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Issues the Current Situation of the Science and Technology Sector in Mongolia

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Abstract

In our article, we have researched and evaluated the current situation of development of the science and technology sector in Mongolia and a brief overview of the implementation government policy and decision-making in last years. The key mechanism for ensuring the economic growth and competitiveness of any country is the development of science and technology. In addition, the researchers believe that government support and developing efficient cooperation between government and science and technology sector in Mongolia and how to take the scientific sector to a new development level.

Keywords: experiments and inventions, research work, projects

1. INTRODUCTION

The main mechanisms to improve to ensure economic growth and competitiveness of a country is to develop science and technology.

Mongolian in 2019 human development index ranks 93th place respectively Index 74 140 and 99 190 countries in the world corruption index and the business environment from global liquidity and economic competitiveness in the world 92 Index of 177 countries.

The World Intellectual Property Organization's 2019 Global Innovation Index is sorted ranked 53 of 129 countries. Thus, in our country indicates that many indicators region is in regional countries, are lower than the world average of lack of scientific development policy vision for the development of our country. Therefore, research and discovery are a key factor to address Mongolian national development through science, technology and innovation to create to work, concentration of national intelligence, talent, and one of the country's urgent priority.

2. METHODOLOGY

In this study, the historical approach is used to identify how national strategies, policies and practices have been implemented to support development of science and technology sector of the Mongolia. The descriptive and comparative analysis methods are used for study of the several era's Mongolian Government Policy on Science and Technology, main directions, and measures that have been applied up to date in order to prove that the governments are consistent in the policy making and implementation towards sustainable development of the science and technology. Also, methods of statistical analysis are employed.

The secondary data, used by researchers, is from the Government Resolution and Mongolian Academy of Sciences data base, mainly from Mongolian governmental and national statistical data base.

Based on the above, the following objectives of the study are:

- To analyse in detail by type of total expenditure for Science sector in Mongolia;
- Comparative study of financing sources investment by period 2005, 2016-2018 of Science sector in Mongolia. Also, compare and summarize the Research work, experiments and inventions ordered by Government of 2005 and 2016-2018.

3. MAIN SECTION

Modern science ripples in Mongolian has been developed in 98 years. In recent years, the government of scientific in addition to paying close attention to the development of technology industry policy to improve legal environment, strengthen competitiveness and undertaking major efforts to upgrade facilities and develop human resources for encouraging development of the current situation in the sector yet sufficiently should recognize that cannot be reached.

Although scientific research is considered key to handling subscriber base funding must be a public show of our study is that it does not yet implemented in real life. In 2018, total expenditure of science sector amounted to MNT 49.4 billion, 0.2 % of total GDP, compared to MNT 3.4 billion, 0.3 % of total GDP in 2000.

We spent 2016-2018 years as 46373.8 million ₮ per year. - a scientific field that is equal to only 0.15 percent of the country's gross domestic product. During the last 3 years, our GDP jumped by 117.1 percent, but the state has been added to the funds for science.

For example: In 2005, share of total expenditure of Science sector to GDP up from 0.59%, it is a continuous decrease of 0.01 percentage points per year over the last 3 years. (Tab.1)

Table 1 – Expenditure of Science Sector to GDP

Indicators	2005 year	2016 year	2017 year	2018 year
GDP, at current prices, billion togrogs	1224	23943	27876	32094
Total expenditure of Science sector, million togrogs	7231	42173	47555	49394
Share of total expenditure of Science sector to GDP	0.59	0.18	0.17	0.15

Source: Mongolian Statistical Yearbook 2018

But in 2018, compared to the same period of the previous year humanities science funding decreased by 7.5% a mild technical science funding was a positive change in the sector increased to 11.9% of the structural funding. This shows that the expected continuing increase in technology and innovation funding in recent years. (Fig.1)

