

IN TERMS OF THE GLOBAL INNOVATION INDEX: INDIA AND UZBEKISTAN

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Abstract: The article discusses the role of India and Uzbekistan in the ranking of the world's leading Global Innovation Index, the results of the ranking on indicators. Because in this index, yes, both countries are located in the same region. This article is devoted to the comprehensive analysis of the results of the ranking of Uzbekistan in the Global Innovation Index (GII-2021) by the World Intellectual Property Organization (WIPO) in 2021 and seven indicators used for achieving this rating. In addition, this article offers proposals for further improvement of some indicators, including low business attractiveness (Business sophistication), Creative outputs and research and technological results (Knowledge & technology outputs). Moreover, the article presents the views expressed on the issues that need to be settled in the implementation of the priorities set out in the “Concept of Science Development until 2030”, as well as relevant conclusions developed in the process of the research.

Key words: innovation index, institutions, human capital and research, infrastructure, market attractiveness, business attractiveness, scientific and technological results, creative output.

Introduction

Admittedly, India is the undisputed leader in the Central and South Asian region in the ranking (GII-2021). India is ranked 46th in the 2021 rankings! India should be proud of its indicators such as Human capital & research (54), Market sophistication (28), Business sophistication (52) and Knowledge & technology outputs (29). Most importantly, India, like us, has risen two places in the ranking of 2021 indicators compared to 2020, ie from 48th to 46th place.

It is known that last year in the ranking of indicators of the Global Innovation Index (GII-2021) published by the World Intellectual Property Organization (WIPO) under the heading “Monitoring innovations through the crisis COVID-19” Uzbekistan ranked 86th among 132 countries, thus going up 7 points compared to 2020! It should be noted that in the first attempt made in 2020, Uzbekistan scored 93 points in this ranking. So, the sayings of the President of the Republic of Uzbekistan Sh. Mirziyoyev, which could manage to inspire confidence in our people for the future, are being currently proved.

Uzbekistan aims to be among the top 50 in the Global Innovation Index in 2030. Despite the short period of time, it is worth being proud of the results. First of all, our country entered this ranking in 2020 and ranked 93, and then in 2021 it has improved by 7 points and ranked 86. Moreover, it should be noted that at the meeting of the Republican Council on International Ratings and Indices on December 23, 2021, it was emphasized that our position in the Global Innovation Index has improved and there is much work ahead to be done in this regard. Nevertheless, it is a great and historic achievement for the Uzbek economy, which has not been included in the rankings for the last decade. Herewith we would like to say that if we make an effort, we will definitely achieve our goals.

Literature review

Currently there are more than 200 rating companies in the world and the Global Innovation Index (GII) is considered to one of the most influential and significant in the world. Due to the global coronavirus pandemic (COVID-19), in 2021 the GII faced problems and challenges in assessing economies of countries throughout the world. The pandemic has lowered many economic indicators. The Global Innovation Index (GII-2021) is published jointly by Cornell University, the European Institute of Business Administration (INSEAD) and the World Intellectual Property Organization (WIPO) and the United Nations Special Agency. This year the index will be presented in “Who Funds Innovations?” special thirteenth edition devoted to the subject matter. Admitting that innovation is a key factor in economic development, this publishing house combines innovation rankings and extensive analysis of 132 countries around the world.

According to the World Intellectual Property Organization (WIPO), the Global Innovation Index is a ranking of countries’ innovation opportunities and indicators. It measures the level of innovation based on the criteria of institutions, human capital and research, infrastructure, lending facilities, investment, communications.

According to the Ministry of Innovative Development of the Republic of Uzbekistan, the Global Innovation Index is a comprehensive analysis that ranks the countries of the world according to the level of innovative development. Hence, the Global Innovation Index represents an annual ranking of countries based on their ability and success in innovation. This rating is typically used by corporations and governments to compare countries’ innovations.

This Global Innovation Index is divided into sub-indices and consists of several components assessed. The indicators of the Global Innovation Index rating cover the economies of the world countries and are determined (formulated) in reliance upon about 80 indicators.

Research methodology

Such research methods as induction and deduction, analysis and synthesis, systematic approach, logical thinking, comparison, factor analysis have been applied in the study of the results of the rating of the position and indicators of Uzbekistan in the Global Innovation Index. Herewith the data on indicators have been analyzed in a comprehensive manner and relevant conclusions have been developed using comparative analysis methods.

