

GLOBAL INNOVATION INDEX: LATEST ACHIEVEMENTS OF UZBEKISTAN

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Abstract: This article is devoted to the consideration of the ranking of Uzbekistan by the World Intellectual Property Organization (WIPO) in the Global Innovation Index (GII-2022) at the end of 2022. Moreover, the article provides a comprehensive analysis of seven indicators taken into account in assessing the ranking. In addition, in reliance upon the research results the authors have developed proposals for further improvement of the figures by some indicators including Business sophistication, Creative outputs and Knowledge & technology outputs.

Keywords: WIPO, GII, human capital and research, infrastructure, market attractiveness, business attractiveness, knowledge and technology output, creative output.

Introduction

In 2022 Uzbekistan has become the only country in Central Asia, ranked 93 in the famous “The Global Innovation Index” – GII. It should be noted, Uzbekistan ranked 93 in this rating in the first attempt in 2020. As a result, the Republic of Uzbekistan has managed to join TOP-10. And this is just the beginning, because due to the reforms gradually implemented in our country, in 2030 Uzbekistan was supposed to be among the top 50 in the Global Innovation Index.

Considering the history of Uzbekistan in this ranking, firstly, the Republic of Uzbekistan entered this rating in 2020 and ranked 93, and secondly in 2021 it improved by 7 points and ranked 86. According to the indicators of the current year, it has risen 4 points and ranked 82. The dynamics of the past years demonstrate that Uzbekistan is expected to go higher.

Literature review.

Nowadays there are over 200 rating evaluation companies in the world and among them one of the most influential is the Global Innovation Index (GII).

Currently the World Intellectual Property Organization (WIPO) is challenging problems and difficulties in evaluating the world economies due to the global coronavirus pandemic, as well as ongoing conflicts and wars between countries. The Global Innovation Index (GII-2021) is jointly published by Cornell University, the European Institute of Business Administration (INSEAD) and the World Intellectual Property Organization (WIPO), as well as a specialized UN agency.

According to the World Intellectual Property Organization (WIPO), the *Global Innovation Index* represents the ranking of countries' innovation capabilities and performance. It evaluates the level of innovation based on the criteria of institutions, human capital and research, infrastructure, lending facilities, investment, and communication.

Furthermore, the Global Innovation Index is a comprehensive study that ranks the countries of the world in compliance with the level of innovative development. Therefore, the Global Innovation Index is an annual ranking of countries based on their ability and success in innovation. This ranking is usually applied by major corporations and governments to compare countries' innovations.

This Global Innovation Index consists of several evaluation components divided into sub-indices. The indicators of the Global Innovation Index rating cover the economy of the world countries and it is determined on the basis of about 80 indicators.

Research methodology

In the research of the ranking results of the position of Uzbekistan and indicators in the international innovation index such methods as induction and deduction, analysis and synthesis, systematic approach, logical thinking, comparison, and factor analysis have been widely used. The indicator-based data have been comprehensively appraised and relevant research-grounded proposals have been worked out.

Analysis and results

At this time the Republic of Uzbekistan is enhancing this prestigious rating by which indicators and which aspects particular attention should be paid to. As it has been specified above, this rating is developed in reliance upon certain criteria. However, it should be noted that the main goal of the innovation-based development strategy determined by the President of the Republic of Uzbekistan in a coordinated manner with world economic development is focused on the "Human capital development". Therefore, as a result of achieving the main goal of the Strategy, by 2030 Uzbekistan is supposed to join top 50 advanced countries of the world according to the Global Innovation Index rating. This can be evaluated and recognized as the essential factor determining the level of competitiveness and innovative development of our republic in the international arena.

It is an inspiring fact that Uzbekistan has become the leading country in the top three in the Central and South Asian region (India - 40, Islamic Republic of Iran - 53 and Uzbekistan - 82). It is crucially important that Uzbekistan ranked 4 in the South Asian region last year in 2021, and this year we left behind Kazakhstan and entered TOP-3, that is, Uzbekistan is proudly considered a new participant of the top three. However, Uzbekistan is still ranked 10 out of 36 countries with Lower middle-income economies.