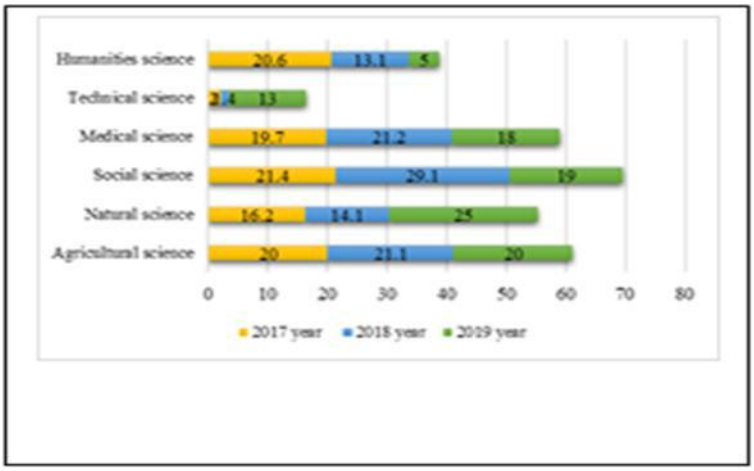

Figure 1 – Financing sources for Science sector in Mongolia

But in 2016 – 2018 years performing government ordered an average of 305 scientific research and experimental design work for 14 years in 2018, decreasing job numbers compared to the same period of 2005. Share in theory, but also for basic theoretical research, an increase of 9.3% of science and technology projects has declined by 9.3%. (Tab.2)

From 2017 - In 2019, a total of 1140 projects implemented nationwide average shows that in recent years the successful implementation of 380 projects per year. In 2018, 34.9% of the total project implemented are in the environmental sector, 25% of the social and humanitarian fields, 16.3% of the agricultural sector, 14.5% of the medical sector, and only 9.2% of all technical fields.

One project 31718 thousand ₮ or technical science in the average financing per capita. highest, but are subject to Natural science 16445 thousand ₮ minimum financing Natural sectors.

Considering type of research work, basic research projects received funding in 2019 from the same period in 2017 increased by 18.9%. But in 2017, in cooperation with foreign countries 72 projects received funding for 77 innovative projects in 2019, 27 foreign joint venture project-by and passed through innovation projects has declined by 23 by, and the core technology 2. But also in 15 technology experiments newly granted funds. (Fig.2)

Table 2 – Research work, experiments and inventions ordered by Government

Type of research work	2005 year		2016 year		2017 year		2018 year	
	Number of works	Share of work (%)	Number of works	Share of work (%)	Number of works	Share of work (%)	Number of works	Share of work (%)
Total number of research work ordered by Government	319	100	319	100	276	100	320	100
Science and technology projects	130	40.8	160	50.2	94	34.1	131	40.9
Basic theoretical research	161	50.5	159	49.8	169	61.2	189	59.1
Ready-to-go work science and technology	28	8.8	-	-	13	4.7	-	-

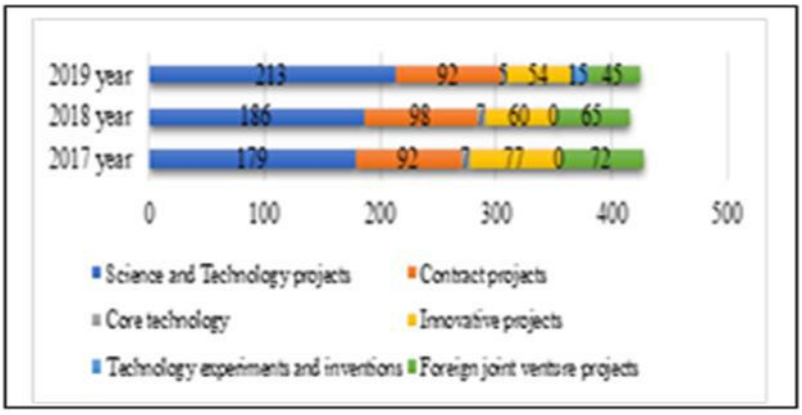

Figure 2 – Research work funded from the budget (Type of projects)

Table 3 – Successful implementation of research work by executers

Indicators	Contract		Innovative	
	Number of projects	Financing of project (million?)	Number of projects	Financing of project (million?)
Research institutes and centers	30	2632.8	20	1686.8
Universities and colleges	22	1848.6	12	829.3
Private sector	5	394.3	6	533.5
Total	57	4875.7	38	3049.6

Source: Ministry of Education, Culture, Science and Sports

Get a contract for scientific research was submitted in 2018, if the total contract project more than half, or 52.6% of the research institutes and centers, 38.6% performed by universities and colleges, and the private sector by 8.8% and in "The natural flax seed oil with regulatory actions watering food production technology" and "Modern high-tech polymer subscribers to complete a total of 38 innovative projects, such as "potential introduction of Mongolian agricultural sector has been given a handed. 52.6% of them performed the research institutes and centers and 31.6% respectively for high and high schools, 15.8% of private sector organizations. (Tab.3)

In terms of funding, but these ratios are maintained. Research shows that over the past two years, our total 1455.0 million ₮ with foreign countries, 5 of the cost estimates with the highly successful 110 projects and studies, 54.5% and 36.3% for South Korea with Russia, 25.5% of China with together, they are performed.