Analysis and results

In this regard, there may arise the question, by which indicators Uzbekistan has achieved a worthy rank in this prestigious rating. As mentioned above, this rating is developed in reliance upon certain criteria. However, the main goal of the Innovation Development Strategy, set by the President of the Republic of Uzbekistan in line with the world economic development, is to “develop human capital”. Thus, as a result of achieving the main goal of the Strategy, according to the Global Innovation Index, Uzbekistan must become one of the 50 strongest countries in the world by 2030. This can be evaluated and recognized as a key factor in determining the level of competitiveness and innovative development of the country in the international arena.

In this regard we are proud to note, that Uzbekistan has become one of the top five countries in Central and South Asia (India ranked 46, the Islamic Republic of Iran ranked 60, Kazakhstan ranked 79, Uzbekistan ranked 86 and Kyrgyzstan ranked 98). However, Uzbekistan is still considered a lower-middle income country (*LM = lower-middle income*).

According to the indicators of 2021, Uzbekistan ranked 10 in the “Income” category and 4 in “Regional Rating” and attained a total of 27.4 scores. The figures demonstrate that the Global Innovation Index of Uzbekistan in 2021 has risen by 2.4 scores (27.4) (in 2020 it was rated from 0-100 to 25.0). Thus, according to the Global Innovation Index (GII-2021), Uzbekistan is ranked according to the following indicators: rating in GII-2021 - 86, entry rating - 100, exit rating - 75, income level - below average - 10, region - Central and South Asia, on GDP purchasing power parity (PPP) -250.2 billion USD, GDP per capita (RRR) -7.4 thousand USD.

It is well known that on December 28, 2021 the President of the Republic of Uzbekistan participated in the informal CIS summit. CIS countries are also ranked in the GII-2021, including Russia ranked 45, Belarus ranked 62, Armenia ranked 69 and Azerbaijan ranked 80. What we mean is that the increase in Uzbekistan activity with the CIS countries in recent years (signing of more than 40 beneficial agreements, membership in 23 influential CIS organizations) can guarantee a further increase in our international rankings.

In terms of Central Asia, we are still ranked 2 (Kazakhstan ranked 79, downgrading two scores compared to 2020, Kyrgyzstan ranked 98 downgrading four scores. Like our country, Tajikistan has achieved a favourable result, being ranked 103, improving its position by 6 scores). This means that while our country remains second in Central Asia, there is almost a decline in neighboring countries, and the rise is not at our level.

Table 1**Global Innovation Index (GII-2021): India and Uzbekistan**

Assessment score (0-100)	Rank	Income	CSA	Rank in the region
India				
36.4	46	Lower middle	Central and South Asia	1
Uzbekistan				
27.4	86	Low-middle (LM)	Central and South Asia	4

According to the data, India is also in the first place in the region, and according to the results of the rating, it is 40 points ahead of us. There is also a difference of 9 points (36.4-27.4) as a result of the indicator in the range 0-100.

This means that it will be absolutely leading country over the next 2-3 years and not doubt, our country will have been able to enter the top 50 by 2026 (if the average increase accounts for 2.4 scores, it will constitute 9.6 in 4 years or 37.0 in total), while the lower limit of TOP-50 of the GII-2021 is equal to 35.4 scores. This proves the fact that the goal can be achieved only due to progress, knowledge, research, innovation, creativity, and so on. In our opinion, we will achieve this in reliance upon the “Third Renaissance”, which has laid the foundation of the New Awakening period in our country.

Below we try to find the answers to the question which indicators of Uzbekistan have promoted 7-score increase in the ranking of the Global Innovation Index. This can be obvious from the data on the 7 most important indicators (components).

