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## Global Innovation Index as an Evidence-based Tool for Policy-Makers

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**ABSTRACT** *The World Intellectual Property Organization develops the Global Innovation Index (GII). In this paper, we studied the GII of some selected countries with a number of policies under some main themes. The GII model is studied in this paper with the publication output and its correlated indicators data.*

**Keywords:** Global Innovation Index, GII, STIP Compass, Science, Technology And Innovation (STI) Policy, Evidence-based Tool, Prediction Model

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### 1. Introduction

Rapidly developing nations are increasingly implementing policies tailored to stimulate innovation. One of the foremost instruments to assess innovation progress is the Global Innovation Index (GII) [1] devised by the World Intellectual Property Organization. Grounded in the Frascati manuals, the GII quantifies national development input and output drawing from over 70+ distinct indicators. Embracing this metric, the Republic of Uzbekistan has positioned the GII as a cornerstone of its developmental agenda, aiming to secure a position within the top 50 by 2030 [2]. This study endeavors to offer a framework for countries aspiring to develop evidence-driven policies and derive insights from open data sources.

Within the parameters of the GII, the publication indicator emerges as critical, given its substantive weight and its profound implications for innovation yield. Based on the data provided, Uzbekistan was selected as the focus of our empirical analysis. Subsequently, a GII model was crafted, predominantly centered on publication output and its correlated indicators. Our projections delineate two scenarios: the first, basic scenario maintains Uzbekistan's extant GDP allocation to R&D, and the second, successful scenario considers the augmentation in R&D funding that would be required to attain the designated GII rank.

