



RESEARCH ON GER AREA INFORMAL SETTLEMENT REDEVELOPMENT PLANNING OF ULAANBAATAR, MONGOLIA

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ABSTRACT

This study discusses the urbanization of Ulaanbaatar city in Mongolia by considering ger areas that have encountered unprecedented expansion during the past few years due to rural-to-urban migration. Although of extreme urbanization in Ulaanbaatar, ger areas continue to expand out into the fringe areas. This article tries to identify some unique appearances of urbanization in Ulaanbaatar city while focusing on ger area problems. The urbanization in Ulaanbaatar addressed by focusing on three principal issues of ger areas: socio-economic situation, infrastructure requirement, and environmental pollution. Mutually, those subjects create a research structure for this paper. The conclusions of this study suggest that ger area needs to realize as historically unique structure implanted in Ulaanbaatar as well as urban squats in need of redevelopment.

Keywords: Ger area, urbanization, informal settlement, redevelopment, renewal, Ulaanbaatar

INTRODUCTION

Expanding cities in rapidly urbanizing regions of the world function as hubs of growth for the developing country; they remain centers of politics, economy, culture, and the arts. Those cities also experience increasing shortage, environmental pollution, public health problems, political disorder, and severe societal inequality. The radical changes in urban land use due to urban growth, which makes the increased demands for energy, water, and urban infrastructures, triggers the environmental degradation in the region, leading to severe threats to natural ecological systems.

In many developing countries, the big cities, which are often the capitals, are much larger than other towns and contain a substantial proportion of the country's population. This phenomenon, most common in Latin America, also is prevalent in nations of Africa and Asia (Cohen, 2004). In most cases, essential cities function as the engines in the financial and commercial system all worldwide. Besides, patterns of urbanization differ from country to country. The impact of urbanization on the environment and populace varies by city.

During the growth periods of leading cities, economic opportunity has been the main attraction of urban centers, resulting in their long-term growth (Redman & Jones, 2005). Primary industries and markets in densely built-up areas provide many benefits to the cities, with a variety of coverage. The cities could serve as centers for education, which can provide a better-educated workforce and a new and market demand base (Cohen, 2004; Lucht, 2002). It is undeniable that the cities continue to function as economic engines in developed as well as developing countries. However, they are the site of growing inequalities in urban and regional society, with the most radical differences found mainly in the developing world (Clark & Dickson, 2003). Many problems related to urban poverty are rapidly increasing in the urbanizing cities of developing countries. Redman and Jones (2005) maintain that more than half residents in the metropolitan area of developing country now live in poverty, and the proportion appears to be continuously increasing. In this context, there have been domestic issues in Mongolia concerning the appropriate management of rapid urbanization, particularly in *ger* areas in and around Ulaanbaatar city. Since Mongolia has a unique nomadic culture of moving from one place to another according to the season, the concept of urbanization is relatively new and strange in Mongolian society. Nomadism and urbanization differ considerably, and it is difficult for rural migrants to adapt to urban life.

Ulaanbaatar city is home to almost 60 percent of Mongolia's total population. In the past several years, the city has expanded its borders widely due to rapid migration to urban areas. This abnormal urban enlargement brings about many related problems, including those to do with economic matters, infrastructure, and environment. Currently, approximately 60 percent of the total population of the city resides in peri-urban informal settlements, where there is little existing infrastructure except electricity. In Mongolia, cities are facing great difficulties concerning urbanization. Increasing numbers of the *ger*,

neighborhoods composed primarily of traditional Mongolian dwelling, are covering the urbanization of the whole country as well as that of the capital city Ulaanbaatar. Consequently, this study begins by asking whether all the *ger* areas requiring urban infrastructure should demolish the better environment of *ger* areas in Ulaanbaatar. In this context, this paper attempts to investigate the urbanization in Mongolia regarding the residential environment of *ger* areas in and around Ulaanbaatar. In particular, this study tries to create a hierarchical approach to *ger* by distinguishing them into three types, to rough identity and separate residential cultures and to make regionally specific implications.