One of the project's high of 27192.6 thousand ₮ of Taiwan-funded projects, the lowest funding per 6148,687 thousand ₮ funded project is implemented in cooperation with Russia. (Fig.3)

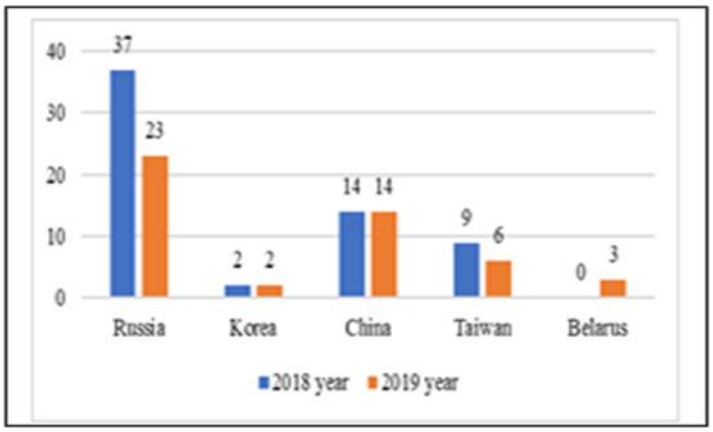

Figure 3 –Research work with foreign countries
Source: Ministry of Education, Culture, Science

4. DISCUSSION

In 2018, total number of granted patent increased by 15 (4.5%) from the previous year. In 2018, 4739 patents were in force, of which 997 patents are on inventions and 3742 patents are on industrial designs.

In 2018, our scientific institutions 4.1% for new and updated technologies, products and successful standard model, 3.4% is accounted for, and feasibility within the combined works of a total of 851 in the domestic power market, monograph, brochures as a result of these projects, 66, has published a research report, article 645 respectively. (Fig. 4)

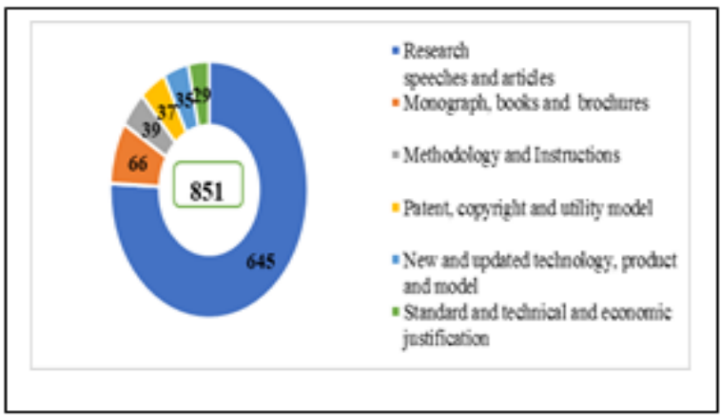

Figure 4 – Project results performed by our scientific institutions

But for a project in collaboration with the total of 142 research work with foreigners submitted to taking the 137 or 97% is made available to the public in the form of a monograph, books, newsletters and research reports and articles. (Fig. 5)

