



## NATIONAL INNOVATION SYSTEM OF UZBEKISTAN AND ISSUES OF ITS EFFECTIVE INVESTMENT

Aliev Yashnarjon Egamberdievich<sup>1</sup> and Jaloliddinov Anvar Jaloliddin Ogli<sup>2</sup>

<sup>1</sup>Doctor of Economics, Professor, Tashkent State University of Economics, Tashkent, Uzbekistan

<sup>2</sup>Senior Teacherr, Tashkent State University of Economics, Tashkent, Uzbekistan

### Abstract

This present article provides an analysis of the current state of development of science and innovation in the country and investments in this area. The issues of state reforms in the national innovation system, improving the position of Uzbekistan in the ranking of the Global Innovation Index are also covered.

**Key words:** Innovation, Innovative infrastructure, Human capital, Generator of ideas, Startup project, Venture fund, IT-park, Technology transfer, Youth technopark, Business incubator, Business accelerator, Coworking centers and Engineering centers.

### 1. Introduction

Today, the main institutions that make up the innovation system in the country have been identified, measures have been taken to develop scientific and innovative activities, effective mechanisms for the formation and further improvement of innovation potential have been developed. Necessary conditions have also been created for material and moral support of employees working in this field, ensuring the active participation of young people in innovative activities, the introduction of mechanisms for financing effective and transparent projects based on world experience. At the same time, over the next 10 years, further improvement of the innovation system and its activities, the promotion of economically and socially important research and innovation, the introduction of best practices to increase private sector interest in science, as well as regional disparities in innovation potential and efficiency Large-scale financial projects are being implemented to eliminate it.

In recent years, the indicators of innovation and socio-economic development of the Republic of Uzbekistan are reflected in international publications. These indicators focus on the country's fiscal and monetary policy, which forms the basis of the financial sector for the development of innovation. At the same time, the innovations implemented in the country and their dynamics, the social status of the business environment will be assessed and analyzed. Significant changes in the global financial system will in one way or another lead to specific adjustments to the innovative development of countries, resulting in the development of innovation.

In recent years, various promising projects have been implemented in our country to develop an innovative economy. These include energy conservation and alternative energy sources, development of information and communication technologies, biotechnology, water issues, ecology and environment, medicine and pharmacology, chemical technology, petrochemistry and nanotechnology, geology, geophysics, seismology and mining, etc.

\*Corresponding author: Aliev Yashnarjon Egamberdievich

Received: 10.08.2022; Accepted: 12.09.2022;

Published: 15.10.2022.



## 2. Research Methodology

Methods of statistical and economic analysis such as analysis and synthesis, induction and deduction, abstract-logical analysis, correlation and regression were used in the preparation of the article.

## 3. Analysis and Results

Innovative processes have been scientifically studied since the twentieth century and its theories have been established. The main stage of development of innovation theory coincided with the work of V. Zombart, V. Mitcherlix, J. Schumpeter. In particular, the term "innovation" in the work of Y. Schumpeter "Theory of economic development" "Development occurs in the economic system as a result of innovative combinations.", began to be widely used after the conclusion (Shumpeter, 1982).

"Innovation is a process in which new ideas become economical (Twiss, 1989).

Kondratev (1993) connects the innovative development of regions with the theory of clusters and says that innovations appear as a group and are unevenly distributed over time.

In the textbook "Innovative Economics" Ya. Aliyev interprets the concept of "innovation" as a process and result of the interdependence of innovative and scientific-technical aspects of production activities (Aliev Ya, 2019).

Priorities in the field of science have been identified for our country, with the aim of developing the state science. In this regard, it was decided to focus each year on the development of several priority areas of science. In the past 2019 - 2021, the Ministry of Innovative Development of the Republic of Uzbekistan carried out a number of financial processes in the formation and implementation of the state order of research programs. In particular, 1,290.3 billion soums were allocated from the state budget for the implementation of programs and projects on scientific and innovative activities in 2019 - 2021 (Table - 1).

The selection of projects is carried out by the Scientific and Technical Councils (SCCs), which bring together 471 academicians, professors and doctors of science in 19 areas of scientific and technological development. The ITC content is updated from time to time. It should be noted that over the past three years, more than 1,000 scientists have been involved in the work of Scientific and Technical Councils. One of the main criteria for determining the level and competitiveness of scientific research and scientists is the value of the H-index (Hirsch index) of scientists-project leaders as the main indicator.

