and Technology

Lahore, argues that the orbit assigned to the satellite intersects with the orbital path of Indian satellites, which in turn could lead to potential tensions in the region *(Afnan, 2024).*

For Pakistan, 2025 was not only a period of escalation with neighboring India and Afghanistan, but also a time of intensified cooperation with other countries in the field of space exploration. On January 14, in cooperation with technical institutes and organizations in the United States and Turkey, the PAUSAT-1 satellite was launched from the United States. On January 17, 2025, Pakistan launched its first domestically produced satellite, PRSC-EO1, from China. According to Shayan Jani, a researcher at the Centre for Aerospace and Security Studies (CASS), it is important to note that Pakistan is focusing on cooperation in the space sector not only with China, but also with the United States. He added that space remains a promising area for Pakistan in both civil and military terms .

Discussions on space cooperation between China and Pakistan remain relevant for ministerial-level dialogue. Commenting on China's Space Day celebrations on April 24, 2025, Amjad Ali, a senior official at the Space and Upper Atmosphere Research Commission of Pakistan, praised the work of the China National Space Administration, noting that the organization remains a leader in its field. Separately, on the importance of structural cooperation for both countries, he affirmed that «the CNSA-SUPARCO partnership strengthens intercultural dialogue, diplomacy, and peaceful cooperation, proving that shared dreams can unite peoples among the stars» .

On April 22, 2025, a similar meeting took place between the Prime Minister of Pakistan and the head of the Chinese space technology company Galaxy Space. The meeting included discussions with the Pakistan Space Agency and the Ministry of Information Technology and Telecommunications, which are actively involved in space exploration and development projects .

In August 2025, Shan Zhongde, head of the China National Nuclear Corporation and the China National Space Administration, met with Ahsan Iqbal, Pakistan's Minister of Planning and Development. In addition to nuclear energy issues, the parties discussed urgent achievements and plans in the field of space exploration. The Pakistani official noted that, in cooperation with China, Pakistan is making progress in various areas and outlined short- and long-term plans, including the launch of a Pakistani astronaut to the Chinese international space station in 2026 and the launch of a mission to the Moon in 2035 . For his part, the Chinese representative emphasized that China and Pakistan are equally satisfied with the progress of strategic relations, which are gradually becoming interdependent.

An additional example of cooperation between China and Pakistan in the satellite sector, which is also aimed at improving work on the China-Pakistan Economic Corridor, is the launch of the Kuaizhou 1A rocket on July 31, 2025, which carried a remote-controlled satellite *(China Daily, 2025).* Pakistan's Space and Upper Atmosphere Research Commission noted that the satellite's latest optical equipment has enabled more detailed observation of meteorological conditions and is a supporting factor in the development of joint projects between China and Pakistan.

On October 19, 2025, China launched its first Hyperspectral Satellite (HS-1), which is expected to advance the collection of data on meteorological conditions and the overall state of the environment. Commenting on the launch of the satellite, Pakistan's Minister of Foreign Affairs noted the high level of professionalism of the Chinese and Pakistani scientific and technical teams involved in the satellite project *(PMPUN, 2025).* Special emphasis was placed on the importance of launching the satellite for further improvement of the CPEC infrastructure project *(Ukrinform, 2025).*

Pakistan's fundamental strategy for space exploration today is “Space Vision 2040,” also known as Vision 2047, which declares the intention to launch 11 satellites of various specializations and to launch a Pakistani cosmonaut under the auspices of a joint mission in cooperation with China *(Yasmin, Malik, Mustafa, 2023).* With regard to the regulatory framework for cooperation between China and Pakistan in space, it is worth noting Pakistan's National Space Strategy, the latest edition of which was published in 2024. Paragraph 4.7, "International Cooperation and Collaboration“ of the ”Thrust Areas" section states that Pakistan will use all possible instruments of bilateral and multilateral cooperation to further space exploration, improve existing technologies, and exchange information with its partners in this field *(SUPARCO, 2024).* A year earlier, in 2023, the Pakistani government published the “Space Policy of Pakistan,” which outlined the main objectives of the future space exploration strategy, including the promotion of joint ventures and projects with

