PMAS
Proceedings of the Mongolian Academy of Sciences
Vol. 59 No 03 (231) 2019
DOI: https://doi.org/10.5564/pmas.v59i3.1242
https://www.mongoliajol.info/index.php/PMAS

ARTICLE

# Implications of rural settlement patterns for development: case study in central and eastern economic region of Mongolia

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*ARTICLE INFO: Received: 19 Oct, 2018; Accepted: 6 Dec, 2019*

***Abstract:*** *Under the three law of magnetism [1] the mechanism of pull-push is rapidly increasing [2] in the process of urbanization and as a result the role and function of some settlements have changed. The increase in the population of big cities affects the increase in the radius of influence of the settlement to surrounding area [3, 4]. One of the reasons of rural to urban migration among pastoral herder is growing interest in and attraction to intensive farming systems [4]. Therefore, there is an urgent need to identify proper population planning of settlements. This research work was carried out in 9 aimags: central and eastern economic regions of Mongolia.*

*The population of small settlements has decreased under the influence of bigger settlements with market and better infrastructure. The roles of these little settlements are now changing to become centers for agricultural production as well as to provide new opportunities to migrant herders. Nevertheless, many of them still lack access to social services and infrastructure.*

*Prior to the 1990s, much attention was given to urban development ensuring their uniformity, and each urban settlement had its own light and heavy industry. However, after the democratic transformations in 1990, agglomeration was carried out in a few settlements to attract population, while some other settlements were overseen. Therefore, it is important to specialize industrial enterprises at settlements, and improve their structure and create a multi-centered system.*

***Keywords:*** *Rural settlement; urban-type settlement; functional types of settlement; population change; migration; social services;*

## INTRODUCTION

In Mongolia, the pace of urbanization has grown rapidly over the last 20 years, with 67.4 percent of the population now living in urban areas, while 45.3 percent of the total population of the country are living in Ulaanbaatar. About the capital city is home to almost 70 percent of enterprises and organizations and it alone accounts for more than 60 percent of the GDP. The increase in the mechanical growth of urban population, economic and social advances and other related industrial activities have greatly changed the profiles of settlement, people's

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DOI: https://doi.org/10.5564/pmas.v59i3.1242
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lifestyle, while at the same time, ecological conditions have worsened.

Mongolia's agriculture is a sector with a very low productivity, as it is highly dependent on weather. In recent years, owing to severely cold winters with heavy snowfall, locally called *dzud* herders lost their main source of subsistence – livestock animals, while some of them lost their entire livestock herd, whereby there are constantly urged to love from one place to another in search of better pasture [4]. For example, almost about 12,000 herder households lost their livestock in the 1999-2002 dzud [5]. Later in the 2009-2010 dzud, 9.7 million livestock animals perished, 32,756 herder households lost 50 percent of their livestock and 8,576 herder households had no animals left [6].

The most common forms of migration in Mongolia are when nomadic herders who have lost all their means of survival and livelihood are forced to move to cities and other settlements. This is one form of transition from a nomadic to sedentary lifestyle and civilization [7]. The soum center is the rural administrative center with a school, a dormitory for school children coming from distant areas, a kindergarten and a hospital but some of the soum administrative centers, given the high influx of outbound but inland migration, have lost their meaning and can hardly fulfill their administrative duties.

The role of small settlements in the country's social and economic development is one of the factors reflecting the development level of a given region, and it is also an important factor that impacts on how people settle down and re-settle there. Taking into consideration these factor, we have attempted to investigate the development trend of a settlement under the influence of settlement and re-settlement of the herding household.

## MATERIALS AND METHODS

This research was carried out in 9 aimags: Central (Umnugobi aimag was not included) and Eastern economic regions of Mongolia and their 125 soums (Figure 1, Table 1).


*Figure 1. Study area*
*Source: Mongolian National Atlas*

The area of these aimags account for 38 percent of Mongolia's total territory (Table 1) and these areas, as compared to other regions, have better infrastructure systems such as the development of mining industry, and other services, they have paved roads and railways, and as they share common borders with China, these tend to be key attractors for the migrant population.