The following criteria are taken into account when formulating proposals for the thematic project announcement for inclusion in the state order:

- ✓ Relevance of the research topic and the fact that the theme of the thematic project clearly reflects the order for the final product.
- ✓ Relevance of the research topic to the priorities of science and technology development.
- ✓ The research project is aimed at solving specific problems of the economy, social sphere and the regions of the country.
- ✓ Justification of the creation of the final product as a result of the project.
- ✓ Competitiveness of research project results.
- ✓ The research project is focused on the development of the finished product.
- ✓ Opportunity to commercialize the results of the research project.
- ✓ Project efficiency (product or improved technology).
- ✓ Justification of the project funding.

After the decision to finance the project, the project will be monitored on the basis of reporting documents submitted by the implementing agencies (interim and final reports on research work in accordance with GOST 7.32 - 2001), which will be monitored in accordance with the following key criteria:



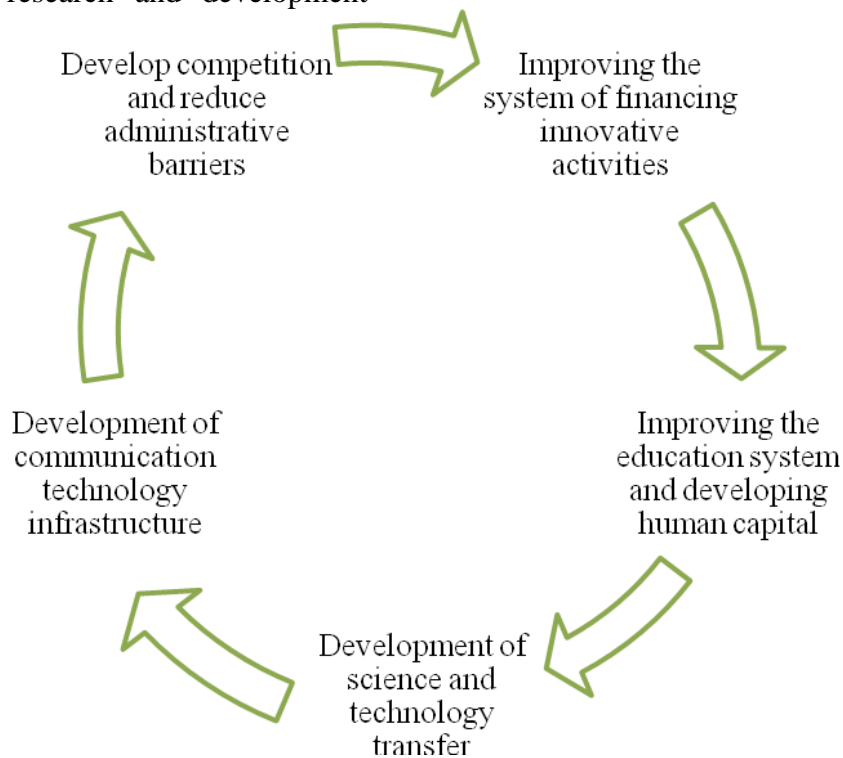
- ✓ The status of implementation of research work in accordance with the contract signed for the project and its calendar plan.
- ✓ Targeted use of allocated funds.
- ✓ The final results to be achieved under each project and the opportunities for their commercialization.

Innovative design In order to properly organize, regulate and manage activities, it is first necessary to choose the right innovation management strategy. Indeed, in the growth of the national economy, management structures and strategies that ensure the effective use of scientific and technological potential of sectors and their mutual development are important.

By further raising the technological level of production in the country through the implementation of research and development

work at enterprises on an experimental and design basis, it is possible to ensure the production of competitive quality innovative products in the domestic and foreign markets, use innovative developments and develop scientific and technical potential.

At present, the priorities of our country in the field of science have been identified, with the aim of developing the state science. In this regard, it was decided to focus each year on the development of several priority areas of science. In particular, the Ministry of Innovative Development of the Republic of Uzbekistan has carried out a number of financial processes in the formation and implementation of the state order of research programs for 2019-2021. The main strategic directions for the development of human capital in the innovative economy have been developed in our country (Figure 1).



