



INNOVATIVE TRANSFORMATION OF UZBEKISTAN'S EDUCATIONAL AND SCIENTIFIC SYSTEMS

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Article history:	Abstract:
Received: 14 th June 2024 Accepted: 8 th July 2024	This article examines the innovative transformation of Uzbekistan's educational and scientific systems through a comprehensive review of strategic documents, legislative acts, and reforms. It highlights key aspects such as the modernization of higher education, the promotion of science and innovation, the development of human capital, and the integration of advanced technologies. The study emphasizes the government's efforts to adapt education to labor market needs, enhance international cooperation, support entrepreneurship, and foster innovation ecosystems. Particular attention is given to digitalization, artificial intelligence, and interdisciplinary research as drivers of socio-economic development in Uzbekistan.

Keywords: Uzbekistan, education system, scientific development, innovation, higher education, strategic reforms, digitalization, artificial intelligence, interdisciplinary research, innovation ecosystems.

The review of the political agenda of Uzbekistan in the field of higher and postgraduate education reflects the desire to improve the educational system, provide quality education and train competitive specialists who can contribute to the sustainable development of the country. This aspiration was reflected in the annual message of the President of the Republic of Uzbekistan Shavkat Mirziyoyev to the Oliy Majlis and the people of Uzbekistan on December 20, 2022, in which 2023 was declared the Year of Human Care and Quality Education. The Head of State emphasized that improving the quality of education is the only right way to develop the country, focusing on the role of society in initiating reforms and the need to involve the people in determining topical issues of educational policy. Such a statement may mark a new milestone in the development of the higher education, science and innovation sectors, which has prioritized the role of society as a subject of policy initiatives and the transition from issues of ensuring coverage and institutionalization of the higher education, science and innovation sectors to issues of ensuring quality and efficiency in these sectors.

Strategic documents

The analysis of key documents of the national policy and legislative framework aimed at the development of these sectors in Uzbekistan covers a number of conceptual and strategic documents, the main of which are the following.

Decree of the President of the Republic of Uzbekistan "On the strategy of actions for further development of the Republic of Uzbekistan in 2017-2021" No.4947 dated 07.02.2017. The document identified education and science as priority areas for the development of the social sphere. At the same time, important attention is paid to improving the quality and efficiency of higher educational institutions and gradually increasing the quota of admission to higher educational institutions, stimulating research and innovation activities, creating effective mechanisms for introducing scientific and innovative achievements into practice, creating scientific and experimental specialized laboratories and centers of high technology at higher educational institutions and research institutes technologies, technoparks.

The Law of the Republic of Uzbekistan "On Education", dated 09.23.2020, No. 637. The law establishes the principles of the functioning of the educational system, defines the types of education, including higher education, the legal status of teaching staff, the rights and obligations of students, as well as the norms of state regulation of educational activities and the powers of state bodies and organizations in the field of education.

The Law of the Republic of Uzbekistan "On Science and scientific activity", dated 29.10.2019, No. 576. The law establishes the principles of the sphere of science, defines the legal status of subjects of scientific activity, the rights and obligations of persons engaged in scientific activity, the forms of organization and directions of financing scientific activities, as well as the norms of state regulation of scientific activity and the powers of state bodies and organizations in the field of science.

The Law of the Republic of Uzbekistan "On innovation activity", dated 06/24/2020, No. 630. The Law establishes the principles of innovation activity, defines the legal status of subjects of innovation activity, their rights and obligations, forms of organization of innovation infrastructure and sources of financing of innovation activity, as well as the norms of state regulation of innovation activity and the powers of state bodies and organizations in the field of innovation activity.

Decree of the President of the Republic of Uzbekistan "On approval of the Concept of development of the higher education system of the Republic of Uzbekistan until 2030" dated 08.10.2019 No. 5847. The document defines priorities for the development of higher education in the long term. The RLA provides for a phased transition of the educational process to a credit-modular system and the transformation of the higher education system into a hub for the implementation of international educational programs in Central Asia. A decision was made to establish the Republican Council of Higher Education on the basis of the Public Council under the Ministry and its main tasks were defined. Specific measurable indicators have been established, such as the inclusion of at least 10 universities of the republic in the first 1,000 positions of the list of higher educational institutions in the ranking of internationally recognized organizations (Quacquarelli Symonds World University Rankings, Times Higher Education or Academic Ranking of World Universities) by 2030.

Decree of the President of the Republic of Uzbekistan "On approval of the concept for the development of science of the Republic of Uzbekistan until 2030" No. 6097 dated 10/29/2020. The document provides for a plan for the phased development of science in such areas as:

- increase of funds allocated to science in relation to GDP with balanced participation of the public and private sectors;
- bringing the average age of scientists to 39 years due to the greater involvement of young specialists

in science;

- increasing the publication and patent activity of domestic scientists at home and abroad;
- functioning of national scientific laboratories;
- structural transformations in favor of the production of knowledge - intensive and high - tech products with high added value;
- promotion of scientific achievements in the real sector of the economy.

