

## TYPES OF URBAN CLUSTER, CRITERIA AND EVALUATION BASED ON REGION AND CITIES

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**Abstract:** Due to Mongolian the large territory, the lowest human density, abundant natural resources and agricultural experience, there is a big opportunity to develop. For this reason, urban cluster can be a significant tool support regional development. Rather than fiercely compete each other, towns and provinces need to cowork together and make their joins effort on regional development aspect. Towns and villages, where have high level of production and services, and where have huge potential to grow, had better to attract the near soums, villages and towns and lead them into complex development in the region. Within the framework of this research we aim to identify types of urban clusters, which are suitable for Mongolian conditions, and make qualitative, quantitative and spatial analysis on those types by the means of certain criteria's.

**Keywords:** Regional development, Settlement, Urban cluster, Urbanization

#### Introduction

Clusters are geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition. They include, for example, suppliers of specialized inputs such as components, machinery, and services, and providers of specialized infrastructure (Porter, 1998).

Recently, research on urban clusters has been developing rapidly around the world. There are many advantages of clustered urbanization such as integrated urban infrastructure and services; increased private sector interest and investment; collaborative and participatory governance; balanced and inclusive development of the region and better environmental protection (Shikha et al., 2019). City clusters in Asia fall into at least four types in terms of geo-spatial forms: urban corridors, megacity-dominated clusters, subnational regional clusters, and transborder clusters (K.Choe et al., 2008). These types of clusters are distinguished by their population, the geographic area they cover, planning and governance mechanisms, and their spheres of economic and social influence in the context of the partic-

ular regions where they are located (K.Choe et al., 2008). Almaty in Kazakhstan and Bishkek in Kyrgyzstan are large examples of urban corridor cluster (CAREC, 2017). In addition, China's urbanization has been a notable global event. The China government recognizes that the economy is slowing down, and to sustain the economy, it needs to develop and support new city clusters /3 mega, 8 medium and 8 small/ (Zhen et al., 2008).

In 2019, 70 percent of Mongolia's total population lived in urban areas and cities (NSO, 2019). 48 percent of it is concentrated in the capital city of Ulaanbaatar, and urbanization is increasing rapidly in recent years. Industrial and service development centers established in a few places and administratively divided into many smaller units. This hinders the development of the management system and also creating economic and financial difficulties.

The concept of urban clusters is a relatively new topic In Mongolia. Regional development is very important for Mongolia and urban cluster can be significant tools support it (Altanbagana et al., 2019). In the past, Mongolia's development planning has been overly confined to province and soum administrations

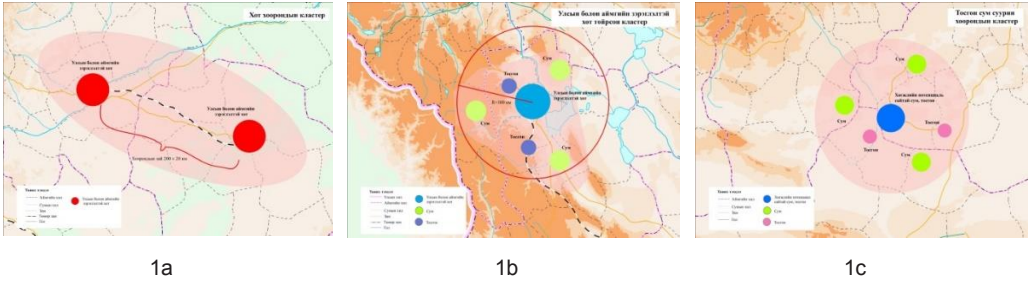
and territorial boundaries, which is a policy mistake. Instead of this, towns and villages, where have high level of production and services, and where have huge potential to grow, had better to attract the near soums, villages and towns and lead them into complex development in the region. Within the Table 1. Key concepts and requirements to be used to determine the type of cluster cities to be developed in the Mongolia

framework of this research we aim to identify types of urban clusters, which are suitable for Mongolian conditions, and make qualitative, quantitative and spatial analysis on those types by the means of certain criteria's (Table 1, Figure 1).