**Figure – 1: Strategic Directions of Innovative Development of the Republic of Uzbekistan.**



**Table – 1: Expenditures on Scientific and Innovative activities from the State Budget in 2019-2021**

| № | Project name    | Unit of measurement | Years |       |       |
|---|-----------------|---------------------|-------|-------|-------|
|   |                 |                     | 2019  | 2020  | 2021  |
| 1 | Fundamental     | billion soums       | 29,3  | 36,2  | 43,4  |
| 2 | Practical       | billion soums       | 201,4 | 248,2 | 297,7 |
| 3 | Innovative      | billion soums       | 81,5  | 100,4 | 120,4 |
| 4 | Targeted        | billion soums       | 4,3   | 5,3   | 6,3   |
| 5 | Foreign (joint) | billion soums       | 31,22 | 38,5  | 46,2  |

Note: [www.mininnovation.uz](http://www.mininnovation.uz)

Enrichment of production with innovations in science and science is not only an important part of public policy, but also a strategic goal of the region and an important area of activity of enterprises and corporations. However, the lack of development of innovation infrastructure in the country is the reason why innovations are not rapidly implemented in the production process. Therefore, a special organizational and economic mechanism is required to manage the innovation process. This mechanism includes organizations that create innovations and implement them in the production process, in addition to the regulatory framework adopted by the state.

Infrastructure facilities - a set of enterprises, organizations, institutions, their associations of any form of ownership, providing material, technical, financial, organizational and methodological, informational, consulting and other aspects of innovative activity. These include Innovation Parks, IT Parks, Youth Technoparks, Business Incubators, Business Accelerators, Technology Transfer Centers, COWORKING Centers and Venture Funds (Table - 2).

Technopark is created to create conditions for the establishment of enterprises engaged in the production of high-tech innovative products, as well as for the introduction of innovative results in production. Management of the Technopark in accordance with the goals and objectives is carried out by the management company of the Technopark. Technopark will have the right to provide services in the establishment and successful operation of

business entities in the field of innovative activities, as well as in the implementation of logistical, organizational and methodological, financial, information, consulting and other support. The relations of the Technopark with its residents are based on the agreements concluded between them on the implementation of innovative activities. The Innovative Technopark specializes in the commercialization of local innovative developments based on the results of scientific activities of research institutions, as well as the transfer of advanced foreign technologies. For example, there is information about the Yashinabad Technopark and the projects being implemented in them, the production of innovative products and the volume of exported products.

The Youth Technopark serves for the implementation and improvement of youth startup projects. The Technopark has a coworking center, a business incubator and startup accelerators. In addition, classes on 3D modeling, robotics, mechatronics will be held in the youth technopark. The main task of the Technoparks is to increase the intellectual, scientific and creative potential of young people in the regions in cooperation with local executive authorities, educational institutions, research organizations and the Center for Technology and Innovation Support. Here, the innovative potential of the regions will be enhanced through the development of youth startup projects and the creation of a single platform for their implementation. At the same time, through the Youth Technoparks, talented young people will be trained in prestigious research centers, universities, technoparks and industrial organizations of developed countries



(Tursunov, 2020). For example, in 2021 we can see the state of financial resources allocated for the involvement of scientific and innovative

activities in some Youth Technoparks operating in the Republic (Table - 4).

**Table – 2: Existing innovative infrastructure facilities in the country (as of 2021)**

| № | Infrastructure facilities   | Quantity |
|---|-----------------------------|----------|
| 1 | Parklar innovation          | 3        |
| 2 | IT-park                     | 8        |
| 3 | Youth technoparks           | 6        |
| 4 | Business incubators         | 5        |
| 5 | Business accelerators       | 3        |
| 6 | Technology transfer centers | 3        |
| 7 | COWORKING CENTERS           | 16       |

Note: Based on data from the Ministry of Innovative Development of the Republic of Uzbekistan.

**Table – 3: Information about Yashinabad Innovative Technopark**

| № | Key indicators              | Unit of measurement | In 2021 |
|---|-----------------------------|---------------------|---------|
| 1 | Total land area             | m <sup>2</sup>      | 3908    |
| 2 | Innovative projects         | Things              | 53      |
| 3 | Product production capacity | Billion soums       | 261,6   |
| 4 | Export volume               | Million dollar      | 2,3     |

Note: Based on data from the Ministry of Innovative Development of the Republic of Uzbekistan.

**Table – 4: Information on funds allocated for scientific and innovation in youth technology parks (as of 2021)**

| № | Address   | Unit of measurement | Number of projects | Allocated funds |
|---|-----------|---------------------|--------------------|-----------------|
| 1 | Samarkand | Billion sum         | 58                 | 8,4             |
| 2 | Andijon   | Billion sum         | 81                 | 6,3             |
| 3 | Ohangaron | Billion sum         | 72                 | 2,0             |

Note: Based on data from the Ministry of Innovative Development of the Republic of Uzbekistan.

