

## ARTICLE

## Issues to develop tertiary education in line with regional development

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**Abstract:** For Mongolia, which has a small population, a large territory, and abundant natural, agricultural, and mineral resources, regional development of the education sector, especially tertiary education, which is significant for population settlement, is an important issue for regional development. The purpose of this study is to optimize spatial planning of the tertiary education sector in line with regional development. This research used statistical and spatial analyzing methods to achieve the sets of research objectives. The key indicators of the tertiary education sector included a number of universities, institutes, and colleges, students, full-time teachers, new entrants, and graduates from general educational schools and the relevant datasets were collected from the National Statistical Office (NSO) and the Ministry of Education and Science (MES) covering the period from 1990 to 2019. As can be seen from research results, 92.5 per cent of tertiary educational institutions, 88.9 per cent of all employees working in the sector, 92.6 per cent of all students, and 92.2 per cent of new entrants are all located in Ulaanbaatar alone, which means that Mongolia's tertiary education sector is overcrowded in the Capital city only. This study suggests that it is necessary to support the establishment of vocational and tertiary education institutions, research centers, institutes, and their branches outside of the capital city by first reviewing the status and functions of national and aimag-level cities, which are in line with regional and local unique and economic priorities.

**Keywords:** Tertiary education; university; institute; college; student; teacher; spatial analysis;

## INTRODUCTION

Mongolia's education system is a combination of formal and non-formal education and consists of pre-school, primary, secondary, vocational, and tertiary education [1]. Citizens with secondary or higher education are admitted to tertiary education institutions based on their knowledge, skills,

assessment, and learning ability. The purpose of tertiary education is to provide tertiary education to citizens in accordance with the basic principles of education, common international standards and approaches based on the state policy on education [2].

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As of the 2018-2019 academic year, there were 94 organizations operating in the tertiary education sector, employing 12.5 thousand people and with an enrollment of 157.6 thousand students [3]. For Mongolia, which has a small population, a large territory, and abundant natural, agricultural, and mineral resources [4], regional development of the education sector, especially tertiary education, which is significant for population settlement, is an important issue for regional development.

The development of the tertiary education sector in line with regional development has always been a key goal of Mongolia's regional development policy. In particular, article 4.7.4 the Regional Development Concept of Mongolia [5], approved by a Resolution 57 of the State Great Khural in 2001, underlines the importance of "supporting the establishment of affiliates of universities and colleges, research, information, and training centers in the rural regions as an important pre-requisite for creating a new system of education and science in conformity with local development." Vision-2050 [6] (Mongolia's long-term development policy) notes that in order to integrate the tertiary education sector with the regional development policy, the goal is to support and develop local tertiary education institutions along international standards and requirements in line with their local unique and regional economic priorities.

Tertiary education institutions in rural areas play an important role in the regional development of the tertiary education sector [7, 8, 9]. However, as of the 2018-2019 academic year, there were only 2 independent state-owned universities in Mongolia's rural areas (the Khovd University and the Dornod University), 11 branches of state-owned universities, 4 independent private institutes, 5

branches of private institutes, and 1 private college [3]. Government policies must support local institutes of higher learning by promoting social and economic development of the regions, improving the quality of rural human resources, increasing employment opportunities, reducing urban and rural disparities, and reducing unemployment and poverty [10]. This makes it imperative to conduct research to carry out spatial analysis of the development of the tertiary education sector and to develop recommendations for regional development of the tertiary education sector when the regional development concept of Mongolia's [11] integrated basis method is re-developed.

The purpose of this study is to optimize spatial planning of tertiary education sector in line with regional development and the study sets the following objectives.

1. Spatial analysis of the development of the tertiary educational sector, and,
2. Develop recommendations to optimize spatial planning of the tertiary education sector,

The importance of this study is that it analyzes the current situation in the tertiary education sector and makes recommendations for regional development as there was no such research in the past in accordance with regional development policy. In the future, we will make suggestions and recommendations based on the results of this research and will thoroughly study regional development of Mongolia's tertiary education sector, reduce overcrowding in Ulaanbaatar, improve the role and participation of local tertiary education institutions, establish affiliates of universities in line with unique local economic priorities, the status and functions of national and aimag-level cities.