According to the indicators of 2022, Uzbekistan ranked 10 in the "Income" category and 3 in the "Regional rating" category and has a total indicator of 27.4 degrees, which indicates that it has attained many achievements in the field of innovation. As it can be seen from the figures, according to the 2022 rating of the Global Innovation Index, Uzbekistan has increased by 0.3 points (25.3) (in 2021 it demonstrated the rating of 25.0 from 0-100). So, according to the

information of the International Innovation Index (GII-2022) Uzbekistan demonstrates the following performance according to the following indicators:

ranked 82 in GII-2022;

admission rating - 68;

on-exit rating -91;

income level is below average – ranked 10;

region-Central and South Asia;

GDP at purchasing power parity (RRR) - 291.2 bln. USD (103.2% growth), GDP per capita (RRR) - 8.4 thousand USD (113.5% growth).

It is a well-known fact that the regular summit of Shanghai Cooperation Organization (SCO) was held in Samarkand on September 15-16, 2022. The countries, participating in this summit, also occupy place in GII-2022 rating, including China-11, Russia-47, India-40, Iran-53, Armenia-80, Kazakhstan-83, Pakistan-87, Azerbaijan-93, Kyrgyzstan-94, Tajikistan -104. What we want to say is that the expanding activity of Uzbekistan with the countries of the Shanghai Cooperation Organization (SCO) in recent years (signing of more than 100 beneficial agreements, as well as membership in 23 prestigious organizations of the CIS) can be a guarantee for our level in international ratings to rise further.

The most essential aspect is that in 2022 Uzbekistan has improved in comparison of Central Asian countries through innovative developments (in 2021, Kazakhstan fell from 79 to 83, Kyrgyzstan improved by 4 and achieved 94, and Tajikistan fell by 1 point to 104). Therefore, gradual implementation of the top-target objectives determined in the “Development Strategy of New Uzbekistan 2022-2026” in our country provides an opportunity to further increase in this rating because in 2030 we need to achieve a decent place in this ranking among the top 50.

Table 1

Uzbekistan in Global Innovation Index (GII-2022)

Assessment score (0-100)	Rank	Income	Region a (CSA)	Rank in the region
27.4	82	Low-middle (LM)	Central and South Asia	3*

**Uzbekistan entered the TOP-3 for the first time in the 2022 ranking.*

As we noted above, there is no doubt that Uzbekistan will definitely enter the top 50 in 2030 by 2026. So it is required to make any effort to strive towards the set goal, learn, search, use innovation-based products and be creative.

Table 2

Dynamics of the change of the position of Uzbekistan in the global innovation index

№	Indicators	"The Global Innovation Index"- GII			difference in relation to 2022, (increase / reduction)
		2020	2021	2022	
	Uzbekistan	93	86	82	+9↑
1.	Institutions	95	94	63	+32↑
2	Human capital & research	77	72	65	+12↑
3	Infrastructure	77	72	74	+3↑
4	Market sophistication	27	24	60	-33↓
5	Business sophistication	127	123	74	+53↑
6	Knowledge & technology outputs	90	77	80	+10↑
7	Creative outputs	127	113	102	+25↑

Below we are analyzing which indicators of Uzbekistan have promoted 9-score increase in the ranking of the Global Innovation Index in relation to 2020. This can be obvious from the data on the 7 most significant indicators.

Table 3

Ranking of Uzbekistan in the indicators of the Global Innovation Index (GII-2022)

(GII-2022)

№	Indicators	Rating result
In GII-2022rating: Uzbekistan ranked 82		
1.	Institutions	ranked 63 (ranked 94 in 2021)
2.	Human capital & research	ranked 65 (ranked 72 in 2021)
3.	Infrastructure	ranked 72 (ranked 72 in 2021)
4.	Market sophistication	ranked 60 (ranked 27 in 2021)
5.	Business sophistication	ranked 74 (ranked 123 in 2021)
6.	Knowledge & technology outputs	ranked 80 (ranked 77 in 2021)
7.	Creative outputs	ranked 102 (ranked 113 in 2021)

If we consider the data on the first indicator, in the "Institutions" category there has been an increase by one point from 94 to 63 (57.3 scores) and herewith assessment has been made according to the following parameters:

first, the political environment constitutes 52.1scores or ranked 94 (political and operational stability - 65.5/74, government efficiency - 38,8/98),

second, the legislative base accounts for 50,7 scores or ranked 104 (quality of laws - 21,3/123, the law priority- 18.5/123, dismissal costs -17.3/73),

third, the business environment amounts to 69.2 scores or ranked 21 (ease of starting a business 69,2/21, ease of resolving insolvency – no data available).