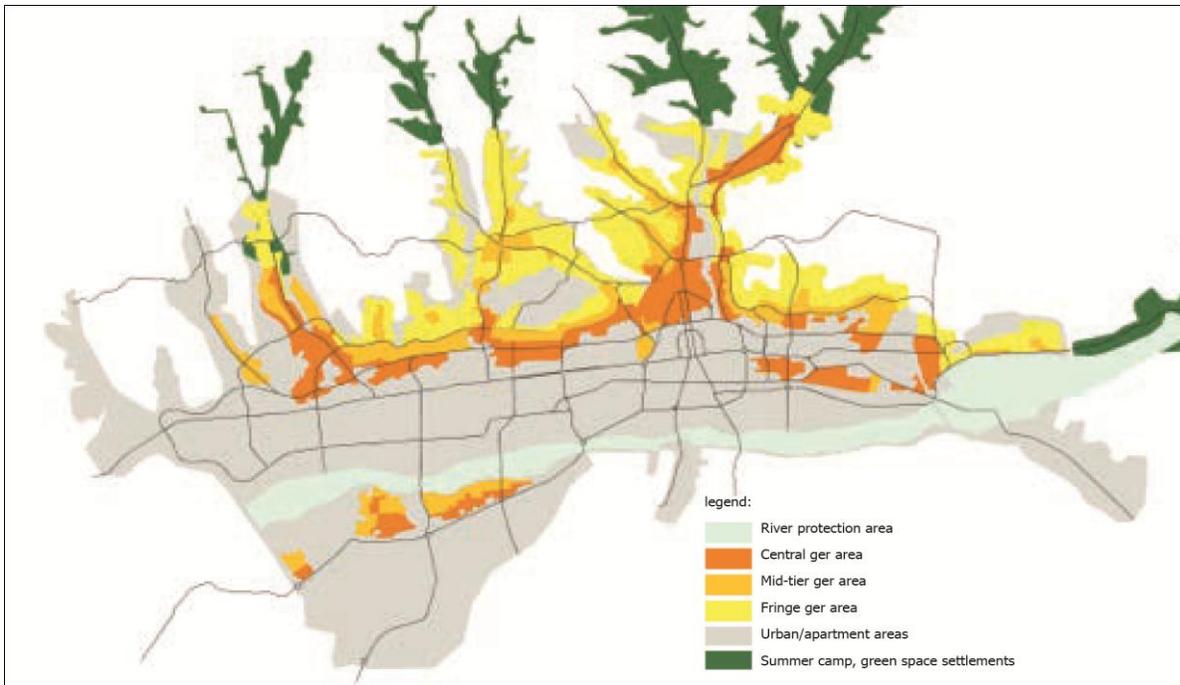


Figure 1: The map shows the expansion of the Ger Area in Ulaanbaatar

URBANIZATION OF MONGOLIA

Urbanization:

Urbanization is challenging to determine in a single sentence. It generally understood that urbanization means the density of population and expansion in urban areas (Pelling, 2007; Choi, 2010). There are two sides to urbanization, which is considered as positive in some cases but negative in another hand (URBED et al., 1999). Urbanization means not only the physical growth of urban land use in municipalities but including the urbanism is describing modernization and the sociological process of systematization linked to patterns of social life characteristics.

In the same context, Angel et al. (2005) present that urban expansion generally takes differing shapes. In some cities, urban growth may occur with the same density as that prevailing in the old built-up areas, whereas urbanization of other towns may involve enhanced density or reduced density.

Expansion in urban areas has mainly progressed through the redevelopment of old regions urbanized at higher frequencies, through infill development of public open spaces in existing built-up areas. In particular, urban expansion can take place through environment development in previously non-urbanized areas. New construction in green regions can be adjacent to existing urbanized areas or can leapfrog away from them, into swaths of undeveloped land, which may isolate the latest development from old urbanized areas. It very often infringes on watersheds, flood-prone fields, forests, and other environmentally vulnerable places that are worth conserving. As a result, new development can reduce open space in and around the city, and the quality of the urban environment tends to deteriorate rapidly (Angel et al., 2005; World Bank, 2008).

Urbanization of Mongolia:

Mongolia is a landlocked country bordered by People Republic of China and Russian Federation, also with a total population is 3,081,677 as of 2016 according to the National Census Report. In total comprises 21 provinces (aimags), and 329 districts (sums). The capital Ulaanbaatar is administrated separately as a capital city (municipality) with provincial status. Table 1 shows the administrative and political sub-divisions in Mongolia. Mongolia is known as one of the least developed countries that have made steady progress from a centrally planned to a free market-led economy. Also, urban development in Mongolia has historically set in a demographic context where the nomadic population is migrating to Ulaanbaatar for what looks like better longer-term settlements.

FOR RURAL AREA:	FOR MUNICIPAL AREA:
<i>bag</i> = lowest political and administrative unit	<i>kheseg</i> = smallest political and administrative unit
<i>sum</i> = equivalent to country – political and administrative unit	<i>khoroо</i> = lower political and administrative unit
<i>aimag</i> = equivalent to province – political and administrative unit (this is located in either peri-urban or urban area)	<i>duureg</i> = <i>district</i> = equivalent to country – political and administrative unit <i>city</i> = this is purely urban area with ger area settlements - political and administrative unit

Table 1: The administrative and political subdivisions in Mongolia

Figure 2 shows a portable felt dwelling structure, also known as a yurt. The *ger*, a traditional Mongolian dwelling that is similar to a tent, is a unique accommodation used by nomads in the steppes of Central Asia. *Ger* areas

of Mongolian cities are typical of peri-urban informal settlements that include not only *gers* but also detached houses inside wooden *hashaas* (plots) surrounding Ulaanbaatar.

Mongolia has a settled population sparsely and has recently few years found extreme urbanization. Even though almost more than half of the population lives in urban centers, semi-nomadic life is still prevailing on the urban fringe or in rural areas. Like as capital cities in other developing countries, Ulaanbaatar is facing numerous urban development problems, which historically increase during the periods of socialism and are accelerated by reforms in political and economic systems. Also, free market development and an extreme increase in population generated by migration regarded as two of the leading issues of urbanization problems in Mongolia (Badamdorj, 2004). The migrants, who are mostly low-income families from the rural area, come to settle in the peri-urban informal settlement *ger*.