## MATERIALS AND METHODS

Basic statistics on tertiary education are compiled by the Ministry of Education and Science (MES), which are developed and disseminated by the National Statistical Office

(NSO) in accordance with international methodologies, which are a source of information for policymaking, decision-making, and research. In order to achieve the set

goals and objectives, the key indicators of the tertiary education sector, which were determined by the MES and NSO [12], such as the number of universities, institutes, and colleges, students, full-time teachers, new entrants graduates from general educational schools, were collected from 1990 to 2019 and statistical analysis was done in Microsoft Excel using “Methodology for calculating education statistics” [13]. In the spatial analysis, the number of universities, institutes, and colleges, the number of students, full-time teachers, new

entrants, and graduates from general educational schools by location, were collected in the 2018-2019 academic year and thematic maps in ArcGIS software were created. We tried to develop policy recommendations to optimize spatial planning of tertiary education sector in line with regional development based on the results of statistic and spatial analysis and also by comparing the findings of research conducted by foreign and domestic scientists, as well as policy documents.

## RESULTS AND DISCUSSION

### Spatial analysis on tertiary educational institution and students

The number of tertiary education institutions operating in Mongolia had not been constant in the period from 1990 to 2019. As can be seen from the figure, the number of tertiary education institutes in our country increased from 40 in the 1990-1991 academic year to 184 in the 2004-2005 academic year,

and then decreased steadily to 94 in the 2018-2019 academic year (figure 1). But the number of students of tertiary education has been steadily increasing from 38.4 thousand in the 1990-1991 academic year to 178.3 thousand in the 2014-2015 academic year. As of the 2018-2019 academic year, 157.6 thousand students were studying (figure 1) at tertiary education institutes.

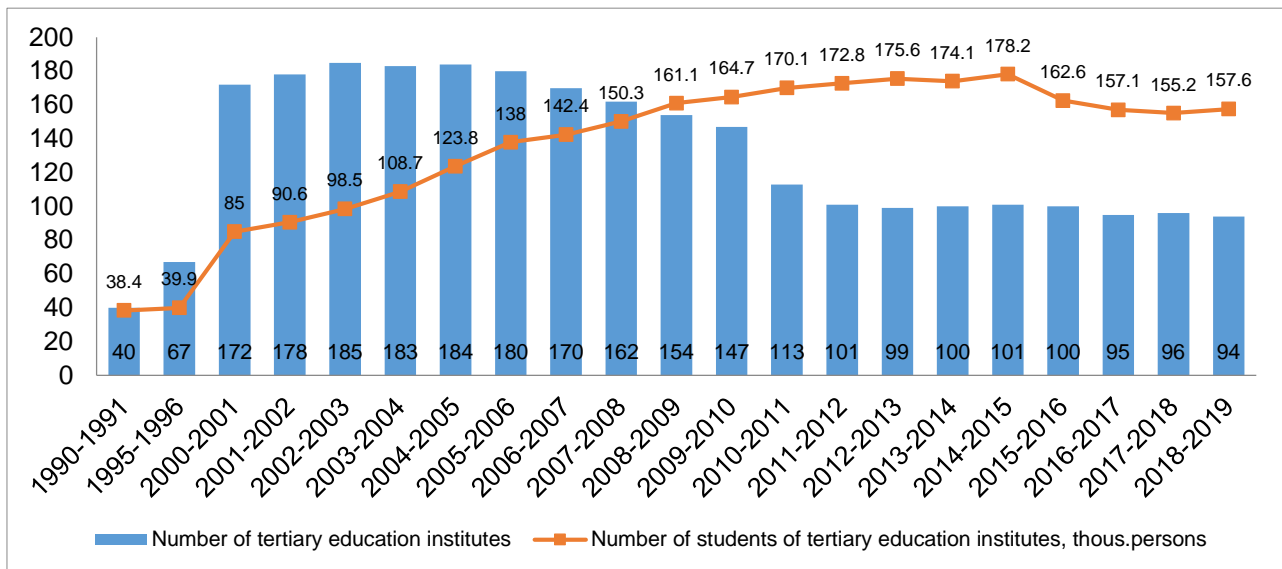


Figure 1. Changes in the number of tertiary education institutes and students, 1990-2019

Source: NSO “Mongolian statistical yearbook” 1990-2019

Tertiary educational institutions are classified as universities, institutes, and colleges [2] and according to the 2018-2019 academic year statistics, there were 94 tertiary educational institutions in Mongolia, of which 37.2 per cent were universities, 52.1 per cent - institutes, 7.4 per cent colleges, and 3.2 per cent

were branches of foreign universities. If we classify such universities, institutes, and colleges with their ownership, we found that in the 2018-2019 academic year, 77.7 per cent were private, 19.1 per cent were state-owned, and 3.2 per cent were foreign-affiliated universities [3, 12]. According to their location,

92.5 per cent or 87 are located in Ulaanbaatar, and only 7.5 per cent or 7 are located in aimags and rural areas. In addition to this, 6

independent, 15 branches, and one college are functioning in aimags and rural areas [3] (figure 2).