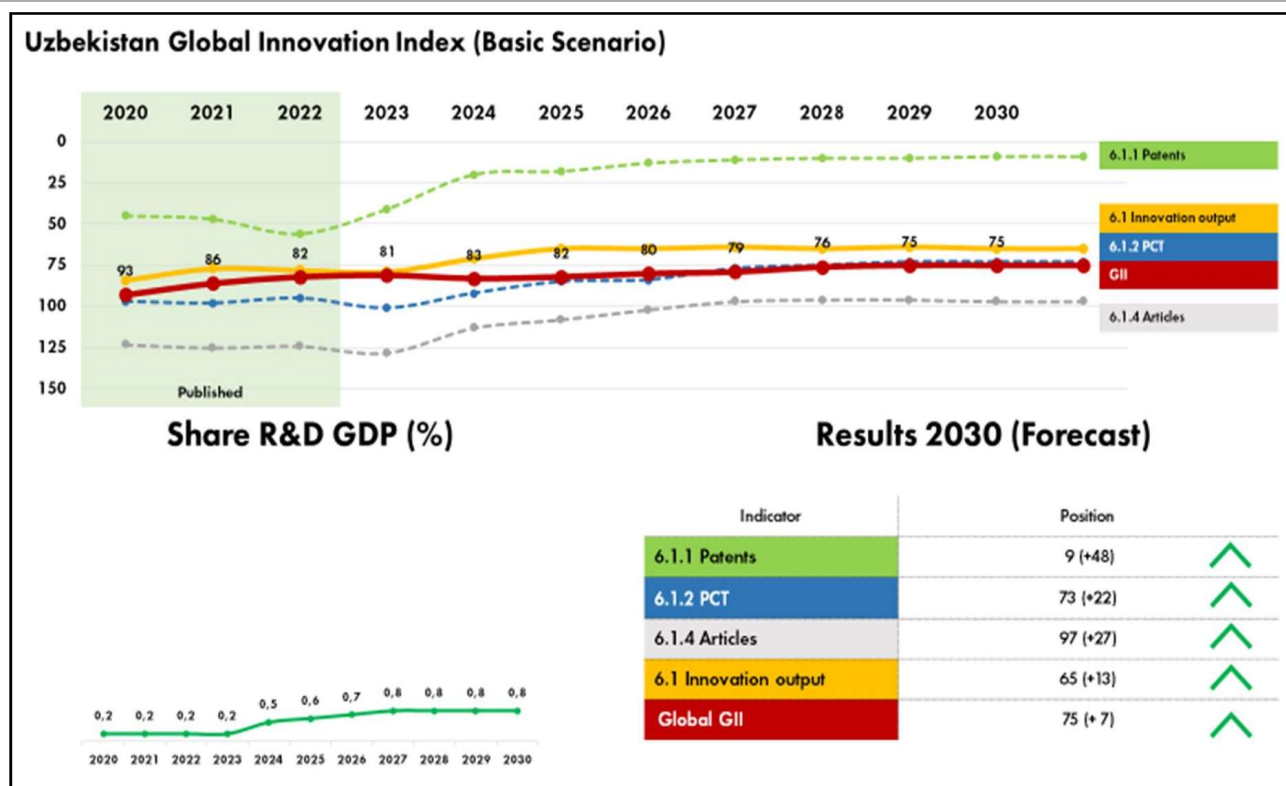


Figure 1. Basic scenario

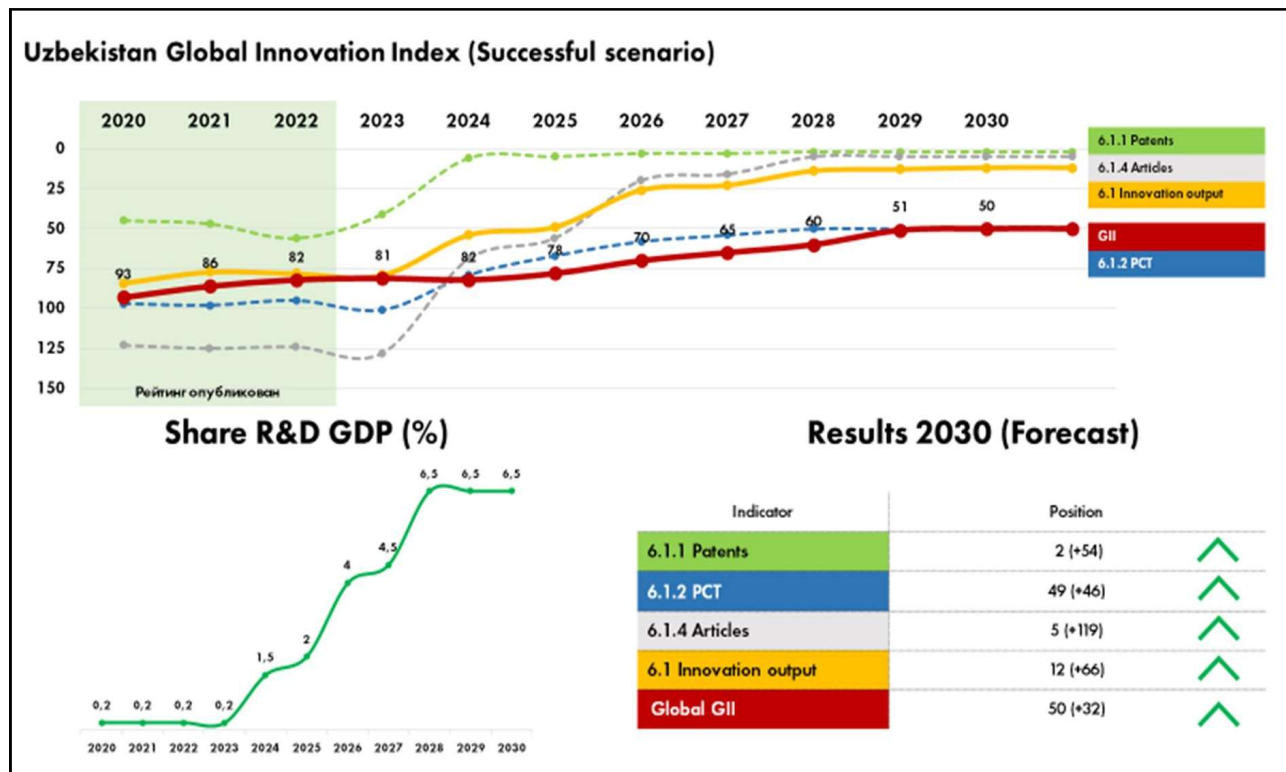


Figure 2. Successful scenario

Subsequent analyses, informed by the EC-OECD STIP Compass [3]—an extensive repository of questionnaires and knowledge on Science, Technology and Innovation Policy (STIP)—enabled the elucidation of specific policies that have undergirded the success of select nations within the GII from 2000 to 2021. This paper covers around 900 policy documents from 9 countries (4 countries from the chosen list did not provide data for the STIP survey). The STIP data was meticulously segmented into three categories by word in the tags section (elaborated upon in Appendices 1 and 2, and below):

1. Main theme: key target areas for innovation development (country level),
2. Main target group: units involved in innovation development (macro level),
3. Target group: institutions and groups (micro level).
4. General results have been also analyzed as a world cloud in Figure 3, which covers the scope of the selected information and its frequency.