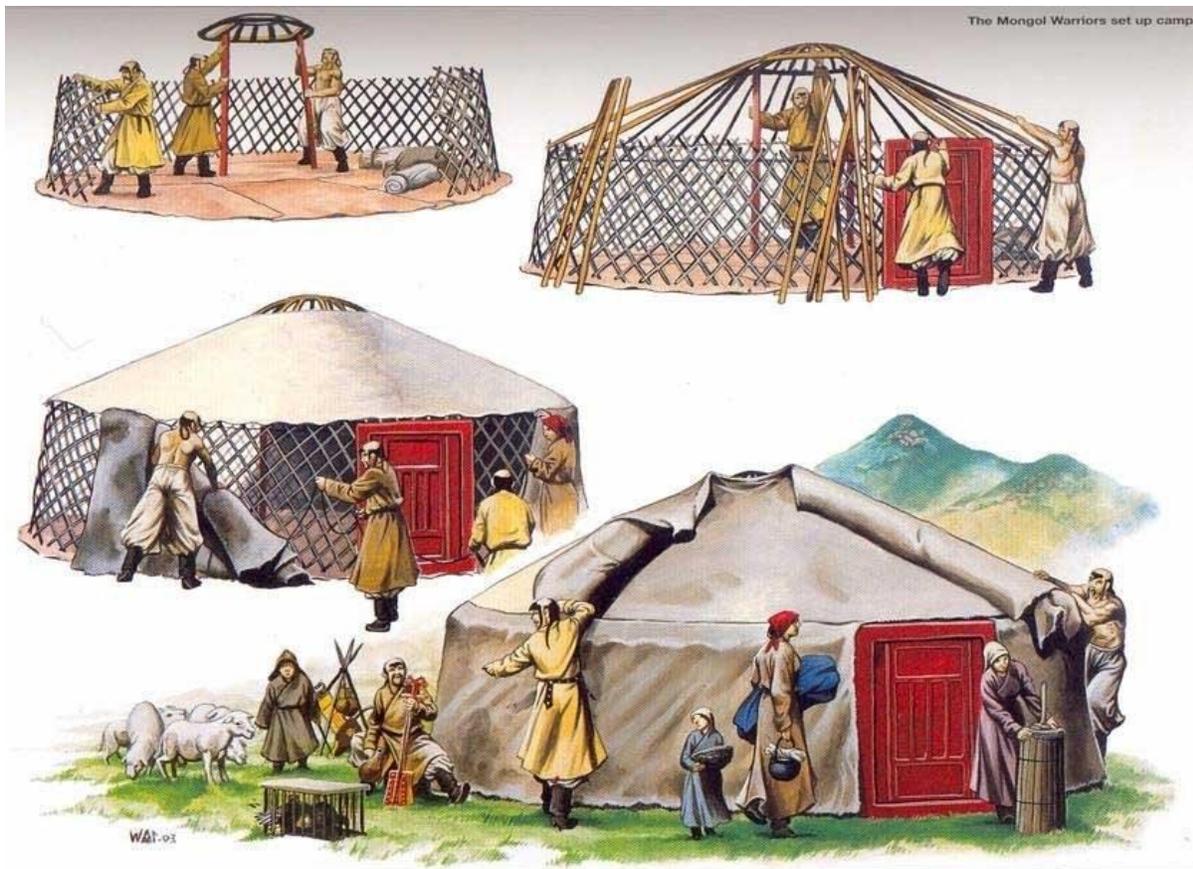


Figure 2: Shape and Structure of Mongolian Traditional Ger

The same patterns of rural-to-urban migration prevailed for the past twenty years in Mongolia. More than 60 percent of Ulaanbaatar's population remains in peri-urban informal settlements that shortage modernized urban infrastructures, such as sewage, water supply, sanitary facilities, roads, and a public transportation system.

Furthermore, the coverage of social infrastructure, including medical insurance and public education, is inadequate. This unplanned growth of peri-urban settlements called *ger area*, and the functional aim of urbanization have brought about numerous outcast challenges, such as the mass of unemployment problems, traffic problems, an unbalance of an ecosystem and other adverse environmental impacts (Kamata et al., 2010). The population of Ulaanbaatar has increased by almost 70 percent in the last twenty years and now equals about 50 percent of the country's total population. The entire administrative area of Ulaanbaatar is now 30 times larger than the original built-up regions (JICA, 2008). The *ger areas* continue to expand, although developments in urban services are not managing movement with the expansion, and the local government's potential to respond to these difficulties is still inadequate.

Urbanization in Mongolia has two characteristics that distinguish it from other developing countries. First, unique dwelling type *ger* has directed to the population increase of Ulaanbaatar, bringing about urban-sprawl in the process of urbanization. It notable that *ger* is different from the ghetto, in which many low-income people of particular racism and religions live apart from other people. However, the *ger* is not necessary a residence type only for the low-incomers. Second, *ger* has a regionally particular context within each spatial hierarchy. Most of the expansion has taken place in the *ger areas*: low-income areas where essential infrastructure services are inadequate or non-existent. The population of the *ger areas* is expected to make up about 60 percent of the total population of the capital city. Therefore, there are undoubtedly numerous types of the *ger* to meet the demands of different classes. *Ger* around Ulaanbaatar relatively well equipped with infrastructure compared to other *ger areas*.

RESEARCH FRAMEWORK OF GER AREA

In Ulaanbaatar, the modern urban form characterizes by the core built-up area, an intermediate transitional area (with *ger areas* and full housing), and the peri-urban *ger areas*. The latter two regions have shortage primary infrastructure and services. In the framework of this research, those *ger areas* can operationally categorize into three categories, central *ger area*, middle *ger area* and urban-fringe *ger area* as shown in Figure 3. The central *ger area* mostly borders main urban areas and has encountered a gradual conversion to apartment buildings. The area partially accesses the standard level of services presented to *gers* and partly obtains more extensive services due to the area's closeness to high-density areas. The middle *ger area* is all sides bordered by another central and fringe *ger areas*. Residents in the area aim the standard level of services provided to *ger areas*. Residents intend to stay in their plots maintained, making progressive improvements in their housing and expecting improved urban services. In the urban-fringe *ger area*, residents are still deserving land. Households, especially new migrants, lack the standard level of services currently implemented in most *ger areas*.