**Table – 5: Work carried out in the Digital City Technopark in Andijan**

| № | Contents  | Unit of measurement | In 2021 |
|---|---|---------------------|---------|
| 1 | Number of training courses and directions               | Things              | 5       |
| 2 | Several trainees a year are trained in the profession   | Person              | 330     |
| 3 | Number of young people covered                          | Person              | 165     |
| 4 | The number of young people with innovative ideas        | Person              | 52      |
| 5 | Several projects are submitted to the startup in a year | Things              | 24      |
| 6 | Number of startup projects formed                       | Things              | 14      |

Note: Based on data from the Ministry of Innovative Development of the Republic of Uzbekistan.



**Table – 6: Information on Innovative training and production technoparks**

| <b>№</b> | <b>Indicators</b>                    | <b>Unit of measurement</b> | <b>In 2021</b> |
|----------|--------------------------------------|----------------------------|----------------|
| 1        | Total land area                      | Billion soums              | 1,94           |
| 2        | Total value                          | Billion soums              | 110            |
| 3        | Planned innovative projects          | Thing                      | 100            |
| 4        | Number of jobs planned to be created | Person                     | 1000           |

Note: Based on data from the Ministry of Innovative Development of the Republic of Uzbekistan.

**Table – 7: Information about Syrdarya business accelerator**

| <b>№</b> | <b>Indicators</b>                                   | <b>Unit of measurement</b> | <b>In 2021</b> |
|----------|---|----------------------------|----------------|
| 1        | Total land area                                     | m <sup>2</sup>             | 3360           |
| 2        | Total cost of equipment                             | Billion soums              | 1,0            |
| 3        | Involvement in scientific and innovative activities | Thing                      | 562            |
| 4        | Number of graduates                                 | Person                     | 126            |

Note: Based on data from the Ministry of Innovative Development of the Republic of Uzbekistan.

Digital City Technopark in Andijan is aimed at supporting information technology and innovative projects, as well as the export of software products. The technopark has a wide range of facilities for local youth, entrepreneurs and citizens who want to learn a new profession. In particular, there is a coworking center, data center, conference hall, library, innovative laboratory and training rooms, business incubator, media center, cybersport room. Provides services for youth employment in the Technopark, preparation of school graduates for the free market (Table - 5).

Trainings and master classes with the participation of representatives of leading companies, qualified specialists and experts will be held in youth technoparks. In addition, scientific and technical conferences, seminars, training courses and trainings will be organized to develop practical skills in young people and establish innovative corporate relationships with manufacturers.

Projects will be selected on topical areas proposed by talented young people. In turn, these projects will be directed to the competitions announced by the Ministry of Innovation Development of the Republic of Uzbekistan for thematic grants.

The innovative training and production technopark combines three systems - education, science and production. Here, the researchers get acquainted with the process before making the finished product using advanced techniques and help them to become qualified professionals. Here, these modern trends in mechatronics, biotechnology, robotics, programming, which are growing in demand in the world and lead to many inventions in our lives, provide the necessary information on new concepts and serve as a "generator of ideas" (Table - 6).

Innovation Training and Production Technopark helps young innovators to realize their ideas. This is due to the fact that the students of higher education institutions in this area aim to combine their theoretical knowledge with practice, to improve the curriculum based on advanced technologies. They also see the most advanced techniques here and use them with the help of experts (Burkhanov and Tursunov, 2020). There are all the conditions for this in the technopark, more precisely, this place is adapted to the system - the combination of education, science and industry. The facility consists of a biotechnology laboratory, a production room, a soil fertility analysis laboratory, about 20 offices, robotics, standardization, 8 coworking spaces, 3 training and education rooms, a library, a kitchen and



other rooms. A greenhouse has also been built for biological experiments. But this facility is not just a small plot of land or a factory where the practice takes place. In it, talented young people, students can create their own ideas, prototypes of startup projects and turn them into a finished product for the market. For this purpose, the technopark even has branches of a bank, a public service center, and an intellectual property agency. With the help of the services of these government agencies, it is possible to create new businesses without leaving the building.

The Business Accelerator Training and Practice Center serves to create additional jobs by encouraging innovative developments, assisting in the establishment of small businesses, and setting up businesses effectively (Table - 7).