Types of cluster cities	Description of cluster cities	Key concepts and requirements to be used to determine the type of cluster cities				
		Population	Economy	Infrastructure, transportation and logistics	Geographical and spatial location	Coherence of development policy and planning
<b>Urban corridor cluster</b>	The concept of state and provincial ranking cities forming cluster cities and developing in a coherent and interconnected manner. (Figure 1a)	1) State and provincial ranking cities with a population of more than 50,000 (up to 50,000 if necessary); 2) Urban population density is more than 300 people / km <sup>2</sup> ; 3) Cities where the process of urbanization is growing rapidly	1) Play a key role in the social and economic development of the region; 2) Dominant in tourism, agriculture and processing industry, food industry, heavy industry and mining industry, good development resources and opportunities and these industrial sectors could develop as a priority; 3) Cities with high development potential compared to other cities; 4) Rather than fiercely compete each other, towns and aimags need to cwork together and make their joins effort on trade, production, services, transportation and supply	1) Located at node or along of national vertical and horizontal axes (including international and national roads, railways and economic corridors) and connected to each other by road and rail; 2) Regional level transportation and logistics center; 3) Includes cities connected to energy sources	Geographical location 1) Stay away from capital city; 2) The distance between cities should not exceed 200 km; 3) Cities where located on economic zone or near places	Cities will need to define their own development policies and plans, as well as develop policies and plans in line with their cluster cities at the regional level.

<p><b>State ranking cities dominated cluster</b></p>	<p>The concept of state ranking cities (key role in the regional development) become cluster and develop coherent with outskirt and neighboring soums and villages (Figure 1b)</p>	<p>1) State cities with a population of more than 50,000 (up to 50,000 if necessary); 2) The central cities of the cluster are cities with growing rapidly urbanization</p>	<p>1) Play a key role in the social and economic development of the region; 2) Dominant in tourism, agriculture and processing industry, food industry, heavy industry and mining industry, good development resources and opportunities and these industrial sectors could develop as a priority; 3) State cities with high development potential compared to other cities; Central cities of cluster will develop in conjunction with outskirt and neighboring soums and villages through cooperation in trade, production, services, transportation and supply.</p>	<p>1) Located at node or along of national vertical and horizontal axes (including international and national roads, railways and economic corridors) and connected to each other by road and rail; 2) Regional level transportation and logistics center; 3) Includes cities connected to energy sources with outskirt and neighbouring soums and villages</p>	<p>Geographical location 1) Based on the theory of central location at the regional level; 2) Includes soums and villages within a radius of up to 100 km from state cities</p>	<p>State ranking cities need to develop coherent development policies and plans in partnership with outskirt and neighboring soums and villages.</p>
<p><b>High development potential soums and villages dominated cluster</b></p>	<p>The concept of soum or village (key role in the social and economic development of the local) become cluster and develop coherent with outskirt and neighboring soums and villages (Figure 1c)</p>	<p>1) Plays a key role in the social and economic development of the local, Population of more than 5000; 2) The central soum and village of cluster are soums and villages steadily growing settlements</p>	<p>Soums and villages with high development potential compared to other soums and villages; Central soums and villages of cluster will develop in conjunction with outskirt and neighboring soums and villages</p>	<p>Connected to each other by state and local road</p>	<p>Geographical location 1) Central location with surrounding soums and villages; 2) Central soums and villages of cluster are stay away from state and provincial cities.</p>	<p>Central soum and village of local level cluster need to develop coherent development policies and plans in partnership with outskirt and neighboring soums and villages.</p>

Figure 1. Types of urban cluster



**Method**

About 10 indicators were used to determine whether the cluster satisfied the criteria and concepts. For example, the population change was calculated by comparing the population growth of 1990-2000, 2000-2010, and 2010-2019 (Altanbagana et al., 2016) with the average population growth of the country. The development potential of the industrial sector was clarified by using result of the atlas named "Development of integrated industrial location planning and mapping methodology" (Battogtokh et al., 2018). Calculate the amount of gravitation between Ulaanbaatar and aimag centers, the average sum of the results found the gravitational distance to the capital city (Reilly, 1931). The criterion is that it is better to stay away from the specified distance. Infrastructure and transport conditions are the most important factors for the urban cluster, and horizontal and vertical axes, which have a major impact on Mongolia, were used as criteria (Altanbagana et al., 2019). The current road classification (local, national and international roads) is also used. Cities, soums and villages connected to the energy source are classified according to their energy capacity. The points for each of the selected criteria were converted into scores, and the cities, villages, and soums with the highest overall scores were used as cluster centers. The center of a cluster and cities, soums,

and villages located within a radius of 100 km are considered to be a whole cluster.