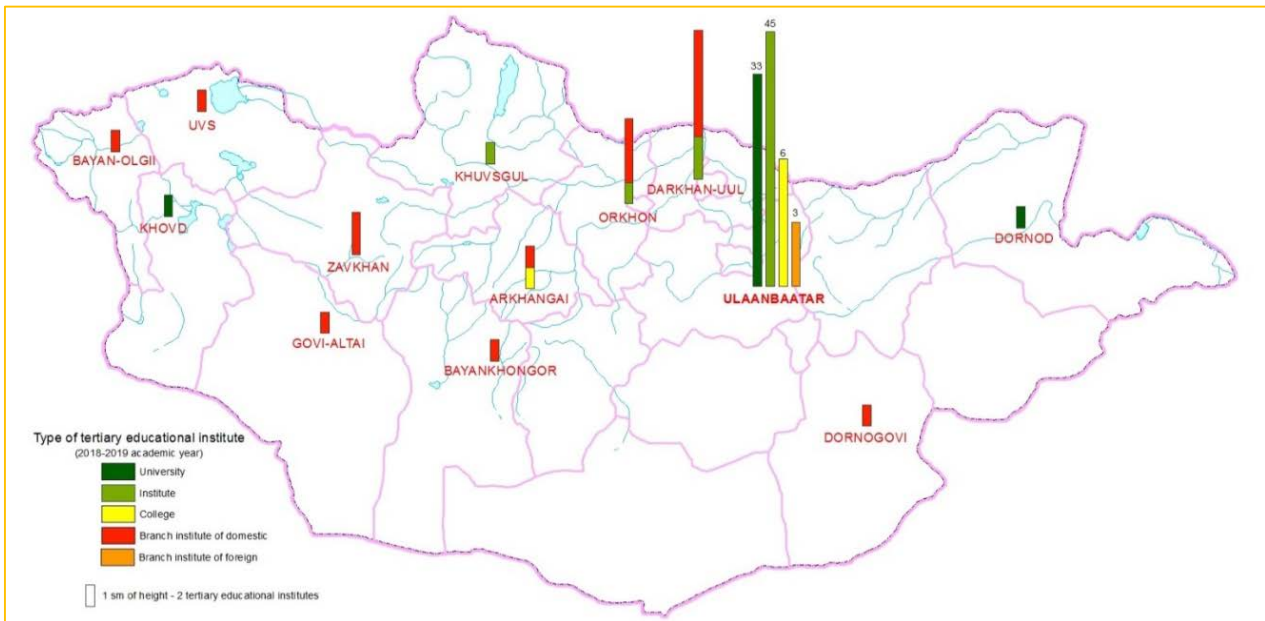


Figure 2. Location of tertiary educational institutes, 2018-2019 academic year

Source: MES "Introduction of tertiary education sector statistics for the 2018-2019 academic year" 2020

Mongolia's tertiary educational degrees have diploma, bachelor's, master's, and doctoral degrees, measured in a set number of hours [2] and a total of 157.6 thousand students were studying at universities, institutes, and colleges in the academic year of 2018-2019. According to educational degrees, 0.2 per cent are enrolled in diploma programmes, 82.8 per cent in

bachelor's degrees, 14.3 per cent in master's programmes, and 2.7 per cent in doctoral programmes (figure 3), furthermore, 87.2 per cent of all these students are studying at universities, 12.3 per cent at institutes, 0.3 per cent at colleges, and 0.2 per cent at branches of foreign-affiliated universities [3, 12]