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*Table 1. Administrative and territorial units*

| | Number of soums | Territory thous.km$^2$ | Population thou.persons |
|---|---|---|---|
| Study area | 125 | 594.4 | 667.0 |
| Mongolia | 330 | 1564.1 | 3119.9 |
| Percent | 37.9 | 38.0 | 20.6 |

*Source: Mongolian statistical yearbook 2016*

Given the changes in the socio-political situation in the country, urban settlement development has been studied in two stages, one continuing until 1990 and the other starting in 2000. National and aimag statistical yearbooks for 2000 and 2015 categorize settlements (soum center) as big, medium and small depending on the size of their population (Table 2) [8]. This method of classification has been taken from "Urban village Classification" in the Second Edition of the Mongolian National Atlas.

*Table 2. Classification of settlement (soum center)*

| Classification of settlement | Population of settlement |
|---|---|
| Small | Less than 1000 |
| Medium | 1000-3000 |
| Big (aimag center) | Up to 10000 |

The study was used in the "Geographical study of rural settlement processes" project of the Institute of Geography and Geoecology of the Mongolian Academy of Sciences, and the sample survey was carried out in ausing the mixed sampling method. The survey did not take into consideration the administrative unit. 420 herder households and 200 households of soum centers in the forest steppe, steppe, and Gobi zones were selected for random sampling in the applied questionnaire.

## RESULTS AND DISCUSSION

Until the 1950s, the country was divided into 18 aimags based on their location, geographical features and economic conditions, and their administrative centers were established in designated areas, which resulted in many small rural settlements become urban types of settlements. The Mongolian People's Revolutionary Party, the former communist party of the country, had set a goal of turning the country into an "industrial-agricultural country" and to build complex of towns and cities with the development of light industry (livestock produce and agricultural raw materials's production) and food processing industries, in addition to heavy industry (Figure 2).

Consequently, the government, given the growing demand for skilled workers, relocated many herders from rural areas to urban settlements [9].

Urban development since 2000. According to the economic development of our country, the proportion of residents in urban areas (urbanization rate) is growing rapidly, but due to specific economic and natural geographical factors, the growth is unevenly distributed across the country. For example, the vast majority of migrant families, who move from rural to urban settings, do so to improve their family economy, livelihood and living conditions, and a large proportion of migrants are moving into their indigenous aimags.

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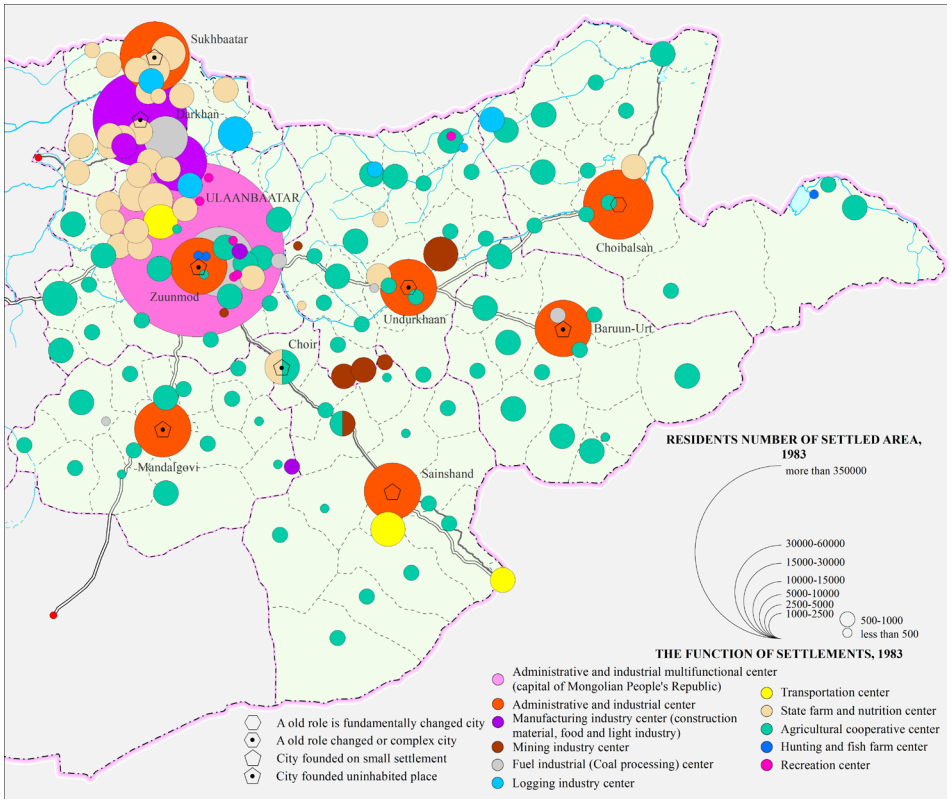