It should be noted that currently there are many problems that need to be solved in order to strengthen the legislative base of our republic and ensure its priority. On the other hand, in this rating the legislative base is described as a weakness (ranked 104). The Assembly of the Republican Council for International Ratings and Indices have also determined specific measures to improve the international rating in this political and legal sphere. It is a very inspiring fact that in terms of this parameter, our performance in the business environment is assessed as strong and ranked 21.

In the **second indicator**, Human Capital & Research, there has been 7 score increase to 30.8 and ranked 65. This happened mainly due to the following factors:

first, education accounts for 57.4 scores or ranked 50. Unfortunately, according to the educational indicator, compared to 2021, it has decreased by 8 points. It does not provide any information on some columns (expenses on education in relation to GDP constitute 4.9 percent or ranked 45, public funding/student, percentage of GDP - data not available, duration of secondary education (school), year-12.5/88, PISA scale of the international student assessment program - no data available, student-teacher ratio, average -10.9/37),

second, higher education accounts for 33,9 scores or ranked 54 (enrollment in higher education, gross percentage -15.9/101, graduates in science and engineering, percentage - 36,9/6, mobility in higher education- 0.2/106),

third, research and development (R&D) 1.2 scores or ranked 93 (researchers, FTE-full-time equivalent/person-439,9/73, research and development expenditures in relation to GDP, in percent - 0.1/98, research and investors, million USD - 0.0/38, QS- university rating - 0.0/72).

The **third parameter** in the ranking - Infrastructure - also rose by 5 points compared to 2021, from 72 to 74 (41.7 scores).

According to this, **first**, information and communication technologies (ICT) constituted 76.1 scores or ranked 55 (access to ICT 82,7/78, use of ICT 62,3/ 66, online government service - 78.2/46, electronic users 81.0/46),

second, general infrastructure amounts to 32.6 scores or ranked 56 (electricity generation - 1891,9/ 84, logistics - 24.7/92, gross capital formation in percent in relation to GDP - 40.6/6),

third, ecological balance accounts for 16.4 scores or ranked 117 (GDP/energy consumption unit 5.2/118, environmental impact -38.2/77, ISO 14001 environmental certificates/billion USD in relation to GDP-0.1/125).

According to some of these indicators, we are in the top 50, for example, ranked 46 by online services of our government! In terms of e-commerce we possess the same result and according to the level of capital formation in relation to GDP we can even compete for the top 10, as we ranked 7 in terms of generating capital in relation to GDP! (Russia ranked 59, Kazakhstan ranked 24). In general, our indicators of “Infrastructure” have demonstrated their strengths in many parameters.

“Market sophistication” is considered another significant indicator of the global rating, which has demonstrated a decline by 36 points. In other words, this indicator constitutes 33.9 scores or ranked 60.

First, the lending is rated at 7.1 scores or ranked 119 (ease of borrowing – no data available this year, but in 2021 it accounted for 65.0/61, domestic loans to the private sector in percent in relation to GDP - 35.7/87, microfinance gross loans in percent in relation to GDP - 0.2/51),

second, in terms of investments no data available. However, last year this indicator was rated at 70.0 scores or incomplete data (ease of protection of minority investors - 70.0/36, market capitalization- no data available, venture capital investors, transactions/billion USD - no data available, venture capital recipients, transactions/ billion USD - no data available),

third, trade, diversification and market size have been rated at 60.7 or ranked 51 (applicable tariff rate, average weight, 2,6/69, local industry diversification - 92,9/37, domestic market size, billion USD (PPP) - 291,2/59).

According to “*Business sophistication*”, the fifth indicator in 2022 is admitted as an absolute record of the rating, which has improved by 49 points compared to 2021 (improved its position from 123 ranking to 74).

Herewith, **the first**, no data available in terms of educated employees (however, this indicator constituted 22.8 scores last year), knowledge-intensive employment in percent – 16.9/98, firms offering formal training in percent - 16.9/98 compared to GERD in relation to GDP – 0.1/69, GERD funded by business in relation to GDP – 13.7/56, women with academic degree- no data available),

second, innovation relations have been scored at 24.7 or ranked 59. Due to the fact that the data is inadequate (university-industry collaboration-data on research is not available, development status of the cluster - no data available, foreign-funded GERD in percent in relation to GDP - 0.0/93, joint ventures/strategic partnership agreements/billion USD (PPP) in percent in relation to GDP -0.0/62, patent families/billion USD in percent in relation to GDP - 0.0/91),

third, knowledge digestion - 22.8 scores and ranked 100 (intellectual property fees, total sales percentage - 0.4/74, high technology imports, total sales in percent - 9.1/54, ICT services import, total sales in percent - 0,7/98, net inflow of foreign direct investment in percent in relation to GDP - 2.6/54, research potential at enterprises in percent - 12.9/58).