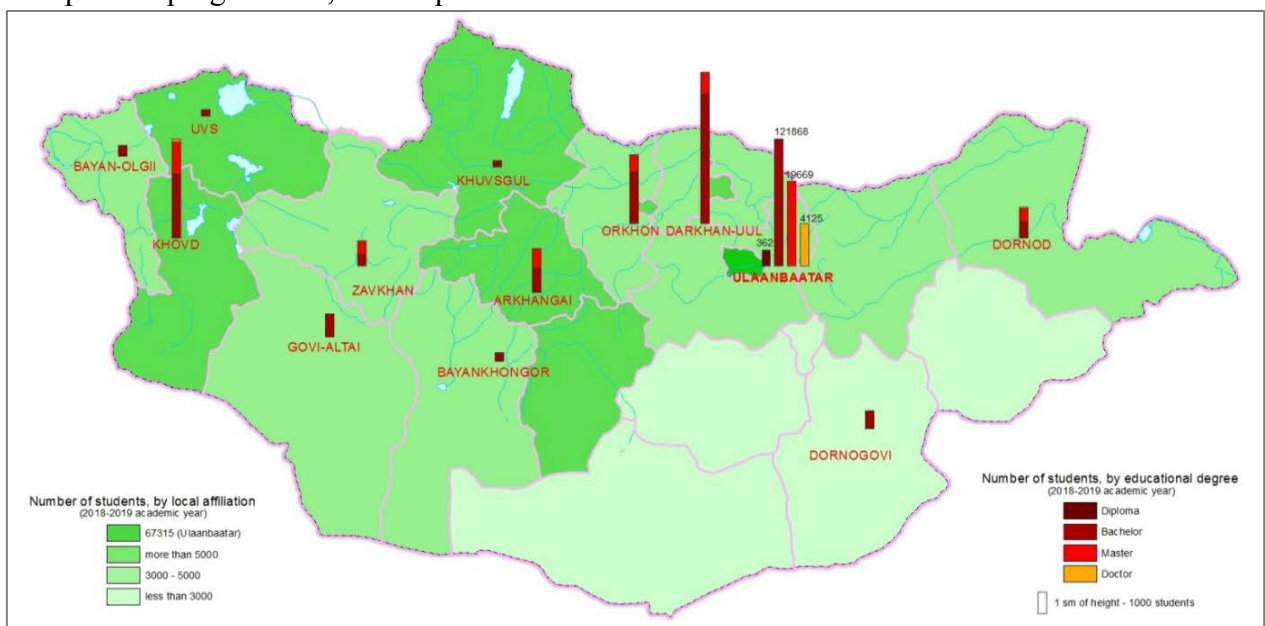


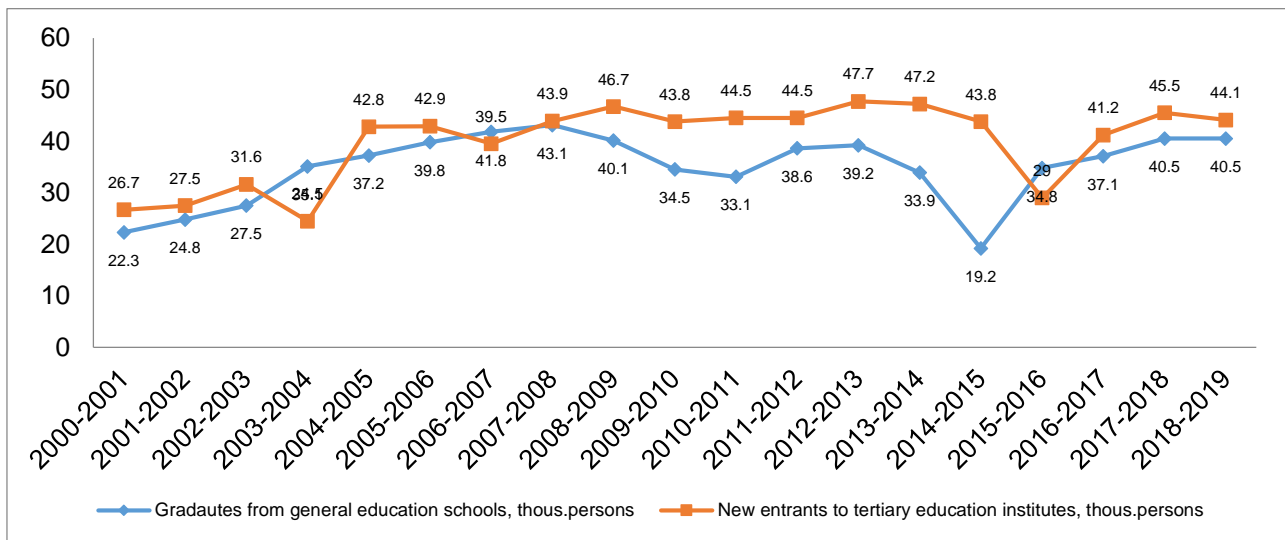
Figure 3. Location of students in tertiary education institutions, 2018-2019 academic year