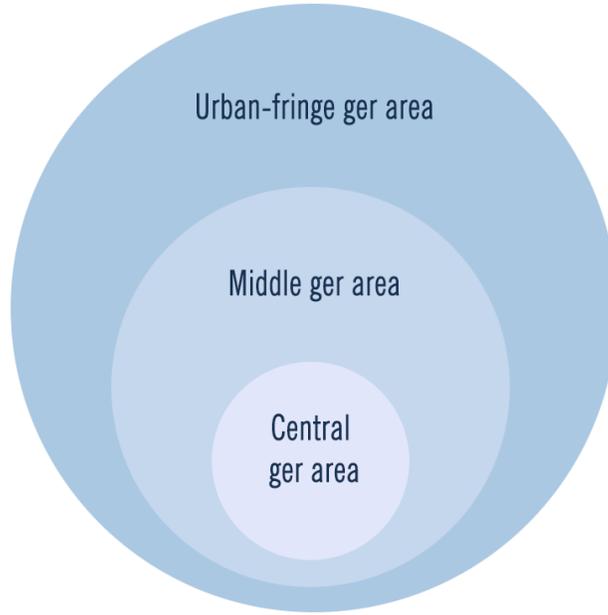


Figure 3: Three categories in Ulaanbaatar ger area

Some review and reports provide helpful data and information on urbanization issues related to these ger areas in Ulaanbaatar. Of particular importance are reported on infrastructure and residential issues in Ulaanbaatar. For instance, JICA (2008) concentrates on preparing counter-measures handling increasing ger areas in replying to rapid socio-economic changes. It also indicates the pre-eminence of road construction. The government of Mongolia (2009) emphasizes the supplies and payment issues related to civil services and policies related to issues such as urban development, transport system, and road construction. Most studies related to ger area deal with housing problems, urbanization, the requirement of infrastructure, social and economic development and the environment condition of ger areas. Table 2 offers a research framework for ger areas base on the above report review.

ASPECTS	GER AREAS	URBAN-CENTRAL	MIDDLE	URBAN-FRINGE
Socio-Economic Issues		- UB is divided into nine districts, or duuregs. Six duuregs break up the central urban area of the capital city, fanning out to the ger areas. - Ger area households are larger, younger, less educated, poorer and more reliant on social services than households in apartment areas. - In line with the recent growth of ger areas, a large proportion of residents are migrants.		
Infrastructure-Roads and Transport Issues		The majority of people (59%) still live in gers. The percentage of paved roads is higher in this ger area. Residents have better access to transportation.	More than 70% of households live in detached houses. There are no regular bus services in most parts of this area. No formal roads exist inside the area.	More than half of the residents live in ger. No formal roads exist. No scheduled bus services exist.
Environmental Issues		Solid waste management, hygiene and sanitation are priority issues in all ger areas.		

Table 2: Research framework for ger area

WHY REDEVELOP TO GER AREA IN ULAANBAATAR?

Expanding ger area in Ulaanbaatar:

The sustainable management and development of ger areas in Ulaanbaatar are one of the crucial urban development issues that Mongolia is currently standing. The transition to a market-economy and severely climate change has brought about the migration of many low-incomers from the rural area into the ger area in and surrounding Ulaanbaatar. Figure 4 shows that Ulaanbaatar grows from only 600,000 people in 1989 to more than one million as of 2007, accounting for 39 percent of the nation's population (National Statistical Office, 2008). The present produces more than 60 percent of Mongolia's GDP and makes up almost half of the total investment in the country. Given the shortage of employment possibilities in other major aimag (province) cities, migration to Ulaanbaatar is expected to continue.

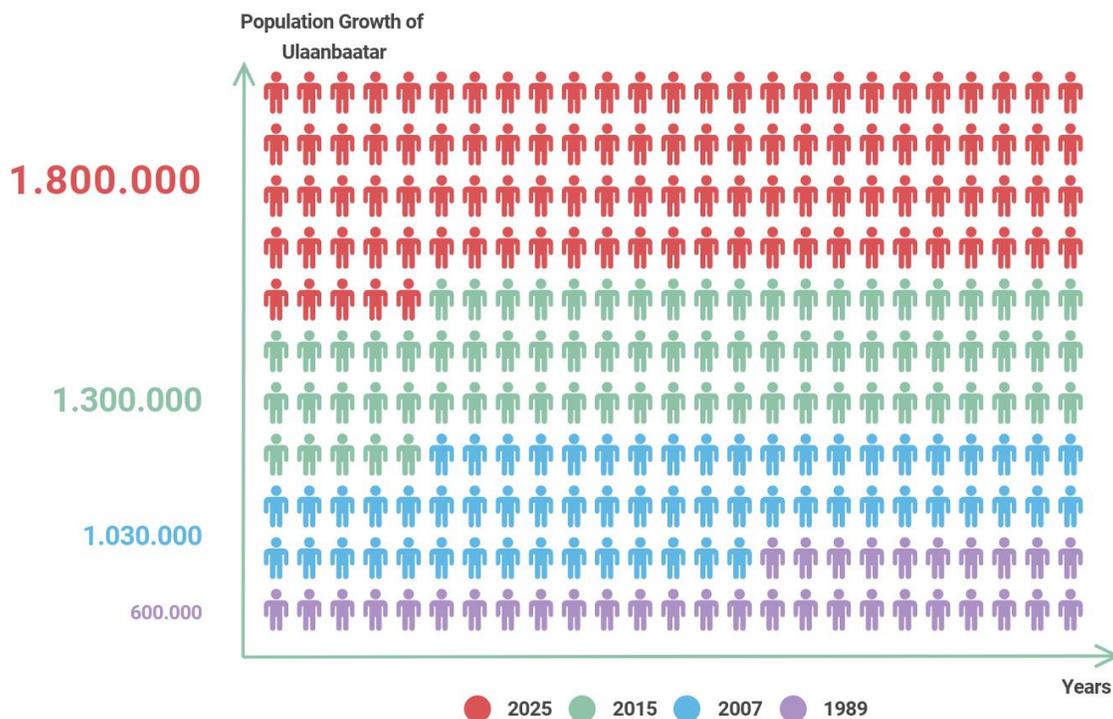


Figure 4: Expansion of ger area

Source: Revised from Kamata et al. 2010

Essential infrastructure services are inadequate or non-existent in ger areas. Almost 85 percent of ger area residents use wood or raw coal-burning stoves for heating, while apartments provided with a central heating system. Ger residents are compelled to travel to public kiosks as far as 500 meters from their homes to get potable water, which they carry back home in plastic or metal tanks. By contrast, Apartment residents can enjoy a use for the central-watering system of drinkable tap water and hot water. Terms of even essential public services in the ger areas is