Table 2**Position of India and Uzbekistan in the indicators of the Global Innovation Index (GII-2021)**

№	India		Uzbekistan	
	Indicators	Rating result	Indicators	Rating result
	<i>In GII-2021 rating: India ranked 46 (ranked 48 in 2020)</i>		<i>In GII-2021 rating: Uzbekistan ranked 86 (ranked 93 in 2020)</i>	
1	Institutions	62	Institutions	94
2	Human capital & research	54	Human capital & research	72
3	Infrastructure	81	Infrastructure	72
4	Market sophistication	28	Market sophistication	24
5	Business sophistication	52	Business sophistication	123
6	Knowledge & technology outputs	29	Knowledge & technology outputs	77
7	Creative outputs	68	Creative outputs	113

As can be seen from the data in the table, India’s performance on the 7 indicators of the Global Innovation Index is undoubtedly good. If we compare in sequence:

According to the Institutions indicator, India is 32 points ahead of us, and its position in the Political Environment (57.7 / 66), Regulatory environment (63.6 / 710 and Business environment (71.8 / 62) is improved and stable compared to last year. will need to be further enhanced.

In the Human Capital & Research indicator, Uzbekistan is 18 points lower than India. According to this indicator, India - Education (35.9 / 102) is very unsatisfactory. However, in Uzbekistan, Education has 57.3 scores or ranked 42. The results of tertiary education (33.8 / 64) and Research and development (R&D) (32.5 / 35) are high.

Although India's infrastructure performance is good (9 points higher), both countries have a lot of work to do on this indicator in the future.

In terms of market sophistication, India and Uzbekistan have almost equal opportunities. In both countries, Credit (India 43.1 / 56 4), Investment (India 35.9 / 45) and Trade, diversification, and market scale (India 87.7 / 7) have very high results. According to this indicator, India and Uzbekistan are in the top 25 of the ranking.

In terms of business sophistication, the situation in Uzbekistan is not positive (123rd place in the ranking). The result is very bad. In any case, India's position in this ranking is relatively low, but its position in relation to Uzbekistan is satisfactory (India-Knowledge workers 26.4 / 83, Innovation linkages 24.1 / 50, Knowledge absorption 37.1 / 34).

India's performance on knowledge & technology outputs is to be envied. India ranks 29th in the ranking on this indicator. This is due to the fact that the country has done a lot of positive work on the following indicators. Including Knowledge creation 21.0 / 51, Knowledge impact 33.3 / 51 and Knowledge diffusion 49.1 / 13. It turns out that India is even in the TOP-20 in some indicators.

In terms of creative outputs, India is almost twice as good as us. Intangible assets 31.9 / 61, Creative goods and services 19.8 / 55 and Online creativity 8.6 / 105.

Below, we provide an analysis of which data they have used to receive rating scores for each indicator (According to the indicators of Uzbekistan).

If we consider the data on the first indicator, in the "Institutions" category there has been an increase by one score from 95 to 94 (55.8 scores) and herewith assessment has been made according to the following parameters:

first, the political environment constitutes 47.6 scores or ranked 95 (political and operational stability - 64.3/80, government efficiency - 39.2/99),

second, the legislative base accounts for 49.9 scores or ranked 107 (quality of laws - 17.5 126, the law priority- 19.1/123, dismissal costs -17.3/69),

third, the business environment amounts to 69.8 scores or ranked 72 (ease of starting a business 96.2/8, ease of resolving insolvency -43.5/90).

As it has been noted by the President of the Republic of Uzbekistan, one should admit, we have a lot of work to do to further strengthen the legislative framework of the republic and ensure its supremacy. In turn, this rating demonstrates weakness of our legal framework (ranked 107).The Assembly of the Republican Council for International Ratings and Indices have also identified special measures to improve the international rating in this political and legal sphere in 2022. We are proud of the fact, that in terms of this parameter, our performance in the business environment is assessed as strong (ranked 72).

In the second indicator, Human Capital & Research, there has been 5 score increase to 30.4 and ranked 72:

first, no data is available in terms of education, which accounts for 57.3 scores or ranked 42 (education costs - 5.3 percent in relation to GDP or ranked 28, no data available on public funding/student in percent in relation to GDP, secondary education (school) duration, year constitutes 12.5/87, international student assessment program PISA scale - no data available, student-teacher ratio, average -10.9/37),

second, higher education accounts for 32.0 scores or ranked 68 (enrollment in higher education, gross percentage -12.6/108, graduates in science and engineering, percentage - 34.5/7, mobility in higher education- 0.2/105),

third, research and development (R&D) 2.0 scores or ranked 95 (researchers, FTE-full-time equivalent/person-476.2/69, research and development expenditures in relation to GDP, in percent - 0.1/99, research and investors, million USD - 0.0/41, QS- university rating - 0.0/74).