*Figure 2. Functional types of settlements, 1983*
*Source: National Atlas of the Mongolian People's Republic, 1990*

21.5 percent of the 200 households in the soum centers surveyed were from rural areas, and 55.9 percent of them had left for urban settlements seeking work, 28 percent had migrated because their relatives lived in the city. 6.9 percent of these 200 households responded that they had access to cheaper household goods, 4.6 percent had to easy access to major cities and followed roads and pasture land. However, people failed to mention the reason for their migration as to access better educational services.

*Table 3. Reason for migration*

| Reason for migration | Number of households | Percent |
|---|---|---|
| Economy | 3 | 6.9 |
| Infrastructure | 2 | 4.6 |
| Employment | 24 | 55.9 |
| Education | 0 | 0 |
| Family | 12 | 28.0 |
| Pasture | 2 | 4.6 |
| **Total** | 43 | 100 |

*Source: Field data ("The geographical study of the rural population's settlement" baseline research project), 2017-2019*

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The reasons for migration are different depending on the age structure of the household heads. Households that had retirees migrated as they wanted to be close to their relatives from whom they could get help, and people aged 16-34 years wanted better working conditions so they could improve their source of income. In the soum center, mostly young and working age people are returning (Table 4).

*Table 4. Types of households (by age group)*

| Age groups of household heads | Number of households surveyed | Non migrant | Percent | In-migrants | Percent |
|---|---|---|---|---|---|
| 16-34 | 41 | 31 | 19.7 | 10 | 23.3 |
| 35-54/59 | 127 | 100 | 63.7 | 27 | 62.8 |
| Up to 55/60 | 32 | 26 | 16.6 | 6 | 14.0 |
| **Total** | **200** | **157** | **100.0** | **43** | **100.0** |

*Source: Field data ("The geographical study of the rural population's settlement' baseline research project), 2017-2019*

Another reason why people migrate from remotes rural areas to soum centers is the education for school-age children. Our country has shifted to a 12-year education system under which 6-year-old children now join general secondary schools, and when herder households are increasingly involved in migration, there are cases when families have to live separately (Table 5).

*Table 5. Types of households (children of school age)*

| Children of school age | Number of households surveyed | Non migrant | Percent | In-migrants | Percent |
|---|---|---|---|---|---|
| Yes | 84 | 64 | 40.8 | 20 | 59.2 |
| No | 116 | 93 | 46.5 | 23 | 53.5 |
| Total | 200 | 157 | 100.0 | 43 | 100.0 |

*Source: Field data ("The geographical study of the rural population's settlement' baseline research project), 2017-2019*

The population of aimag centers has been steadily growing. Residents of some soum centers, who are unable to contribute to the soum's socio-economic development, as well as herders from remote rural areas are migrating to the aimag centers, which are contributing to the mechanical growth of their population. As a result, aimag centers beside fulling their administrative and organizational duties, are burdened with additional responsibilities of providing services, transportation and production.