international partners for missions and research initiatives *(MOFA, 2023).*

China's latest relevant document, or white paper, on space was published in 2022 and focused mainly on achievements in the period 2016-2021 *(The state council of PRC, 2022).* Nevertheless, it outlined the main goals for the next five years in terms of space exploration, namely: the introduction of new technologies, intensification of research on the Moon's poles, and the development of infrastructure for further launches. A separate point was made about achievements in the space sector, where attention was paid to cooperation with Pakistan, in particular joint satellite launches. Among the official documents published by the China National Space Administration, the announcement of a competition for a project to join the Chinese mission to launch an orbital module to Mars stands out in particular *(CNSA, 2025).* The section describing international cooperation within the framework of this mission proclaims openness to the global community and the intention to cooperate with institutions in other countries, so it is quite likely that in the near future we will see a Pakistani proposal for a joint launch of a module to Mars.

Arooj Fatima Kazmi, a researcher at the Pakistani Strategic Vision Institute, notes in her analysis that cooperation with China in space exploration is important for Pakistan and does not make it dependent on China, as it gives the country a choice of which partner to intensify cooperation with in a particular field. Moreover, he notes the importance of the planned Chinese-Pakistani mission to the Moon in 2028, which could further strengthen Pakistan's status as China's strategic partner in space *(Kazmi, 2025).* Another example of China's positioning as Pakistan's partner in space is the first Pakistani astronaut, Namira Salim. In his response to Xinhua on November 22, 2023, he noted that China remains Pakistan's main partner in helping to improve its space program, while highlighting previous experience in sharing technology and expertise in other areas *(Xinhua Silk Road Information Center, 2023).*

At the same time, researchers at the Pakistani Center for Aerospace and Security Studies noted that Sino-Pakistani cooperation in space contains a certain number of contradictions that could weaken the overall potential for cooperation *(Mujtaba, Chohan, 2021).* In addition to Pakistan's underdeveloped cooperation base, there were also concerns about the potential deterioration of relations with the United States and European countries, as China's main competitors, and the prospect of falling into a debt trap resulting from the uneven development of partners in the space sector.

Nowadays, the training and dispatch of a Pakistani astronaut to the Chinese international space station remains a pressing issue. On February 28, 2025, Pakistan and China reached a final agreement on sending a Pakistani representative to the space station *(Radio Pakistan, 2025).* The head of Pakistan's space agency noted that this flight will aim to strengthen the scientific potential of countries and gain experience in space exploration for future generations. For his part, Pakistan's Minister of Information and Broadcasting Attaullah Tarar expressed hope that the cosmonaut's flight would take place within a year, adding that the Pakistani government pays regular attention to the field of space research *(The Nation, 2025).*

On February 7, 2026, the media department of the Pakistani Armed Forces announced that two candidates would be selected to undergo six months of training at the Chinese Astronaut Training Center, but only one astronaut would be admitted to the mission *(Arab News, 2026).* As part of the mission, the selected candidate will conduct scientific research and assume the duties of a crew member of the Tiangong space station *(Muslim Network, 2026).*

Conclusions. Based on the information presented above, it can be concluded that cooperation between China and Pakistan in the space sector is quite active and stable in its dynamics. A technological partnership has been established between the two countries, which promotes further exploration of space among scientific communities. The experience gained from joint work between space agencies, organizations, and agencies of both countries is also an important indicator, giving the “space” aspect of cooperation between China and Pakistan synonymity with other areas of cooperation. At present, we do not see any examples of political escalation in the region due to space incidents and organizational conflicts. However, given the dynamic turbulence in the global political arena, it is possible that such incidents could occur in the future.

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