Decree of the President of the Republic of Uzbekistan "On approval of the strategy of innovative development of the Republic of Uzbekistan for 2022-2026" No. 615 dated 07.06.2022. The document defines the following priority areas:

- support for startups through the creation and development of innovative infrastructure: innovation centers, technology parks, clusters, technology transfer centers, venture organizations, startup accelerators, incubators; as well as the organization of large-scale production.
- increasing the share of innovative and active organizations through the improvement of institutional mechanisms for state support of innovation activities.
- acceleration of the socio-economic growth of the regions by strengthening the innovative activity of small enterprises.
- stimulating the demand for innovation through an integrated system for creating new types of products and technologies from the idea to the end user.
- development of human capital through the development of creative, entrepreneurial and innovation skills.

The main goal is to develop a continuous (cyclical) ecosystem "innovation–capital–innovation" in the process of forming a creative economy, which includes all the key stages from creating new jobs to creating economic value.

Separately, in cooperation with the UNESCO Office in Uzbekistan and with the support of the Islamic Development Bank **a draft National Policy in the field of Science, Technology and Innovation (STI) is being developed.** The document aims to achieve STI goals for the country over the next ten years. It will also serve as a framework for using STI to achieve a rapid and sustainable recovery from the COVID-19 pandemic while increasing resilience to future crises and shocks. The proposed Policy instruments are in line with National Sustainable Development Goals and Objectives, the Addis Ababa Action Agenda, which identifies specific STI strategies and actions as key to achieving the Sustainable Development Goals (SDGs).

The regulatory framework for the development of certain aspects of higher education, science and innovation

In addition to the conceptual strategic documents, the country has created a regulatory framework for the development of certain aspects of higher education, science and innovation. For example, the following Resolutions of the President and the Cabinet of Ministers of the Republic of Uzbekistan reveal the ways and mechanisms of development of these sectors.

"On additional measures to ensure the academic and organizational and managerial independence of state higher educational institutions." Reveals the powers of state universities in the development of academic and organizational and managerial independence. In addition, the Resolution abolishes the boards of trustees of state higher educational institutions, which are granted financial independence, and provides the basis for the creation of Supervisory Boards of higher educational institutions without the status of a legal entity, at least 70 percent of whose members are representatives of relevant ministries, departments, personnel customers, and the public.

"On the organization of admission to study at state higher educational institutions." The

document defines new educational mechanisms, such as distance learning, the parameters of the state order for admission to study, admission to master's degree, grant-based education abroad, etc. **"On measures to improve the quality of teacher education and further develop the activities of higher educational institutions for the training of teaching staff."** By this Decree of the President of the Republic of Uzbekistan, a number of regional pedagogical universities have been established. The document provides guidance on the revision of educational programs of pedagogical higher educational institutions and bringing them into line with the requirements of the National Qualifications Framework, the International Standard Classification of Education (ISCED-2011) and international assessment programs (PISA, TIMSS, PIRLS, TALIS). A notable feature of the document is the fact that it is in this RLA that the transition to digital management of business processes of higher education is indicated, such as, for example, the transition from January 1, 2024 to work in the information system "Management of higher Education processes", electronic training programs and textbooks, multimedia educational products, audio and video recordings lectures, as well as other materials.

"On measures to support the education of women in higher, secondary specialized and vocational educational institutions." The document reveals the mechanisms for implementing a system of allocating State budget funds to commercial banks in order to finance educational loans for women's education on preferential terms.

"On additional measures to improve the system of training women in professions and entrepreneurship." The RLA is aimed at creating conditions for increasing entrepreneurial activity, training in professions and ensuring employment for women in Uzbekistan.

"The program of modernization of higher education for 2020-2021". In general, the Program is focused on improving the quality of education, enhancing research activities, developing international cooperation and introducing modern educational technologies.

"Comprehensive measures to further improve the system of training and advanced training of personnel in the system of higher and secondary special education for 2021-2022." The focus of this document is the development of professional training and advanced training of teachers, as well as the development of modern curricula that meet the needs of the labor market.

"On measures to further strengthen the infrastructure of research institutions and the development of innovative activities" in 2017 it has defined a set of measures to strengthen the infrastructure of research institutions and the development of innovative activities. The main attention was paid to strengthening the material and technical base of research institutions through financing the reconstruction and overhaul of buildings and buildings of research institutions and equipping them with modern scientific and laboratory equipment, necessary consumables and components.

"On additional measures to create conditions for the development of active entrepreneurship and innovation" in 2018, which was logically continued in 2021 **By Presidential Decree "On additional measures to create conditions for the development of active entrepreneurship and innovation"** establishes measures to stimulate business to innovate and provides the basis for the introduction of innovative ideas and technologies, creating the necessary conditions for the accelerated development of science and innovation, with special attention to the harmonious development of regions in this regard.