Source: MES "Introduction of tertiary education sector statistics for the 2018-2019 academic year" 2020

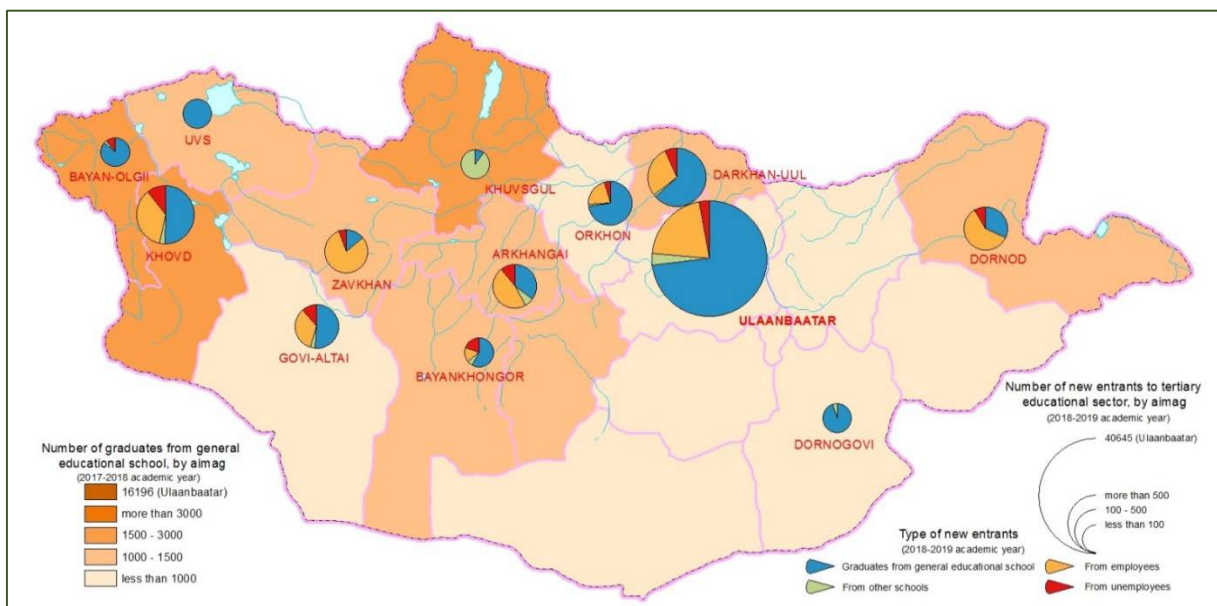
In terms of location, 146.0 thousand or 92.6 per cent of all students are in Ulaanbaatar, and 11.6 thousand or 7.4 per cent study in aimag and rural areas (including branch universities). In terms of local affiliation, 42.7 per cent of all students are from Ulaanbaatar and 57.3 per cent are from aimags and rural areas (figure 3).

**Spatial analysis of graduates from general educational schools and new entrants in tertiary educational institutions**

The number of secondary school graduates is expected to increase, but is estimated to be the lowest in 2015-2016 due to the transition of Mongolia's education system to a 12-year system. Therefore, the number of new entrants at tertiary education institutions depends on the number of graduates from general education schools, while the number of new entrants in the academic year of 2015-2016 (figure 4) is expected to be at its lowest.



**Figure 4. Changes in the number of graduates from general educational schools and new entrants of tertiary education institutes, 2000-2019**  
 Source: NSO, Statistical Yearbook of Mongolia, 2000-2019



**Figure 5. Location of graduates from general education schools and new entrants of tertiary education institutes, 2018-2019 academic year**  
 Source: MECS "Introduction of tertiary education sector statistics for the 2018-2019 academic year" 2020

As of the 2017-2018 academic year, 40.5 thousand students graduated from general educational schools in Mongolia, of which 24.3 thousand or 60.1 per cent were from aimags and rural areas, and 16.1 thousand or 39.9 per cent were from Ulaanbaatar (figure 5). During this period, 44.1 thousand new students joined tertiary educational institutions, of which 71.6 per cent were graduates of 12th grade of general educational schools, 3.4 per cent from other schools, 21.8 percent were former employees, and 3.2 percent were people who were unemployed. [4]. In other words, 77.7 per cent of graduates from general educational schools in the academic year of 2017-2018 joined tertiary education institutions in the 2018-2019 academic year.