*Table 6. Number of soum centers (by classification of population)*

| Population of soum center | 2000 | | 2015 | |
|---|---|---|---|---|
| | Number of soum center | Percent | Number of soum center | Percent |
| Less than 500 | 7 | 5.6 | 21 | 16.8 |
| 501-1000 | 37 | 29.6 | 38 | 30.4 |
| 1001-2500 | 52 | 41.6 | 39 | 31.2 |
| 2501-5000 | 13 | 10.4 | 12 | 9.6 |
| More than 5001 | 16 | 12.8 | 15 | 12 |
| Total | 125 | 100 | 125 | 100 |

*Source: Mongolian National Atlas, Statistical yearbook of aimags, 2000-2015*

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As a result of migration, the population of medium soum centers has decreased and several such medium soum centers have became small soum centers. In other words, migration has a negative effect on medium and small settlements. For example, in 2015 compared to 2000, the number of medium soum centers with a population of 1001 to 2500 decreased by 13, and the number of small soum centers increased by 15. The combination of functions and duties of a settled area is directly related to the number of population, and accordingly, the responsibilities of the soum center with dwindling population are diminishing and they are merely carrying out their administrative functions [10] without much impact.

During the survey, 40.7 percent of 420 herder households, which were randomly selected from the field survey, had acquired real estate (ger, fence and apartment) in any one settled area. As the soum population grows, interest of herders to own real estate is increasing too. For instance, 39.7 percent of herders in the surveyed small soum centers, 43.2 percent of herders in the medium soum centers and 43.5 percent of herders in large soum centers own real estate.

One of the factors of development of the soum center is the economic location or the distance from the aimag center, and depending on the distance and proximity of the aimag center, the attraction of nomadic herder households to the soum centers tend to be unidentical.

Only 24.1 percent of the surveyed households had immovable property within the strong serving distance of aimag center (up to a distance of 40 km from the aimag centre), while 44.4 percent in the medium serving distance (41-80 km from the aimag center) and 50 percent in the loose serving distance of aimag center (81-120 km). However, ownership of immovable property has dropped by 37.8 percent in those aimag centers that are unable to provide services, owing to the distance (121 km and above) (Table 7). This indicates that the herder households living in soums located at loose serving distance from the aimag center are more likely to migrate to the urban areas.

*Table 7. Land and real state ownership, (by distance from aimag centers)*

| Distance from the aimag centers | Number of households surveyed | Yes | Percent | No | Percent |
|---|---|---|---|---|---|
| 0-40 км | 29 | 7 | 24.1 | 22 | 75.9 |
| 41-80 км | 117 | 52 | 44.4 | 65 | 55.6 |
| 81-120 км | 68 | 34 | 50 | 34 | 50 |
| Above 121 км | 206 | 78 | 37.8 | 128 | 62.2 |
| Total | 420 | 171 | 40.7 | 249 | 59.3 |

*Source: Field data ("The geographical study of the rural population's settlement' baseline research project), 2017-2019*

Also, 14.3 percent of herders with strong serving distance, 42.3 percent of herders living in the medium serving distance, 85.3 percent of herders living in loose serving distance, 76.9 percent of herders living outside of serving distance areas immovable properties in their soum centers. As the distance from the aimag center increases, herders have an increased interest in real estate in their own soum. The herders of soums located at strong serving distance of aimag centers have immovable property in the aimag center and they are interested in getting social services from the aimag center.

The flow of migration is constantly changing depending on ther country's economic development level and economic structure, reflecting the different levels of developments

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in territories of our country. In recent years, Mongolia has been witnessing intensifying rate of migration, due to many factors such as the differences in urban and rural development, quality of access to social services, differences in market enabling environment, natural risks affecting livestock breeding etcetera. As a result, population concentration is higher in a few cities and soum centers, giving rise to negative ecological and social consequences.

According to a survey conducted by herder households, the soum centers are unable to carry out their service functions when they are close to the aimag center, losing such services to the aimag centers, and are thus performing only administrative functions. Small and medium soums located at loose serving distance have developed independently and provide herders with the necessary government as well as social services. It is necessary to choose the advantages of geographic locations, roads, fuel, energy, and raw materials in cities and sedentary areas and develop industries, schools, culture and services that are the main drivers of population migration.

## CONCLUSIONS

Prior to the 1990s, much attention was given to the development of urban areas, and the territories was uniformly developed with each having a light and heavy industrial enterprise. However, since the democratic revolution, created the agglomeration in few settlements, to attract the population, result as some of the settlements are essentially missing. Therefore, it is important to develop the specialization of enterprise of settlements, to refine the structure of the role and to create a multi-centered system.

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