"On measures to further improve the activities of the Academy of Sciences, organization, management and financing of research activities" in 2018. The document clearly delineates the tasks and activities of the Academy of Sciences, as well as institutionalizes various areas in the structure of the Academy – mathematics, nuclear physics, ion plasma and laser technologies, chemistry and physics, etc.

"On additional measures to improve the efficiency of commercialization of the results of scientific and scientific-technical activities" in 2018 creates prerequisites for ensuring accelerated implementation of domestic scientific, applied and innovative projects and developments, increasing the contribution of science to strengthening the competitiveness of the country's economy, as well as creating effective mechanisms for promoting promising domestic achievements in scientific and scientific-technical activities. The resolution defines the main tasks of research and higher educational institutions in the field of commercialization of the results of scientific and technical activities (hereinafter - RSTA), methods of commercialization of RSTA, and a list of developments subject to commercialization. The document also lays the foundations for a policy course on public-private partnership projects and the creation of public-private scientific clusters that meet the needs of the country.

"On measures to improve the position of the Republic of Uzbekistan in international ratings and indices" in 2019 it corresponds to Uzbekistan's aspirations to ensure competitiveness at the international level, setting a course for monitoring indicators in 17 leading international rankings, and creates the basis for creating a national monitoring system for key areas of the country's development, not limited to the sectors of higher education, science and innovation.

"On measures to introduce the procedure for determining the rating of scientific organizations" in 2020 it laid the foundations for a healthy competitive environment for scientific organizations, as well as the foundations for regular monitoring of their effective activities.

"On measures to create conditions for accelerated implementation of artificial intelligence technologies" in 2021 It reflected the country's desire to accelerate data analytics using artificial intelligence in 9 priority sectors and outlined the main mechanisms of state financing of this innovative direction both in the field of science and in the commercial sectors.

Appendices 1 and 2 provide in more detail the number of RLAs and a list regulating higher education, scientific and innovative activities in Uzbekistan. All accepted documents are based on the principles of continuity, accessibility, openness and competitiveness.

The analysis of the above conceptual documents and normative legal acts of the Republic of Uzbekistan reveals the main trends determining the national agenda in the field of development of higher and postgraduate education.

Internationalization and academic mobility. The country is actively developing international cooperation in the field of higher education, science and innovation, supporting the exchange of students, teachers and scientists with leading universities in the world. Targeted grants are allocated for the training of specialists abroad, scientific internships. This contributes to improving the quality of education and enriching curricula, conducting joint research and participating in international scientific projects.

Adaptation of education to the needs of the labor market. The development of education is closely linked to the needs of the economy. Training programs are regularly updated to meet the requirements of the labor market, which contributes to the training of specialists in demand in various industries.

Increasing the proportion of businesswomen. The country by creating conditions for education (offline or online) actively promotes the issue of increasing the proportion of women in higher and postgraduate education, as well as their involvement in scientific and innovative activities.

Digitalization of education. The introduction of modern information technologies into the educational process contributes to improving the effectiveness of education and accessibility of education.

Innovations and scientific research of universities. Uzbekistan is striving to increase the volume

of scientific research and innovation activities. The creation of research centers and laboratories on the basis of higher educational institutions will contribute to the development of advanced technologies and strengthen the country's position on the world stage.

Improvement of scientific and educational programs. The Government of Uzbekistan actively promotes the development of scientific and educational programs. Measures have been developed and implemented to improve the quality of scientific personnel training and to stimulate scientists, researchers and consultants.

Development of scientific infrastructure. Uzbekistan is striving to improve the infrastructure for scientific research and innovation. This includes the creation of science and technology parks, innovation centers and laboratories, as well as the opening of regional scientific structures.

Increased publication activity. Today, conditions are being created to increase the publication activity of Uzbek scientists and young specialists. The Government of Uzbekistan provides various forms of financial and organizational support for scientific research, which contributes to publication activity.

Stimulating startup initiatives and developing venture financing. Financing programs, contests and accelerators are being created in Uzbekistan to support innovative entrepreneurs and startups.

The development of information technology and artificial intelligence. The development of information technology and digitalization are important components of innovative development. Projects have been launched to create digital infrastructure and electronic public services, and to transfer business processes of scientific activity to the digital space. Uzbek scientists are active in the implementation of research aimed at solving the issues of the introduction of artificial intelligence, as evidenced by the creation in 2022 of the Council on Artificial Intelligence under the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan.

The development of innovation clusters and the interdisciplinarity of research. The promotion of the creation of innovation clusters and technology parks stimulates the interaction between scientific research, innovation and business. At the same time, Uzbekistan recognizes the importance of interdisciplinary research combining knowledge and methods from different scientific fields. This contributes to a deeper understanding of complex phenomena and problems, as well as the creation of new solutions.

In general, these areas demonstrate that science and innovation in Uzbekistan occupy an important place on the political agenda today. However, these are just a few examples of measures taken by Uzbekistan towards the development of national technological initiatives.

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