insufficient and costly, mainly due to the low population density and the frigid weather. Moreover, the ger areas are subordinate to flood damage because they are located mainly in the flood-prone low-lying areas (Kamata et al., 2010).

The lack of necessary urban infrastructure in the ger areas has also appeared in environmental disgrace, including the air pollution and other natural sources. The urban environment mainly suffers from the surface pollution or groundwater caused by untreated sewage. Soil pollution is blamable to happen due to the open dumping of solid waste. Air quality is quickly worsening due to the construction of thermal power plants and the ger resident's lifestyle, which depends on raw coal or wood-fired cooking and heating stoves. Deteriorating urban air quality leads to posing severe health risks to residents, causing various respiratory tract disease (WSSF, 2006).

Despite the weak environment, the number of ger areas has been increasing hugely. What factors encourage people into ger area? There have been a few studies on the causes for migration into the cities (ger areas) in Mongolia. Janzen et al. (2002: 11) explain that two primary purposes for in-migration are to improve living standards and to get the better entrance to markets. Also, they tend that countless migrants go to ger areas at around the city to get the job. It should regard that many migrants want to improve their quality of life through living in the ger area, which ultimately suggests that there is a diversity of multi-level conditions between ger areas.

In response to these problems, some policy actions have been taken to coordinate spatial expansion and promote high-density development in the urban area (Kamata et al., 2010). Although policy regulations have become a less precise, administrative direction concerning the spatial development of ger areas have still been imperfect. The Mongolian government tried to control migration to Ulaanbaatar by requiring punitive settlement fees, which were remained unconstitutional by the country's Supreme Court.

Residential Issues of ger areas:

❖ Socio-economic situation of ger

Ulaanbaatar divides into nine districts (duuregs). Six of the duuregs form the central urban area of the capital city, enclosed by the ger areas. Each duureg separated into sub-districts (khoros), of which there are total 132 khoros in the town. Each khoroo additionally divided into micro-districts (khesegs). Ger areas locate in all of the nine districts, commonly relating to lower levels of the administrative boundary, the khoros. The breakdown of responsibilities, from the city administration office to leaders of each kheseg, is relatively outspoken (see Table 3). The municipality, led by a mayor who is chosen by elected members, sets budget and policy, regulates the districts, and manages city-level activities such as road sustaining and public facilities management. The duuregs, each headed by an elected governor, are the small administrative unit with budgets available for service improvements. The duureg administration is accountable for the management of the local assets and attempts to implement infrastructure and public utilities.

Khoros are the first level of government interacting with residents. To register as residents are expected to

go to the local khoroo office. Each khoroo represents about 1,800-3,000 households and has a local office, often associated with a community center. The socioeconomic characteristics of residents in khoroo located in the three type ger areas differ considerably concerning assets, liabilities, monthly salary, and savings.

Government	Division	Quantity	Approx.	Responsibility Population	Budget (mill.MNT)	Representation, (Frequency)
Capital (UB)	City	1	1,025,174	Budget allocation, services, maintenance	33,502	Citizen's Khural (4 years), which select the mayor (4years)
Duureg	District	9	113,908	Infrastructure, tax collection, services	754	2-4 representatives per Duureg elected to state great Khural (4 years), duureg governor (4years)
Khoroo	Sub-district	132	7,766	Registration, census, voting, community outreach	Salaries and office maintenance only	Citizen's Khural representative (4 years); Khoroo governor selected by community meeting (4 years)
Kheseg	Micro-district	ca. 8-13 per khoroo	ca. 597-970	Registration, community outreach	Part-time stipend	Kheseg leader

Table 3: Administrative tiers of Ulaanbaatar

Source: Revised from JICA, 2008

	Immobile Assets (Property)	Mobile Assets (Cash, Stocks, Cars)	Total	Total Liabilities	Average Monthly income	Monthly savings
Central Ger area	21.920	4,381	26,196	234	223	70
Middle Ger area	13.521	935	14,454	42	154	14
Fring Ger area	8.958	312	9,266	46	164	5
Apartment area	26.444	1,362	27,806	2,049	319	21

Table 4: Household assets. Liabilities, monthly income and savings

Source: NSO. 2008

Household assets in apartment areas and the three types ger area differ significantly. The total assets of residents in the central ger area amount to \$26196, middle ger area total \$14454 while fringe ger area amounts to \$9,266. Average monthly wage is \$223 in the central ger area residents, while average monthly salary in the fringe ger area residents is \$164. Whereas, the total assets of apartment area are higher than those ger areas. Average monthly savings in the urban fringe ger area residents is only \$5, which is the lowest amount (Table 4).