At the same time, the organization of training courses on modern information and innovative technologies, the formation of their independent research and entrepreneurial skills, taking into account the individual characteristics of young people, encouraging innovative development, practical assistance in attracting venture funds in small business; serves to create additional jobs through effective implementation.

Startup incubator is a tool aimed at creating favorable conditions for the formation and successful development of startup projects by providing them with complex resources and services.

The startup incubator allocates money to finance the start-up business. Unlike a foundation, just having an idea is enough to turn to an incubator for help. You can form a team and then list the company. But that doesn't mean the incubator is the most loyal investor, it just takes an idea to start a partnership. But it doesn't have to be just an idea - a well-thought-out plan, a detailed presentation is needed. An entrepreneur should carefully prepare for negotiations, because a startup incubator is an organization created by experienced

entrepreneurs who have a broad enough vision to determine the prospects of the project as clearly as possible.

Startup-incubator provides advice and practical assistance to entrepreneurs in choosing the optimal organizational and legal form of the enterprise, the formation of the charter of the enterprise, the preparation of registration documents and the solution of various problems. A business incubator is a legal entity, including small, newly established enterprises and startups, which are created within the technopark to support small innovative businesses in the early stages of its decision-making, who want to start their own business but are unable to do so. is a special structure that provides support related to assisting in the creation of profitable goods and products or in building efficient productions based on their ideas.

The business incubator is directly involved in all organizational issues of the company and creates the necessary conditions for work on startup projects. These are:

- ✓ Creation of opportunities for cheaper rent of office and production facilities.
- ✓ Promotion of new products or services.
- ✓ Assistance in solving various administrative problems.
- ✓ Technical, financial, management and marketing support.
- ✓ Control over the processes of accounting and tax reporting.
- ✓ Assists in the search and selection of personnel.
- ✓ Assistance in the implementation of organizational and economic relations.

In general, business incubators are established to support small businesses in the start-up phase. Business incubators are organizations that lease production areas and offices, provide office equipment and communications, outsourcing and accounting services on a preferential basis for residents.

One of the most widely used ways to support innovation in modern innovation economies is coworking. Coworking is a



performance model in which entities with one or two employees as a sole proprietor, together with other similar business entities, rent a larger building and at the same time retain their independence. The main purpose of this is to accelerate the exchange of information and ideas, the development of cooperation.

Innovative territorial cluster - a public authority and local self-government bodies of several organizations, participating organizations located in a separate territory, including a scientific and educational organization, a credit and financial organization, an innovation or venture fund, carrying out at least one innovative activity; is a merger agreement with investors, financial and other organizations in order to create conditions for effective interaction in the interests of the development of an innovative regional cluster.

The development of the innovation regional cluster will be carried out on the basis of an appropriate program that provides for measures in the main areas of stimulating innovation activity within the regional cluster.

Coordination of the activities of the participants of the innovative regional cluster, methodological, organizational, expert-analytical and information monitoring and support of the development of the regional cluster is carried out by a specialized organization of the innovative regional cluster operating on the basis of an agreement between the participating organizations.

The technology transfer center is organized by individuals or legal entities for the provision of services and performance of works provided for in the regulations. Conduct market research to identify opportunities for the introduction of products, technologies, services, organizational and technical solutions created by the Center; services on protection of intellectual property rights, preparation of business plans for innovative projects, investment attraction, management of innovative projects. It also ensures the participation of innovative activities and innovative infrastructure entities in the

organization of exhibitions, fairs, conferences and other events, information promotion of innovative products, technologies and services based on innovation. Engineering centers are organizations that specialize in advising and organizing the production process, areas of technical and technological application of innovations in the production process and other issues related to the production process.

#### **4. Research Results**

In the following years, the terms “venture capital” and “venture investment” began to be used more frequently in the scientific literature. Opportunities to develop innovative activities through venture financing in foreign countries are growing. As a result of the analysis of many scientific works, attention is paid to the venture financing of innovative processes.

The concept of venture financing has been widely used in the United States since the 1950s and in Europe since the 1970s. Venture financing creates opportunities for the development of innovative infrastructure by applying it to emerging sectors of the innovative economy. The reason is that all innovative projects are risky, and all of them are venture financing. According to economists, 70 – 85 % of GDP growth will depend on new products, techniques and technologies. For example, the share of innovation in GDP growth is 35 % in the United States, 42 % in Japan and 50 % in the European Union.

