

THE STATE OF SCIENTIFIC RESEARCHES IN GLOBAL INNOVATION INDEX

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Abstract. *Creation of the necessary institutional conditions for the sustainable development of the innovation ecosystem, including the improvement of the political, legal and business environment aimed at stimulating innovation, and the continuation of reforms in this direction is the demand of the time.*

Keywords: *institutional conditions, reforms, boundaries, scientific and innovative activities.*

Creation of the necessary institutional conditions for the sustainable development of the innovation ecosystem, including the improvement of the political, legal and business environment aimed at stimulating innovation, and the continuation of reforms in this direction is the demand of the time.

Over the past years, the main institutions that establish the innovation system in our country have been identified, boundaries, elements and participants in innovative activities have been established, measures have been adopted for the development of scientific and innovative activities, effective mechanisms for the formation and further improvement of innovative potential have been developed, regulatory legal foundations have been updated.

“Innovation means the future. We need to start building our great future precisely on the basis of innovative ideas. It is not for nothing that we move on to the path of innovative development and the digital economy. Because who will win in the current era, when the times are developing rapidly? A new thought, a state that relies on a New Idea, Innovation, wins”.

The Global Innovation Index (GII) provides information on the multifaceted aspects of innovation-based economic growth, and this directly covers key areas in countries. Among them is the field of Science, in which the indicators of “human capital and research activity” are assessed, and through indicators in other similar areas, the overall indicator of the Innovation Index is determined. According to the 2022 report, 81 detailed measurement criteria were calculated for 131 states, making GII one of the leading indicators that assess the innovative efficiency of economies. To date, GII has become one of the most important comparative tools for policymakers, investors and other stakeholders that allow them to assess annual innovative progress.

The new edition of GII is a project that will be developed with the assimilation of new data as well as the practical application of the latest research on the shortcomings in the assessment of innovations in previous reports. GII is based on two sub-indices – the Innovation input sub-index and the Innovation output sub-index. The sub-indices in question are calculated as follows:

“Innovation input” sub-index covers five types of input components that ensure the innovative activities of the national economy, which are: Institutions, Human capital and research, Infrastructure, Market sophistication and Business sophistication. These components define aspects of the environment that promote the development of innovation in the economy.

“Innovation output” sub-index is the results of innovative activities in the economy. Although the sub-index consists of only two components, it has the same weight as the “Innovation input” sub-index when calculating the total estimate of the GII. The results of two activities: Science and technology and creative products.

The total estimate of the GII is equal to the average of the sub-indices of the Innovation input and Innovation output.

This ranking has been published since 2007 by Cornell University, the INSEAD School of business, and the World Intellectual Property Organization (WIPO), and the data has been published annually. The index covers 81 indicators divided into 7 directions and 21 groups, and each state was evaluated on its respective normalized scores in the range from 0 to 100.

Summarizing 15 of these Index indicators from international indices, 4 from surveys conducted by the World Economic Forum, and 61 from the quantitative statistical database of relevant international organizations, as well as by other researching methods, from October of each year to the end of February of the next year. The leading countries in the 2022 ranking were mainly the Swiss-led European countries, with the United States ranked 2nd and Denmark ranked 10th. For the first time in the ranking, Uzbekistan ranked 122nd among 141 countries in 2015, and in 2020 Uzbekistan ranked 93rd among 131 countries after an 8-year hiatus, climbing 34 points. In 2022, it ranked 82nd out of 132 nations, increasing its position up to 40 points, and became the leader of Central Asia, and 3rd among Central and South Asian countries, behind India and Iran.

In achieving this result, it is worth noting the large-scale reforms carried out in the field of science and innovation in our country in recent years, as well as the special attention of the head of our state to the development of the field.

From the diagram above, we can see that in the last 10 years of our country there was only an increase in the GII ranking, that is, an increase of 45 places.

The main pillars of the GII rating are 1) Institutions 2) Human capital and Research 3) Infrastructure, 4) Market sophistication, 5) Business sophistication, 6) Knowledge and technology outputs, 7) Creative outputs.

In this regard, in this scientific work, the main directions of the GII, that is, the second pillar human capital and the research, is divided into three parts, and in turn, each of them divided to five, four and three respectively:

Education:

- Current expenditure on education in relation to GDP;
- Government spending for students in relation to GDP;
- Duration of the school period, years;
- PISA scales in reading, mathematics and science;
- Student-teacher ratio, in secondary education.

Higher Education:

- Entrance in higher education institutions;
- Graduates in science and engineering;
- Mobility in entering the higher education institutions;
- Admission to higher education institutions.

Research and development:

- Number of research staff;
- Costs for research work;

- QS university ranking.

2.3 R & D in the Human capital and Research pillar is considered as the main object of this scientific research and analyzes have been carried out on each of them on the role they occupy in the global Innovation Index (table 1.3).

Table 1.3

The role of the GII rating in the indicators of research and development of human capital and research pillar of Uzbekistan

Years	2012	2013	2014	2015	2020	2021	2022	2023
Quantity of countries	141	142	143	141	131	123	132	132
Indicators	Ranks							
Research and development		123	85	92	94	95	93	92
Researchers, FTE/mn pop.			56	58	70	69	73	69
Gross expenditure on R&D					99	99	98	99
Global corporate R&D investors					42	41	38	40
QS university ranking		68	70	73	77	74	72	71

- information is not available.

- This indicator was added as an addition from 2016.

As we can see in our table above, in the period 2012-2015, Uzbekistan did not have any place in the GII due to the lack of data. By the decree of the president of the Republic of Uzbekistan dated November 30, 2017 “on the organization of activities of the Ministry of Innovative Development of the Republic of Uzbekistan” PD-3416, the only ministry in this sphere in Central Asia was established and, as a result of it and due to the numerous openness policies carried out in our country, since 2020 our country has again returned its position, particularly 93rd place in 2020, which is 34 ranks higher than in previous years, and since then Uzbekistan has been improving with positive results in the Global Innovation Index rankings with 82th ranking in 2023. It is not an exaggeration to say that the adoption of this decree was the impetus for the implementation of not only innovation, but also many reforms in science, as well as its development.

As we all know, today the countries of the world with high indicators of economic and Social Development have at the right time allocated high levels of funds from the state budget to the development of science and education of the country's youth in relation to the gross domestic product. In Uzbekistan, too, in recent years, more than 60 percent of the state budget is being directed to the development of social spheres. In particular, the share of funds allocated to the educational system in the GDP of our country is growing, which in turn serves to strengthen our country's position in the GII ratings in world arenas in the direction of human capital and research. Below we can see the position of Uzbekistan in the second direction of GII in the cross section of years (table 1.3).

Table 1.3

The role of Uzbekistan in the direction of human capital and research

Years	2012	2013	2014	2015	2020	2021	2022	2023
Quantity of countries	141	142	143	141	131	123	132	132
Ranks	35	86	77	76	77	72	65	89

In the 12 indicators, which incorporate in the pillar of Human capital and research, it is aimed to promote important proposals and recommendations that should be implemented in order to ensure that our country is among the 56 most advanced countries in the world in terms of ranking and role by 2026.

This scientific work covers 12 indicators of the direction of human capital and research of the GII. Also, the data required for the calculation of each indicator, the requirements for its rise in the ranking, its place, are revealed to international organizations collecting information.

The development of science in GII countries indicates the level of utilization of the existing innovational potential in the countries. This makes it possible to analyze the place of innovative potential in the national economy. Therefore, science ensures the development of the country's economy at a high pace, but this sector requires large amounts of funds due to the fact that it also requires long-term investments.

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