In terms of location, 3.4 thousand or 7.8 per cent of new entrants of tertiary education institutions were in aimags and rural areas, and 40.6 thousand or 92.2 per cent were new entrants in Ulaanbaatar. Of the new entrants 42.7 per cent were from Ulaanbaatar, 57.3 per cent were from aimags and rural areas (figure 5). Tertiary education institutes located in Ulaanbaatar enroll more students from among secondary school graduates from aimags and

rural areas. This was in compliance with article 7.2 of the Law on Tertiary Education [2] states that “the number of enrollees shall be determined by the board of tertiary education institutions in accordance with the requirements set by the state central administrative body in charge of education and the tertiary education environment and other relevant standards.”

On an average, 30 to 40 thousand students graduate from general educational schools in Mongolia each year, which disaggregated according to their location, about 40 per cent are graduates from Ulaanbaatar and about 60 per cent are from aimags and rural areas. On an average, 35-45 thousand students enroll in universities, institutes, and colleges each year, and according to location, more than 90 per cent are enrolled in Ulaanbaatar and about 10 per cent in aimag and local tertiary education institutions (figure 5).

As seen from research results, 92.5 per cent of tertiary educational institutions, 88.9 per cent of total employees, 92.6 per cent of students, and 92.2 per cent of new entrants are located in Ulaanbaatar, which means that Mongolia’s tertiary education sector is concentrated in the Capital city (Table 1).

**Table 1. Some indicators of tertiary education sector in Mongolia, by location**

№	Some indicators of tertiary educational sector	In Ulaanbaatar		In aimags and rural areas		Total	
		Number	Per cent	Number	Per cent	Number	Per cent
1	Tertiary educational institutions	87	92.5	7	7.5	94	100
2	Employees of tertiary educational sector	11.2	88.9	1.4	11.1	12.6	100
3	Students in tertiary educational sector	146.0	92.6	11.6	7.4	157.6	100
4	Graduates from general educational schools	16.1	39.9	24.3	60.1	40.5	100
5	New entrants of tertiary educational sector	40.1	92.2	3.4	7.8	44.0	100

Source: NSO, *Statistical Yearbook of Mongolia, 2018*

The majority of graduates from the general education schools of aimags and rural areas choose to study at tertiary education institutes in Ulaanbaatar, regardless of future

job or quality of education, and they stay in Ulaanbaatar to study and work, because of better socio-economic development, labour market and living standards as compared in

aimags and rural areas. On the other hand, it should be noted that the tertiary education sector has become a business due to poor aspiration of young people living in the city and the poor implementation of government policies. The fact that Mongolian universities generate 80-95 per cent of their income from student services, such as tuition and dormitory fees, there is a tendency to seek over and above the quota enrolment of students, and as a result,

## CONCLUSIONS

The goals and objectives of the research have been achieved and the following policy recommendations are being made.

- Aimag and local tertiary education institutions play an important role in Mongolia's sustainable development, regional development, and human settlement system. Therefore, there is a need to reduce over-concentration of tertiary education sector in Ulaanbaatar and to support local tertiary educational institutions through government policies.

- Actions must be taken to review the process whereby students graduating from aimag and rural general education schools enroll in universities in Ulaanbaatar, and the number of university entrants should be determined by a unified policy of the Ministry of Education and Science.

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tertiary education has become almost public [10].

Given the aforementioned circumstances, the challenge of the day is to seriously consider the pluses and minuses of concentration of the tertiary education sector in Ulaanbaatar, which slows down the development of aimag and rural tertiary education institutions, which in its turn, has a negative impact on Mongolia's regional development and human settlement system.

- Universities, especially state-owned tertiary education institutes, need to spread out and set up branches in aimags and rural areas, national level cities and regional capitals, and effort must be made to create conditions for new entrants to obtain tertiary education in the region, and not in Ulaanbaatar alone.

- It is necessary to support the establishment of vocational and tertiary education institutions, research centers, institutes and their branches, and review the status and functions of national and aimag-level cities, which are in line with regional and local unique and economic priorities.

- It is recommended that "The government should develop a policy in the field of education and science, and develop the tertiary education sector in line with Regional development policy.

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