Latin American Journal of Education
www.lajoe.org

HUMAN RESOURCES POLICY AND LEGAL FOUNDATIONS FOR THE PROTECTION OF THE OUTER SPACE ENVIRONMENT: THE MODERN STAGE OF AEROSPACE SECTOR DEVELOPMENT IN UZBEKISTAN

https://doi.org/10.5281/zenodo.17907209

Mukhitdinova Fiyuza Abdurashidovna
Professor, Doctor of Legal Sciences, Department of state and law theory, Tashkent State Law University. E-mail: feruza.mukhitdinova@gmail.com
Orcid: 0000-0003-1721-0189
Azamatov Akbar Oybek ugli
is a 2nd year student at the Academic Lyceum of the International Westminster University in Tashkent.

ABSTRACT: *This article examines the international legal principles governing the protection of outer space and the environment, with a particular focus on their national implementation in Uzbekistan. Special attention is given to the development of human resources, including training, internships, and educational programs, which are crucial for the sustainable growth of the aerospace sector. The study analyzes the role of the Uzbekcosmos Agency, the establishment of the Center for Space Monitoring and Geoinformation Technologies, and innovative projects such as the Samarqand-2028 hyperspectral satellite.*

The article highlights the strategic importance of cultivating a new generation of aerospace specialists, noting that Uzbek youth today show strong interest in space science, technology, and environmental protection. By integrating educational initiatives, legal regulations, and advanced technologies, Uzbekistan is not only ensuring the effective and environmentally responsible exploration of space but also fostering a highly skilled workforce capable of supporting national socio-economic development and international collaboration.

Overall, this study demonstrates how a coordinated approach to human resource development, legal framework implementation, and technological innovation can promote sustainable aerospace sector growth and strengthen Uzbekistan's position in the global space community.

KEYWORDS: *International space law; space environment protection; human resources policy; aerospace sector development; Uzbekistan; youth engagement in space science; remote sensing; satellite monitoring; sustainable development; Uzcosmos Agency; Samarqand-2028; aerospace education; environmental responsibility.*

Latin American Journal of Education
www.lajoe.org

INTRODUCTION

The 21st century has witnessed unprecedented growth in aerospace technologies, which have become a cornerstone of scientific, economic, and environmental development. However, space exploration poses both legal and ecological challenges, including orbital debris, planetary contamination, and the need to maintain sustainable use of space.

For Uzbekistan, the development of the aerospace sector represents a strategic priority. Since the signing of the Presidential Decree on the Development of Space Activities in Uzbekistan (2019), the country has made significant strides in building institutional, legal, and technological frameworks. A crucial component of this strategy is the preparation of qualified specialists capable of managing aerospace technologies while adhering to international legal principles.

This article investigates the human resources policy and legal foundations of Uzbekistan’s aerospace sector, linking international norms with national implementation, and highlights current initiatives that demonstrate both technological advancement and environmental responsibility.

Center for Space Monitoring and Geoinformation Technologies

In accordance with the Resolution of the Cabinet of Ministers dated May 20, 2022 "On measures to further improve the activities of the Space Research and Technology Agency", the Center for Space Monitoring and Geoinformation Technologies was established at the agency.

The main tasks of the Center include remote sensing of the Earth using satellite facilities, processing and transmitting space monitoring data, and providing services in the field of space activities. And also, the introduction of innovations and scientific developments, increasing the efficiency of economic, defense and security sectors using geoinformation technologies.

The Center's activities ensure the practical implementation of the principles of environmental monitoring, emergency prevention and sustainable environmental management.

International cooperation and the Samarqand-2028 project

As part of the implementation of the Presidential Decree dated November 23, 2022 "On additional measures for the further development of the space industry," Uzbekistan has stepped up international partnership.

Of particular importance is the memorandum between the Uzbekcosmos agency and the Chinese company STAR.VISION on the creation of the Samarqand-2028 hyperspectral satellite, symbolizing the holding of the 2028 International Astronautical Congress in ancient Samarkand, the largest global forum to be held in Central Asia for the first time.

Uzbek specialists will develop the artificial intelligence module for the satellite. The data obtained will allow you to:

Latin American Journal of Education
www.lajoe.org

• monitor the quality of atmospheric air;

• Monitor agriculture and forests;

• assess the ecological condition of the territories;

• Promote digitalization and green economic reforms.

In accordance with the Decree of the President of the Republic of Uzbekistan dated November 23, 2022 "On additional measures for the further development of the space industry", the Agency for Space Research and Technology (Uzbekkosmos) It is defined as the coordinating body responsible for the formation and implementation of state policy in the field of space activities, the development of innovation, scientific research and international cooperation.