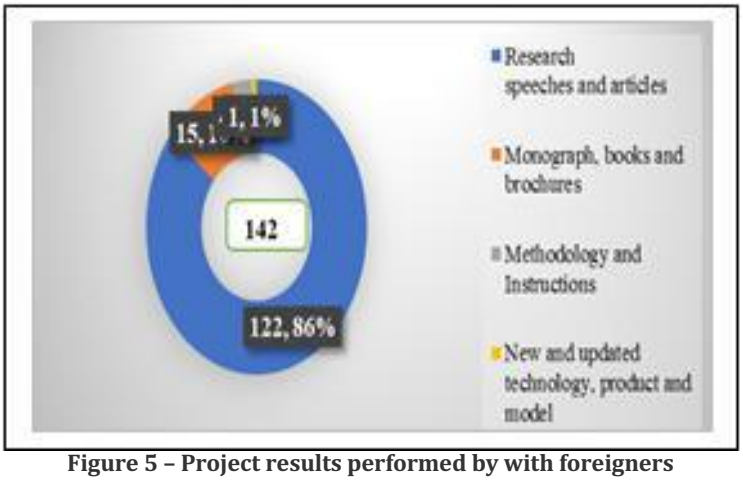

Figure 5 – Project results performed by with foreigners

In 2018, out of 4277 in the sector, 75.8% of 3246 primary full-time employees, 24.2% are contract workers. 44% of employees, servants or degree in 1917, is a scientific researcher, PhD, Doctor of Education 724, 109 master's MSP 1071. This account shows that people with a degree of research for 58.6% of academic research officer ranks.

The state government has granted to promote research activities and for benefits and grants since 2002 research institutions and personnel in order to encourage researchers from scientific discoveries and inventions that basis for public policy development.

As in 2019, "20 best-doctoral researchers wrote works such as UB drony development" skills-based automatic water meter system development "and" artificial intelligence following the innovation grants, "Automation control of unmanned distributed generation with synchronous generators" and "In field measurement of 3D whole-body kinematics in cross-country skiing using wearable inertial measurement selected works such as a unit. " 14 best young researchers are encouraged to grant awarded by a "young researchers". (Fig. 6)

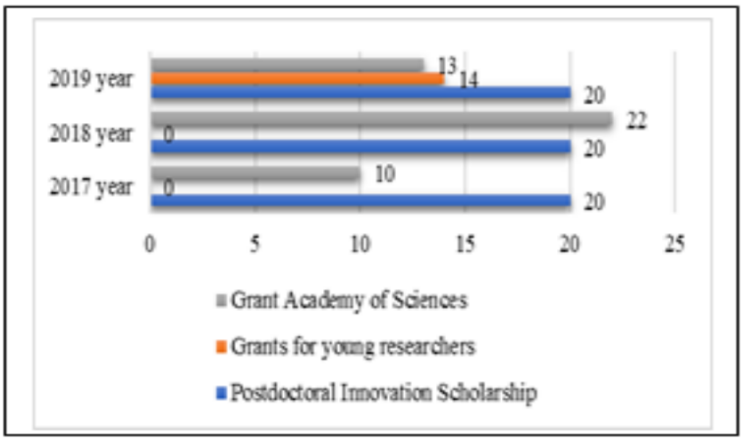

Figure 6 – Scholarships and grants for researchers in 2017-2019

5. CONCLUSIONS

Thus, the current development of Mongolian national scientific progress should be noted that there is progress less progress. However, our research shows that science - to create a foundation of technology and knowledge-based society and economic base by intensifying the policy of innovation and science - has emerged as one of the requirements necessary for a new stage of development of technology and innovation.

The cost over the past 10 years have added substantial proportion of scientific research in the GDP is a clear case of cause some difficulties in accelerating development of science, technology and innovation.

Therefore, knowledge of manufacturing science and technology sector of the changing attitudes of mind science to the Government of the priorities of the development and delivery costs 1% of the country's GDP in science in the near future, and one of the immediate objectives. Within the sector to achieve this goal, we would like to take the following measures. These are:

1. The government move changes the current approach to science and principles of state policy is based on the scientific validity of decisions;
2. Science defines political strategy to priority technical areas, develop and implement short and long-term development plan for industry;
3. To intensify the construction of the Science Park in the near term and to certain funds required for the sector, investment, and budget financing;
4. State-develop partnerships with academic institutions and research organizations to increase efficiency and capacity, research laboratories and testing equipment to upgrade, not the state government providing substantial support in quick pass, the amount outstanding economic research projects the results of scientific research to the production;
5. Scientific and technical research and development funds to increase employment, innovation and project financing, the government funded;
6. Rules fund specifically to improve joint economic efficiency projects abroad. Science and Technology Fund operation and management of international standards;
7. A new stage of cooperation between universities, research institutes, research and development centers and the private sector;
8. Including the development of scientific researchers and scientists to upgrade resources salary and bonus system, starting with skill increase in the near future researchers.

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