In this parameter there are few positive cases due to insufficient or inadequate information provided. These include the international student assessment program PISA scale and government funding/student in relation to GDP, etc. However, in the ranking, the student-teacher ratio and the performance of graduates in science and engineering are recognized as strong (ranked 7, while Russia ranked 13, Kazakhstan-46).

The third parameter in the ranking - Infrastructure - also rose by 5 points compared to 2020, from 77 to 72 (40.4 scores).

According to this, first, information and communication technologies (ICT) constituted 66.9 scores or ranked 65 (access to ICT 60.1/76, use of ICT 48.3/84, online government service - 78.2/46, electronic users 81.0/46),

second, general infrastructure accounts for 35.7 scores or ranked 37 (electricity generation -1908.6/82, logistics - 24.6/95, gross capital formation in percent in relation to GDP - 39.5/7),

third, ecological balance accounts for 18.7 scores or ranked 111 (GDP/energy consumption unit 5.8/110, environmental impact -44.3/77, ISO 14001 environmental certificates/billion USD in relation to GDP-0.2/116). 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! (Russia ranked 59, Kazakhstan ranked 24). In general, our indicators of “Infrastructure” have demonstrated their strengths in many parameters.

“Market sophistication” is considered another important indicator of the global rating, which has shown an increase by 3 points. In other words, this indicator accounts for 56.9 scores or ranked 24.

First, the lending is rated at 30.2 scores or ranked 105 (ease of borrowing - 65.0/61, domestic loans to the private sector in percent in relation to GDP - 30.0/95, microfinance gross loans in percent in relation to GDP -0.0/80),

second, investments have been 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 70.4 or ranked 62 (applicable tariff rate, average weight, 8.7/110, local industry diversification - 95.9/22, domestic market size, billion USD (PPP) - 250.2/60). In these indicators, we ranked 22 in the rating, especially as a result of the favourable actions done on the diversification of local industry at the initiative of the President of the Republic of Uzbekistan. This is something to be proud of at the international level, and even shows that we are an absolute leader among the CIS countries (Belarus ranked 41, Russia ranked 44, Azerbaijan ranked 71, Tajikistan ranked 74, Kazakhstan ranked 87, Kyrgyzstan ranked 101).

According to “Business sophistication”, the fifth indicator of the rating in 2021 it has increased by 4 points compared to 2020 (improved its position from 127 ranking to 123 ranking).

Herewith, the first, educated employees have been rated at 22.8 scores, or the rating data is incomplete [93] (knowledge-intensive employment - no data available, firms offering formal training - 16.9/87% compared to GERD in relation to GDP - 0.1/72, GERD funded by business in relation to GDP - 42.4/38, women with academic degree- no data available),

second, innovation relations have been scored at 2.6 or [130], 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 - 0.0/97, 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 - 0.0/90),

third, mastering knowledge-19.0 scores and ranked 98 (intellectual property fees, total sales percentage - 0.3/83, high technology imports, total sales in percent - 8.8/51, ICT services import, total sales in percent - 0,3/115, net inflow of foreign direct investment in percent in relation to GDP - 2.8/58, research potential at enterprises in percent - 12.9/60).

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

The greatest increase we can witness in “Knowledge & technology outputs” of the rating due to 13 scores growth. Our country has improved its position being ranked 90 in 2020 and achieving the ranking of 77 in 2021. 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) - 10.6 scores or ranked 77 (patents billion dollars (PPP) in percent in relation to GDP, 1.5/47, RST patents/billion USD (RRR), 0.0/98 percent in relation to GDP, utility models /billion USD, in percent in relation to GDP 1.1/22, research and technical articles/billion USD (PPP), 2.1/125 in percent in relation to GDP, h-index of cited documents 4.4/112),

second, the impact of knowledge - 35.1 scores or ranked 42 in the rating! (labor productivity growth in percent - 4.6/8, new businesses - 1.6/63, software costs, in percent in relation to GDP - no data available, ISO 9001 quality certificates/billion USD (PPP) in relation to GDP - 2.3/83, high-tech production, in percent - 24.0/52),