It should be noted that the Resolution is aimed at deepening Uzbekistan's integration into the global space community, expanding the practical application of satellite and geoinformation technologies in economics, agriculture, ecology, urban planning and security, creating a national space monitoring system to improve the efficiency of natural resource management and emergency prevention, as well as developing scientific, educational and human resources in the aerospace industry. the sphere.

The tasks of the Uzbekcosmos Agency within the framework of the Resolution are as follows, since the document specifies the agency's functions aimed at the systemic development of the industry, including:

1. Development of the national program "Cosmos–2030", which provides for the creation of a satellite cluster, the development of ground infrastructure and international partnerships.

2. Creation of a regulatory framework that ensures safety and legal responsibility during space missions, as well as the protection of Earth remote sensing data.

3. Support scientific research and innovative start-ups in the field of aerospace technologies.

4. Interdepartmental coordination in the use of space information by government authorities, scientific centers and businesses.

5. Commercialization of space activities is the creation of conditions for attracting private investment, developing public-private partnerships and forming a space market for services.

Personnel training and development of scientific and educational potential

The Resolution pays special attention to human capital as a key factor in the development of the space industry. The Agency has been instructed to:

• organize training, retraining and advanced training of personnel in the field of aerospace, satellite systems, geoinformation technologies, telecommunications and programming;

• establish cooperation with leading foreign universities (in particular, from China, Germany, France, Russia and Kazakhstan) for the exchange of experience and joint educational programs;

Latin American Journal of Education
www.lajoe.org

• Create a national school of aerospace technologies at Tashkent State Technical University and TSUE and other universities;

• Involve young scientists, postgraduates and students in research projects, stimulating the development of Russian space science.

Substantiation of the strategic importance of personnel policy

The development of the space industry requires a combination of technical, legal and managerial competencies. In this regard, the following are of particular relevance::

• Legal aspects of the regulation of aerospace activities, including responsibility for the use of orbital space and environmental protection;

• Interdisciplinary training of specialists combining engineering, environmental and legal education;

• Creation of a national personnel reserve in the field of aerospace management.

Personnel policy and training of specialists in the field of aerospace law and technology in Uzbekistan

In recent years, Uzbekistan has been actively developing a national system of training and retraining of personnel for the aerospace industry. In accordance with the Decree of the President of the Republic of Uzbekistan dated November 23, 2022 "On additional measures for the further development of the space industry", one of the key tasks of the Uzbekcosmos Agency is the development of human potential, training of highly qualified engineers, space system operators and specialists in international space law.

To achieve these goals, Uzbekkosmos develops partnerships with leading domestic and foreign universities. In particular,

• Agreements have been concluded with Tashkent University of Information Technologies named after Muhammad al-Khorazmi, Tashkent State Technical University named after I. Karimov, as well as a number of foreign educational institutions, including Beijing University of Aeronautics and Astronautics (Beihang University) and Moscow Aviation Institute (MAI);

• Joint internship and research project programs are being implemented with the European Space Agency (ESA) and organizations that are members of the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS);

• Innovative remote sensing laboratories, space modeling centers, and educational startups aimed at popularizing aerospace sciences among young people are being created at universities in the country.

Today, many students study at the Academic Lyceum of Westminster International University in Tashkent, which was established in 2008 by Decree of the Cabinet of Ministers of the Republic of Uzbekistan No. 270 dated December 9, 2008. While other educational institutions in Uzbekistan adopt a basic secondary school

Latin American Journal of Education
www.lajoe.org

curriculum, AL MVUT has an expanded curriculum with in-depth study of subjects. This curriculum allows students with a high level of academic achievement to excel in subject Olympiads, as well as in sports at the national and international levels. For example, in the 2018-2020 academic year, 23 Lyceum students took top places in the Olympiads at the district stage in various subjects, and 5 students took first and second places in the Olympiads at the national level. Students also actively participate in numerous international competitions, such as VKOSHP, IOI, Foxford and others. 95% of lyceum students continue their studies at universities every year. In addition to national universities, Lyceum graduates study at the following higher education institutions abroad: University of Chicago, Clark University, Graduate School of Economics, Lomonosov Moscow State University, ITMO University, St. Petersburg State University, KAIST, UNIST, Nagoya University, Technical University of Munich, University of Helsinki, Yonsei University, Shanghai University, University of Birmingham, London Metropolitan University, University of Amsterdam, Simon Fraser University.