**Results**

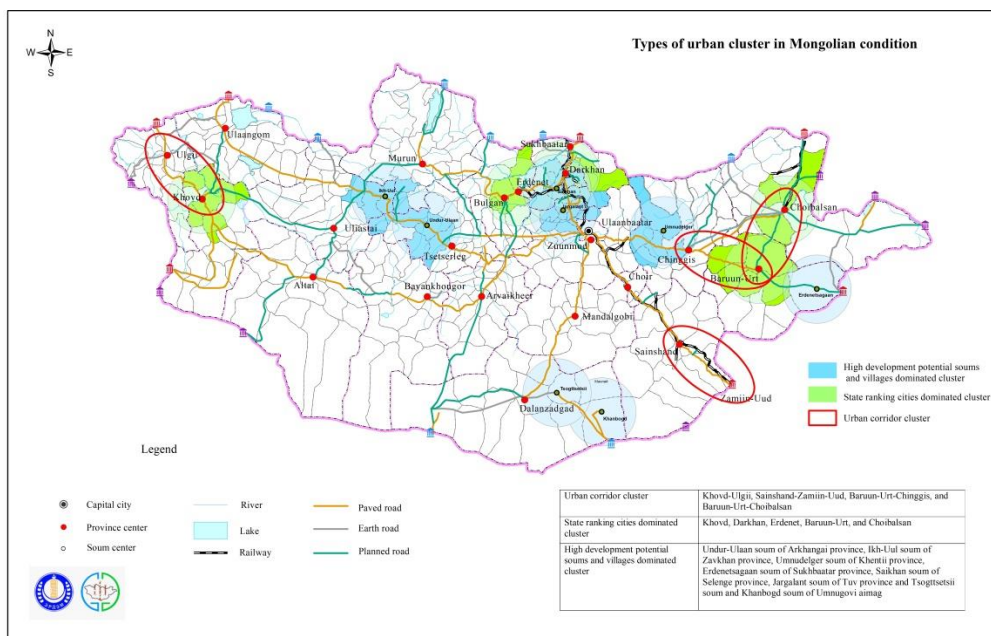
State and provincial ranking cities that can be developed as urban corridor clusters in Mongolia were evaluated. This category includes cities in Khovd-Ulgii, Sainshand-Zamiin-Uud, Baruun-Urt-Chinggis, and Baruun-Urt-Choibalsan (Figure 2). The main backbones of the urban corridor cluster are infrastructure and transportation development, as well as the distance and time between the two cities are the main indicators.

Evaluated eight cities that belongs the state city category, and Khovd, Darkhan, Erdenet, Baruun-Urt, and Choibalsan have the potential to become state cities dominated cluster centers (Figure 2). These centers attract outskirts and neighboring soums and villages within radius of 100 km.

In the category of high development potential dominated soum and village cluster, the following 8 soums (Undur-Ulaan soum of Arkhangai province, Ikh-Uul soum of Zavkhan province, Umnudelger soum of Khentii province, Erdenetsagaan soum of Sukhbaatar province, Saikhan soum of Selenge province, Jargalant soum of Tuv province and Tsogtsetsii soum and Khanbogd soum of Umnugovi aimag) satisfied the criteria and can be develop as a cluster center (Figure 2). The

surrounding soums and villages will be developed to this cluster.

Figure 1. Types of urban cluster in Mongolian condition



**Conclusions**

The main criteria for the development of an urban cluster are space, geographical location, infrastructure and transport conditions. However, in our country, most of the towns, soums and villages are too far apart and far from the vertical and horizontal axes of infrastructure. In the form of urban clusters, cities, soums and villages that have an impact on the socio-economic development of the country and the region will be developed in Mongolia. This will help to establish a settled population in that place, promote urbanization in more than one area, close the gap between urban and rural development, and reduce agglomeration.

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