The rating has no strengths in these business attractiveness indicators, with the exception of the business-funded GERD.

In terms of Knowledge & technology outputs, the *sixth* indicator, the figure amounts to 17.9 scores and ranked 80. However, last year our country demonstrated the greatest increase of 13 scores. Unfortunately this year Uzbekistan ranked 77. Although this figure should have been even better, but our patents, research and technical articles and the information we quote are not in a position to be proud of.

First, knowledge creation (creative approach) - 9.1 scores or ranked 78 (patents billion dollars (PPP) in percent in relation to GDP, 1.3/56, RST patents/billion USD (RRR), 0.0/95 percent in relation to GDP, utility models /billion USD, in percent in relation to GDP 1.3/18, research and technical articles/billion USD (PPP), 2.4/124 in percent in relation to GDP, h-index of cited documents 3.4/113),

second, the impact of knowledge - 33.9 scores or ranked 42 in the rating! (labor productivity growth in percent - 4.7/7, new businesses - 2.7/49, software costs, in percent in relation to GDP - no data available, ISO 9001 quality certificates/billion USD (PPP) in relation to GDP - 1.5/92, high-tech production, in percent - 27.3/46),

third, the spread of knowledge - 10.7 scores or ranked 101 in the rating (revenues on the object of intellectual property, 0.0/106 in percent, attractiveness of production and exports 30.3/85, exports of high technologies, 0.3/98 in percent in relation to the overall trade, exports of ICT services, in percent in relation to overall trade - 0.9/87).

In the *seventh* indicator "Creative outputs" Uzbekistan has improved by 11 scores (ranked 102 in 2022). At the same time, it has reached 7.7 scores in the rating.

first, intangible assets have been assessed at 12.5 scores or ranked 94 (it is the first time to be included in the rating), on trademarks/billion USD (PPP) in relation to GDP 30.9/75, global brand value with the highest value of 5000 in GDP - no data available, on industrial samples/billion USD (PPP) in relation to GDP - 0.6/82;

second, creative goods and services -5.3 scores or ranked 100 in the rating (export of cultural and creative services, in percent to total trade - 0.0/132, national feature films - 1.2/79, entertainment and media market - no data available, printing and other media, production as a percentage - 0.5/79, exports of creative products, as a percentage of total trade - 0.3/68),

third, online creativity - 0.5 scores or ranked 109 in the rating (total top-level domains (TLDs) - 0.0/132, country code TLD - 1.2/79, wikipedia edits - 0.9/104, mobile application creation/billion USD (RRR), in relation to GDP - 0.0/107).

There is still much work to be done on these indicators. However, despite of improving our rating from 113 to 102 we are still far behind the foreign experience in the creation and commercialization of intellectual property (creation of intellectual property ecosystem).

We can say with confidence that today on the basis of the “Third Renaissance”, the “Concept of Science Development until 2030”, adopted as one of the significant steps in achieving international indices and rankings of Uzbekistan, is being implemented. It is not difficult to understand this, as we are gradually rising in the above International rankings because in 2020, when we scored the International Innovation Index (GII) by this World Intellectual Property Organization (WIPO), in 2021 it was ranked 82.

Conclusion and proposals

Currently the funds allocated for science and research in Uzbekistan amount to only 0.5 percent of the national GDP. This indicator is much lower than the funds allocated to the R&D by developed and other developing countries. In addition, the level of commercialization of research results is not high. It is noted that this does not enable research institutions and innovative enterprises established by them to attract investment and bank loans. As a result, by 2030, some low-rated indicators will need to be improved in order to rank high in the Global Innovation Index rankings.

The era of the “Third Renaissance”, which has been launched in new Uzbekistan. Despite the impact of the global pandemic, in compliance with the “Concept of Science Development until 2030” and the “Third Renaissance” it is crucially important to intensify and develop activities aimed at raising the number of published research articles, citation index, participation in international conferences and seminars, research activities of higher education institutions on the basis of the government support of higher education institutions.

In conclusion, it should be noted that Uzbekistan has already undertaken its first steps in the Global Innovation Index (GII) rating, which has been recognized by reputable international organizations.

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