Figure 3. Word cloud of STIP Compass categories

## References

- [1] Global Innovation Index (2023). <https://www.globalinnovationindex.org/Home> Access date: 25.09.2023.
- [2] O'zbekiston Respublikasi Prezidentining farmoni PF-5544-son (2018). 2019–2021 yillarda O'zbekiston Respublikasini innovatsion rivojlantirish strategiyasini tasdiqlash to'g'risida, 21.09.2018 [Decree of the President of the Republic of Uzbekistan No. PF-5544 'On approval of the innovative development strategy of the Republic of Uzbekistan in 2019–2021' dated 21.09.2018]. <https://lex.uz/ru/docs/3913188> Access date: 25.09.2023.
- [3] EC-OECD STIP Compass (2023). <https://stip.oecd.org> Access date: 25.09.2023.

Appendix 1. Number of policies per country for the period 2000–2021

| Country            | Number of policies |
|--------------------|--------------------|
| Korea              | 163                |
| Latvia             | 55                 |
| Lithuania          | 96                 |
| Malaysia           | 184                |
| Montenegro         | 36                 |
| Romania            | 37                 |
| Russian Federation | 164                |
| Thailand           | 96                 |
| Ukraine            | 76                 |
| <b>Total</b>       | <b>907</b>         |

Countries without policies in STIP compass: Viet Nam, India, Philippines and Georgia [3].

Appendix 2. Number of policies in different tag groups according to STIP Compass for the period 2000–2021

| Tag group         | Value                                               | Number of policies |
|-------------------|-----------------------------------------------------|--------------------|
| Main theme        | Innovation in firms and innovative entrepreneurship | 288                |
|                   | Public research system                              | 252                |
|                   | Governance                                          | 193                |
|                   | Knowledge exchange and co-creation                  | 154                |
|                   | Research and innovation for society                 | 149                |
|                   | Human resources for research and innovation         | 136                |
|                   | Countering impacts of COVID-19 on STI systems       | 62                 |
|                   | Net zero transitions                                | 24                 |
|                   | ERA-related initiatives                             | 5                  |
| Main target group | Research and education organisations                | 466                |
|                   | Firms by size                                       | 356                |
|                   | Researchers, students and teachers                  | 349                |
|                   | Governmental entities                               | 301                |
|                   | Firms by age                                        | 241                |

|              |                                                        |     |
|--------------|--------------------------------------------------------|-----|
|              | Economic actors (individuals)                          | 162 |
|              | Social groups especially emphasized                    | 137 |
|              | Intermediaries                                         | 138 |
| Target group | Higher education institutes                            | 409 |
|              | Public research institutes                             | 377 |
|              | National government                                    | 286 |
|              | Established researchers                                | 248 |
|              | Firms of any size                                      | 216 |
|              | Private research and development lab                   | 205 |
|              | Firms of any age                                       | 191 |
|              | Postdocs and other early-career researchers            | 167 |
|              | Social groups especially emphasized                    | 12  |
|              | PhD students                                           | 132 |
|              | SMES                                                   | 130 |
|              | Entrepreneurs                                          | 124 |
|              | Civil society                                          | 123 |
|              | Undergraduate and master students                      | 116 |
|              | Subnational government                                 | 106 |
|              | Teachers                                               | 99  |
|              | Academic societies / academies                         | 86  |
|              | Secondary education students                           | 78  |
|              | Industry associations                                  | 60  |
|              | Private investors                                      | 59  |
|              | Incubators, accelerators, science parks or technoparks | 55  |
|              | Micro-enterprises                                      | 46  |
|              | Technology transfer offices                            | 43  |
|              | International entity                                   | 41  |
|              | Young firms (1 to 5 years old)                         | 41  |
|              | Labour force in general                                | 30  |
|              | Large firms                                            | 30  |

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|--|-------------------------------------------|----|
|  | Nascent firms (0 to less than 1 year old) | 29 |
|  | Disadvantaged and excluded groups         | 25 |
|  | Women                                     | 24 |
|  | Multinational enterprises                 | 14 |
|  | Established firms (more than 5 years old) | 11 |