	Average Age of Household	Average Household Size	Head of Household	Spouse
Central Ger area	47.1	4.9	65.1	34.9
Middle Ger area	48.8	4.3	97.7	2.3
Fring Ger area	44.4	4.5	68.0	32.0
Apartment area	46.0	3.4	76.1	23.9

Table 5: Residents' average age (years) and household size (number of persons)

Source: NSO. 2008

Table 5 shows that the average size of a ger area household is just above four persons, approximately one person more than in apartment areas. In line with the current growth of ger areas, a massive proportion of residents is migrants. According to 2008 Household Socioeconomic Survey of the National Statistics Office, only 50 percent of ger area residents were born in the district in which they are living, compared to 60 percent of apartment area respondents. Over 93 percent of those ger area residents who were not born in the district came from outside Ulaanbaatar. In ger areas, marriage is a dominant reason for migration (more than 40 percent), followed by employment (19 percent), and education (14 percent).

	Ger Areas	Apartment Areas
Male	47.1%	45.8%
Female	53.0%	54.2%
Avg. Number of Household Members	4.2	3.4
Average Age	27.9	30.8

Table 6: Demographic summary of ger and apartment areas

Source: NSO. 2008

The socio-economic distinctions between the ger areas and apartment areas are as significant as the physical. NSO (2008) demonstrates that ger area households are more substantial, youthful, impoverished, education level is low and more reliant on social services than the houses of apartment areas (Table 6).

	Wage Employment	Temporary or Seasonal Employee	Self-employed (business owners, etc)	Unemployed
Central Ger Area	27 (28.0)	0 (0.0)	39 (21.1)	44 (50.9)
Middle Ger Area	14 (10.5)	6 (5.3)	22 (19.9)	68 (62.6)
Fringe Ger Area	26 (24.3)	3 (1.5)	21 (19.9)	60 (54.3)
Apartment Area	43 (39.4)	10 (9.2)	33 (30.3)	23 (21.1)

Table 7: Employment status (% frequency)

Source: NSO. 2008

Also, National Statistical Office (2008) defined that “of labor-age of ger area resident employment rate is only 51 percent during the previous 12 months, compared to 56 percent in the apartment areas and the average national rate of 63.6 percent.” The 2007 National Statistical Office yearbook did not disaggregate employment by the type of area but did generally substantiate the national employment rate, at 62.4 percent. When it comes to land ownership, land in Mongolia has gradually privatized since the country’s transformation to a free economy. There has been a list of land laws or amendments of existing laws. Land ownership in Mongolia is the foundation on the 2002 “Law of Allocation of Land to Mongolian Citizens for Ownership.” According to this law, the land tenure system in Mongolia comprises a combination of three land rights:

- “ownership” available only to Mongolian citizens.
- “possession rights” for up to 60 years, with possible extension, available to Mongolian citizens and joint ventures.
- “land use rights,” valid for up to five years with possible extension, for which foreigners are eligible.

Moreover, land ownership tied to the land fee system which the government proposed in 1997 under the "Law of Mongolia on Land Fee." The law specifies that individuals, business entities, and organizations that own, direct or use land be subject to land fees. For urban, rural areas and other settled places, the land fee ranges from 0.1 to 1 percent of the necessary land value. The land fee is managed by the central government, taking into account particular fixed parameters, including location and land use as well as socioeconomic, geological, and environmental conditions. The Ulaanbaatar is divided into five land valuation zones, depending on location and investment income, and the land fee is involved uniformly to the properties in each zone.

The Government of Mongolia (GOM) has fully privatized ownership of land for “household

consumption” or residential purposes. The “Law on Allocation of Land to Mongolian Citizens for Ownership” states that each household is authorized to the following for ownership: up to 700 square meters in Ulaanbaatar; up to 3,500 square meters in aimag; or up to 5,000 square meters in sum. The associated land tax fee is set low: about 90 percent of the land tax fee up to 700 square meters are exempt. The taxes are assessed on an annual basis and charged quarterly; tax fee collection manages at the district government level.

Administration of Land Affairs, Geodesy, and Cartography (ALAGC), under the Ministry of Construction and Urban Development currently administered by the land management. The mandatory of the ALAGC is to support and implement the government’s land policy, to manage and modernize cadastral and cartographic information and databases, and to improve the land registration system by leading out cadastral surveys and installing a unified database (Saandar, 2005). In addition to the ALAGC, administration departments in nine districts of Ulaanbaatar that process and manage registration are in management of numerous policies and practices related to ger area development in Ulaanbaatar. These administration departments are also in charge of mediating disputes over land ownership and including illegal residents.

From a legal view, the current cadastral law does not constitute procedures for property registration. There also is no legal framework for coping with disputes proceedings during cadastral surveys. Such arguments are increasingly common in residential areas. Institutional functions and liabilities at different levels of government are not delineated. Also, there is a total absence of proper administrative ability, particularly at the district levels, which are usually responsible for managing land registration.

❖ **Infrastructure Provision in Ger**

The ger area settlements are not defined as part of the formal city but considered as temporary residences. Because of the situation of these areas, there is lacking infrastructure and management of the ger areas. Few formal roads exist, and the transportation system in the ger is inadequate.

The road network conditions in the three types of ger areas is generally similar, but with little differences. Table 8 shows that the urban central ger area has a higher percentage of paved roads and better road condition than other ger areas. Most of the paths began as informal tracks to hashaas (plots) and ger area under development. As following hashaas plotted, roads were merely extended to reach them. There were few formal planning and the tracks that resulted in an unplanned manner is become dirt roads. As a consequence, they have low connectivity and integration with the formal road network. The dirt roads in each ger areas have no determined alignments and are not build to any standards. Hence the road system of ger areas lacks compatible dimensions and is consequently incompetent to maintain public facilities such as sewerage systems, sidewalks, and parking lots. Street lights are in place along some of the roads, but some lights are not working, and others are damaged. The streets in the ger areas often have unexpected sharp turns, which manage to increase the risk of traffic accidents. The narrow

roads are fitting only for smaller vehicles because if there is lacking room for larger vehicles to pass and turn sharply.