Special attention is being paid to the field of space activities — a new segment of the aerospace sector is being formed, which combines international legal principles of space protection and national regulatory mechanisms.

Thus, the personnel strategy of the Uzbekcosmos Agency is a key element of the sustainable development of the industry. Trained specialists should not only have engineering and scientific knowledge, but also understand the international legal principles governing outer space and environmental protection. The Uzbekistan Space 2030 strategy is part of the broader Uzbekistan 2030 national program and is aimed at developing space technologies, IT, artificial intelligence and digitalization of public services in order to become one of the innovative countries, raise GDP, improve the lives of citizens and build a modern, just state with a focus on people and economic growth., including the development of a space cluster based on an IT park and an AI center.

Key directions and goals:

• Innovation and the IT sector: Expansion of the IT park, construction of data centers and an Artificial Intelligence (AI) Center.

• Uzbekistan 2030: Joining the ranks of countries with above-average incomes, ensuring well-being, improving education, medicine, and the environment.

• Digitalization: Bringing the share of digital public services to 95% and creating a "paperless government".

• Economic growth: An increase in GDP to $200 billion and per capita income to $5,000 by 2030.

• Space direction: Creation of a Center for Space and Future Technologies, development of a space

Latin American Journal of Education
www.lajoe.org

cluster within the framework of the IT park.

What is planned:

• Construction of new buildings (AI Center, Center for Space and Future Technologies, office and service centers). The Uzbekistan Space 2030 strategy is part of the broader Uzbekistan 2030 national program and is aimed at developing space technologies, IT, artificial intelligence and digitalization of public services in order to become one of the innovative countries, raise GDP, improve the lives of citizens and build a modern, just state with a focus on people and economic growth., including the development of a space cluster based on an IT park and an AI center.

Key directions and goals:

• Innovation and the IT sector: Expansion of the IT park, construction of data centers and an Artificial Intelligence (AI) Center.

• Uzbekistan 2030: Joining the ranks of countries with above-average incomes, ensuring well-being, improving education, medicine, and the environment.

• Digitalization: Bringing the share of digital public services to 95% and creating a "paperless government".

• Economic growth: An increase in GDP to $200 billion and per capita income to $5,000 by 2030.

• Space direction: Creation of a Center for Space and future Technologies, development of a space cluster within the framework of the IT park.

What is planned construction of new buildings (AI Center, Center for Space and Future Technologies, office and service centers).

• Expansion of the IT park by 1.5 times.

• Launch of large-scale IT projects, including a data center in partnership with a Saudi company.

Thus, Uzbekistan's Space 2030 is part of the country's comprehensive development strategy, focusing on the digital and technological future.

Conclusion

The development of space activities in Uzbekistan is in line with the international principles of space and environmental protection enshrined in the UN treaties. The establishment of the Uzbekcosmos agency, the implementation of national programs and international projects such as Samarqand-2028 strengthen the country's scientific and legal positions in the global aerospace space.

In the future, the relevant direction is the development of the Law "On Space Activities of the Republic of Uzbekistan", which will combine issues of safety, ecology, innovation and responsibility in a single legal system.

Latin American Journal of Education
www.lajoe.org

REFERENCES :

1. United Nations Office for Outer Space Affairs (UNOOSA). Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. New York: United Nations, 1967.

2. United Nations Office for Outer Space Affairs (UNOOSA). Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space. New York: United Nations, 1968.

3. United Nations Office for Outer Space Affairs (UNOOSA). Convention on International Liability for Damage Caused by Space Objects. New York: United Nations, 1972.

4. United Nations Office for Outer Space Affairs (UNOOSA). Convention on Registration of Objects Launched into Outer Space. New York: United Nations, 1975.

5. Presidential Decree of the Republic of Uzbekistan No. PF-5863, On the Development of Space Activities in the Republic of Uzbekistan, 30 August 2019.

6. Resolution of the Cabinet of Ministers of the Republic of Uzbekistan, On Measures for Further Improvement of the Activity of the Agency for Space Research and Technology, 20 May 2022.

7. Presidential Resolution of the Republic of Uzbekistan, On Additional Measures for the Further Development of the Space Industry, 23 November 2022.

8. Uzbekcosmos Agency & STAR.VISION Memorandum of Cooperation, Samarqand-2028 Hyperspectral Satellite Project, 2024.

9. United Nations Office for Outer Space Affairs (UNOOSA). Space Sustainability and Environmental Protection Guidelines. New York: United Nations, 2022.

10. European Space Agency (ESA). Remote Sensing and Geoinformation Technologies: Best Practices for Environmental Monitoring. Paris: ESA Publications, 2021.