third, the spread of knowledge - 8.0 scores or ranked 102 in the rating (revenues on the object of intellectual property, 0.0/103 in percent, attractiveness of production and exports 34.4/79, exports of high technologies, 0.1/119 in percent in relation to the overall trade, exports of ICT services, in percent in relation to overall trade - 0.8/87). On the basis of the reforms ongoing in the socio-economic areas of the country, the emergence of business entities and their high labor productivity deserves a high ranking in the international ratings. That is, our country has been ranked 8 in terms of the labor productivity growth! (For comparison: Republic of Belarus ranked 38, Russia ranked 44, Kazakhstan-48), in percent - 4.6/8. In addition, favourable position can be observed in terms of the conditions created for the performance of new businesses. We can confidently ascertain that the analytical data presented in these indicators have shown their strengths.

In the seventh indicator “Creative outputs” Uzbekistan has improved by 14 scores (ranked 113 in 2021 and 127 in 2020). At the same time, it has reached 12.3 scores in the rating.

first, intangible assets have been assessed at 19.0 scores or data have not been fully developed [106] (on trademarks/billion USD (PPP) in relation to GDP 32.8/71, global brand value with the highest value of 5000, in GDP - no data available, on industrial samples/billion USD (PPP), in relation to GDP - 1.0/69, ICT and organizational modeling - no data available),

second, creative goods and services -5.9 scores or ranked 101 in the rating (export of cultural and creative services, in percent to total trade - 0.0/95, national feature films - 4.2/47, entertainment and media market - no data available, printing and other media, production as a percentage - 0.7/79, exports of creative products, as a percentage of total trade - 0.2/86),

third, online creativity - 5.3 scores or ranked 122 in the rating (total top-level domains (TLDs) - 0.0/131, country code TLD - 1.1/82, wikipedia edits - 23.7/116, mobile application creation/billion USD (RRR), in relation to GDP - 0.0/99).

It should be noted, we still have a lot of work to do on these indicators. However, we are still far behind the foreign experience in the creation and commercialization of intellectual property (creation of intellectual property ecosystem), which has been repeatedly mentioned by the President of our country. Moreover, the President has determined it as one of the priorities.

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 important steps in achieving international indexes 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 86.

Conclusion and proposals.

We believe that Uzbekistan should use the experience of India to improve its position in the global innovation index, including:

first, to improve the indicators of Human capital & research, including effective work on the Political environment, Regulatory environment and Business environment;

second, an in-depth study of the Indian experience in Business sophistication and improving the results of Knowledge workers, Innovation linkages and Knowledge absorption;

third, it is expedient to further increase the Knowledge creation, Knowledge impact and Knowledge diffusion indicators on Knowledge & technology outputs and to form the necessary analytical data.

Currently the funds allocated for science and research in Uzbekistan account for only 0.5 percent of the national GDP. This figure is much lower than the funds allocated to science by developed and 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. In this case, we consider it necessary to pay attention to the following aspects:

first, increase the research and development expenses on the component of human capital and research, as well as the development of technology transfer;

second, to further improve the performance of foreign-funded (GERD) indicators on the business attractiveness component and to develop ICT services;

third, to further increase and develop the dissemination of knowledge on the science and technology outcome component;

fourth, to further improve Internet creativity and mobile application development on the creative outcomes component.

The period of the “Third Renaissance”, which began in new Uzbekistan, has never yet been included in the international rankings and indices, in particular: Global Competitiveness Index, World Economic Forum, INSEAD international business-school, Cornell University, World Intellectual Property Organization, (WIPO), Global Green Economy Index - Dual Citizen LLC organization, as well as Competitive

Industrial Performance Index developed by United Nations Industrial Development Organization (UNIDO), however, in future our country is striving to get high ranking in the assessment of this reputable ranking agencies.

Despite the impact of the global pandemic, in accordance with the “Concept of Science Development until 2030” and the “Third Renaissance” launched in our country, 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 state support of higher education institutions.

Uzbekistan has already undertaken its first steps in the Global Innovation Index (GII) rating, which has been recognized by reputable international organizations.

In conclusion, the experience of the past two years have shown that Uzbekistan has succeeded in achieving a worthy rating in the Global Innovation Index alongside with economically developed countries, which development history accounts for several hundred years. Following this active development rates, no doubt, will result in achieving the goals and objectives set in the Concept of development of Uzbekistan by 2030.

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