Type of Road	Central Ger Area	Middle Ger Area	Fringe Ger Area	Total
Earthen	18,461	23,241	30,611	72,313
Paved	6,805	1,004	807	8,616
Total	25,266	24,245	31,418	80,929
% Paved Roads	26.9	4.1	2.6	10.6

Table 8: Road Type by Ger Areas (unit: meters)

Source: Kamata et al. 2010

Except during the rainy season, vehicles are driving on the dirt roads have been creating a mass of dust. When it rains, the streets turn to the muddy path. Because there is lacking drainage, water flows from the surrounding slopes onto the roadway, which often degenerates the road and decreases the quality of life in the ger area community. During the winter, snow on the steep hills makes dangerous driving situations. Ger residents often complain of life to dirty clothes frequently due to the poor condition of the roads. Shallow canyons usually are in ger areas, and it is usual for these ravines to be uses as roads during dry seasons. During heavy rains or the rainy periods, the ravines are subjected to flood, rendering them difficult. Moreover, the rains also into accumulate waste on the roadways, causing sanitary problems.

Transportation Mode	Ulaanbaatar	Targeted Ger Areas
Bus	34%	58%
Walk	30%	29%
Private Vehicle	25%	13%

Table 9: Transportation modes in Ulaanbaatar

Source: Kamata et al. 2010

Public transportation services are crucial for urban life. They increase mobility and employment, school, and extra-urban activities. In the Ulaanbaatar area, passenger transportation consists of buses (34 percent), pedestrians (30 percent), automobiles (25 percent), taxis (9 percent), and other (2 percent). The most popular transportation method for commuting is the bus (39 percent), while 85 percent of students walk or uses the bus to go to school (Table 9).

❖ **Environmental Pollution in Ger**

When it comes to environmental issues related to ger areas, the main concerns concentrate on solid-waste management and sanitation. Responsibilities for solid-waste management are centralized to the district level, while the city government is in an estimate of managing landfill construction (Ministry of Nature, Environment and Tourism in Mongolia 2011; Badamdorj, 2004). Until 2007, the City Waste Management Department directly led the recovery and disposal of solid waste in Ulaanbaatar. Since 2007, a new regulation on waste management has come into influence to increase the effectiveness of control by minimizing the city government's involvement.

Under the contemporary institutional arrangement, each district administration is responsible for the control of waste from residences, business enterprise, and all other individual locations as well as public spaces (MNETM, 2011). The Waste Management Department of each district collects fees, which are usually decided by the city committee, contracts with a private sector for waste collection and transportation (landscaping service company), and provisions street cleansing services.

Because the formal waste collection system is lack, ger area residents dispose of most household waste themselves, usually dropping by the outside their dwellings, on streets, in other public spaces, and flood waterways. This illegal way passing garbage disposal creates much risk to public health and hygiene, often leading to respiratory disease. The open bulk waste disposal also connected to environmental degradation, particularly soil pollution and groundwater contamination. Contrariwise, the waste disposal system in the apartment areas is relatively useful and appropriate. Significantly, the waste of ger areas is collected by garbage trucks that visit each house and receive a fee on the site. In the urban central ger area, an independent collection system within the khoroo has established in some areas. The khoroo owns collection garbage trucks and operates few crews of drivers and staff. District staff and vehicles make the rounds of households to collect waste and also created the garbage collection invoice fees to the residents (MNETM, 2011). The district administrator, in turn, consumes a community-owners system for collection and transportation to landfill sites. For the middle ger area and fringe ger area, the waste collection is done similarly via collection garbage trucks visiting each household and transferring the collected garbage to landfill sites.

Along with waste problems, sanitation, especially in the ger areas in and around Ulaanbaatar, is an imminent and critical problem with a ripple impact on the whole city. Up to now, the brunt of this is shown by the low-income families, who do not access to clean water and a suitable sewage disposal system. Without the proper action of extreme urbanization problem in Ulaanbaatar, the population growth has caused about urban poverty problems, and which in the urban density including ger areas expansion. Also, the increase in population brought about by urbanization has rapidly deteriorated hygienic conditions, including primary affecting the health of children. The morbidity statistics show a high rate of waterborne disease related to poverty, such as hepatitis A and diarrhea, especially among young people. Despite this, increase in sanitation services has moved extremely slow over the last five years. There is much room for growth in the environmental quality of ger areas, which would improve the live quality of all in the community.

CONCLUSION

Ulaanbaatar has faced an enormous in-migration that has continuously expanded the city's territory, leading to a variety of urbanization problems. As of 2010, the extreme population growth of the city has led to an unusual expansion of the ger areas. There are definite differences between apartment and ger areas concerning socio-economic, infrastructure, and environmental issues. The cases in the three type ger areas also differ considerably. Since the focus of this is on ger areas. Table 10 integrates overall research findings on ger areas concerning the extent of priority issues.