According to the latest Global Report of the GEM (Global Entrepreneurship Monitor), new innovative business trends have emerged during the COVID-19 pandemic [6]. The results of the research in this article are based on the conceptual basis of financial and economic stability of innovative business entities based on the essence, importance, necessity of studying their sustainability.

Theoretical recommendations for ensuring the financial sustainability of the innovation system in our country; scientifically substantiated analysis of internal and external factors affecting the financial and economic





stability of innovative business entities; directions of state support in ensuring financial and economic stability of innovative business entities are substantiated; Scientific proposals on the national innovation system of Uzbekistan and its effective investment are presented.

## 5. Conclusion

The Global Innovation Index (GII) is an annual ranking and analytical review of more than 130 countries in the field of innovation, based on the performance of countries, which ultimately serves as a barometer of socio-economic and innovative development of the country for the world community. The GII rating consists of 7 main directions:

- a) Management institutions
- b) Human capital and research
- c) Infrastructure
- d) Market development
- e) Business development
- f) Results in the field of knowledge and technology
- g) Creative results.

All areas are based on 21 structural sub-blocks and 80 indicators that directly cover the socio-economic and institutional framework of the country's development. The rating is compiled annually and the analysis of previous results allows to assess the competitiveness of the emerging innovative economy and the effectiveness of reforms in this area in general.

The active socio-economic policy pursued in the country has a direct positive impact on the scientific and technological reforms outlined in the Action Strategy for the five priority areas of development of the Republic of Uzbekistan for 2017-2021. Development of human capital as a key factor determining the level of competitiveness of the country in the world community and its innovative development has been identified as the main goal of the Strategy of Innovative Development of the Republic of Uzbekistan for 2019-2021. One of the main tasks to achieve the main goal of the strategy is to make the Republic of Uzbekistan one of the 50 most advanced countries in the world by 2030 according to the GII rating.

The article scientifically covers the issues of the national innovation system of Uzbekistan and its effective investment, and in the implementation of these tasks it is expedient to pay attention to the following:

- ✓ Increasing the amount of funds allocated for science from the state budget.
- ✓ To ensure that the material and technical base of research organizations is in line with the current level of development of world science.
- ✓ Use the services of laboratories of leading foreign research centers and service companies in the implementation of research projects.
- ✓ Strengthening cooperation between research institutions and enterprises of the real sector of the economy.
- ✓ Improving the legal framework for the financing of innovative activities on a voluntary basis.
- ✓ Ensuring the integration of science and development through the creation of innovative technology packages.

## 6. References

- 1) Aliev Ya. E. (2019). Innovative economy. p. 9 - 15.
- 2) Burkhanov, A and Tursunov, B. O. (2020). Main indicators of textile enterprises' financial security. *Vlakna a Textil*, 27(3): 35 - 40.
- 3) GEM Global Entrepreneurship Monitor [Electronic resource].
- 4) Kondratev, N. D. (1993). *Izbrannyye sochinenie*. -S. 24-83.
- 5) Official site of the Ministry of Innovative Development of the Republic of Uzbekistan // [www.mininnovation.uz](http://www.mininnovation.uz)
- 6) Shumpeter, Y. (1982). Theory of economic development. -S. 540.
- 7) Tursunov, B. O. (2020). Mechanism for determining optimal management of use of production capacity at the textile enterprises. *Vlakna a Textil*, 27(1), 99-106.
- 8) Tviss, B. (1989). *Upravlenie nauchno-tekhnicheskimi novovvden iyami*. -S. 271.



**Access this Article in Online**

**Quick Response Code**



**Website** [www.jpsscientificpublications.com](http://www.jpsscientificpublications.com)

**DOI Number** [DOI: 10.22192/iajmr.2022.8.5.5](https://doi.org/10.22192/iajmr.2022.8.5.5)

**Thomson Reuters Researcher ID** [K-4194-2016](#)

**ISI Impact Factor** [3.652](#)

**How to Cite this Article:**

**Aliev Yashnarjon Egamberdievich and Jaloliddinov Anvar Jaloliddin Ogli. (2022). National Innovation System of Uzbekistan and Issues of its Effective Investment. *Indo - Asian Journal of Multidisciplinary Research*, 8(5): 2672 – 2681.**

**[DOI: 10.22192/iajmr.2022.8.5.5](https://doi.org/10.22192/iajmr.2022.8.5.5)**