Ger Areas Issues	Central Ger Area	Middle Ger Area	Fringe Ger Area
Socio-economic	Good	Good	Not bad
Infrastructure	Not bad	Bad	Worst
Environment	Bad	Bad	Bad

Table 10: Environmental Situation by Ger Types

Concerning socio-economic issues, ger area households are weaker and more reliant on social services than other parts of the city. Employment rates in ger areas modify according to the source of the data, but in the ger areas, unemployment rates lead to be higher than in apartment areas or fringe areas the capital. While there have been numerous initiatives to improve land management, mostly supported by external donors, the cadastral system (surveys of land boundaries) usually suffers from a lack of administrative potential and insufficient availability of databases. That is mostly affected by short cadastral surveys and mapping, and registration of landowners and users. Concerning infrastructure, traffic system, and transportation, the bulk of residents in ger areas is further disadvantaged by inferior access to trade and service, workplaces, education, and public services, due to a shortage of proper roads. Finally, regarding the environment, waste management, hygiene, and sanitation problems are among the most critical concerns in ger areas. The existing solid-waste collection system in ger areas is very incompetent and needs to develop significantly.

This study researches these details of urbanization in Mongolia and suggests that ger area issues of Ulaanbaatar must have seriously contemplated for further urban development and improvement of the residential environment. Therefore, reflecting those concerns in ger areas of Ulaanbaatar, Figure 5 presents possible implications for urbanization and residential concerns.

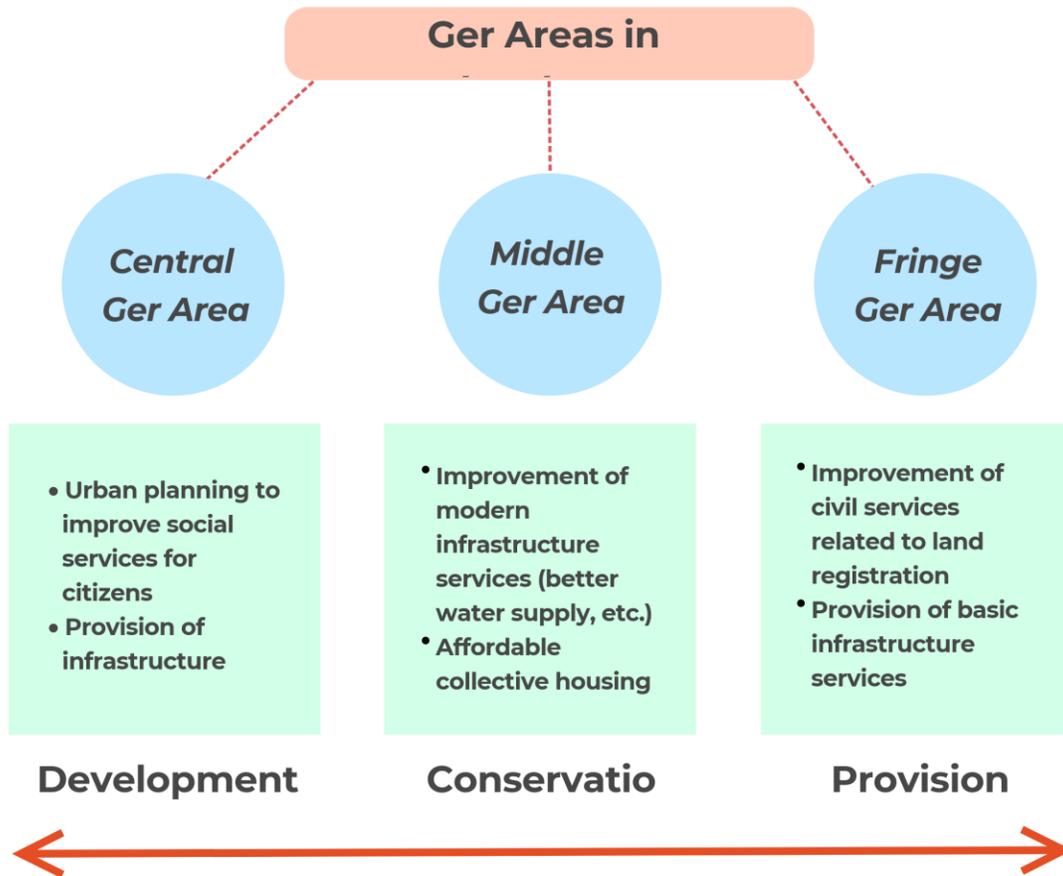


Figure 5: Expansion of ger area

Since urban central ger areas are expected to convert into apartments in the future, official agencies should seek to improve the fields with a proper plan grounded in effective urban policy. Therefore, city administrative and the government of Mongolia need to determine step by step and assume the best urban development approaches from the possible strategies to apply to ger area development.

Regarding middle region ger areas, the environment needs to be efficiently conserved, and those areas should provide with affordable modern infrastructure services. So far, majority apartment developments have been focused in the center of the city and have been targeted only at higher-income people, which do not benefit the many of ger area residents. It would make sense to create analyzing the possibility for affordable cooperation housing development, along with transportation features and utility supply lines in the planned middle region ger areas.

As for urban-fringe ger areas, the common phenomenon of migration into the city expects to continuous; essential infrastructure services should be available for newly arriving groups and should be

provided steadily through efficient local services. The government should provide and improve its services related to domestic land registration so that dispute covering land can be anticipated and significantly diminished.

Definite improvements in the secondary access roads from essential passages into the khoroos (including necessary drainage and street lighting) in all three region ger areas would give residents significant benefits, including easier access by public transportation and reduced dust and storm water flow, and crime. Therefore, it makes sense to inaugurate planning for development of access roads within the khoroos. Community-driven initiatives on land redeveloping, if relevant, would also make it simpler to prepare roads and provide access for utilities.

In synthesis, the ger areas lacking in urban infrastructure will not necessarily all demolished for redevelopment, which implies that ger area resident needs to be regarded as cultural assets embedded historically in Mongolia as well as urban settlements in need of redevelopment. The same reasoning could apply to the environmental conservation in Ulaanbaatar ger area, suggesting the need for policy system to the needs of each region.

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