

II. Changes in the Internal Structure of Ulaanbaatar, Mongolia

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Abstract: The paper outlines the changes in the internal structure of Ulaanbaatar taken place since the fall of socialism in Mongolia. Ulaanbaatar, the capital of Mongolia, encounters increasing urban development problems, similar to many cities in the developing countries. The problems have been accumulated during the socialist era, and accelerated by the reforms of entire political and economic systems, unregulated market development and the rapid population growth generated by in-migration. The internal structure and land use patterns of Ulaanbaatar, as a former socialist city, have been created and re-formed through four time revisions of the capital city's master plans.

Since the transition to a market economy the city of Ulaanbaatar has experienced much more developments, which resulted in changes of the spatial and functional structure of the city. The most salient transformations among others are as follows: 1. the increase of commercial functions in the city centre and inner city area, 2. the expansion of the urbanized areas along with the growth of informal as well as formal ger-settlements, 3. the emergence of some satellite nodes with clusters of commercial functions, and 4. residential suburbanization in the outer city by single family houses

Keywords; Urban internal structure, Urban land use, Ger Settlement, Urban Expansion and Suburbanization

I. INTRODUCTION

Currently, there are 3 big cities and over 20 smaller local cities in Mongolia. All of these cities were established in the socialist time according to the centrally planned economy, most of them built by the Russian model. Among them Ulaanbaatar is the premier one, hosting a population of 825.3 thousand or one third of the total Mongolian population in 2002, and producing about 40% of the Gross National Product of Mongolia. The primate city accounts for 53.4% of the national industrial output, 87.1% of the construction sector output, 56.3% of total trade, 80% of energy sector output, and 98.1% of transportation, communication and storage sector output (Bat, 2002).

The Ulaanbaatar has 6 central administrative districts and 127 khoroo. The area size of the capital city is 470.4 thousand ha, and its total residential area covers 22.4 thousand ha, out of which 12.3 thousands occupied by apartment buildings, 4.1 thousands ha of 'Ger-districts', 6.1 thousands ha of common lands and 33.6 thousands ha of green zones (Tselmeg.2003).

Ulaanbaatar, like many cities in the developing countries, encounters increasing urban development problems, which historically accumulated during the socialist time and accelerated by the reforms of political and economic systems, unregulated market development and the rapid increase of population generated by in-migration.

Since the transition to a market economy the city of Ulaanbaatar has experienced much more developments, which resulted in changes of the spatial and functional structure of the city. The most salient transformations among others are as follows: 1. the increase of commercial functions in the city centre and inner city area, 2. the expansion of the urbanized areas along with the growth of informal as well as formal ger-settlements, 3. the emergence of satellite nodes with clusters of commercial functions, and 4. residential suburbanization in the outer city by single family houses.

It should be noted that a new master plan has been adopted since 2003 and the preparation and completion of the plan requires a variety of surveys to be conducted by national planners and scholars. Up until now, however, no proper scientific papers on the above-mentioned topics have been produced, and there is a lack necessary data as well.

Studies of the functional and spatial differentiation of urban areas constitute a relatively new sphere of geographic interest in Mongolia. Geographers have given little attention to the spatial-functional structure of cities and urban land use. Moreover, there are surprisingly few studies on urban internal structure of the Ulaanbaatar in the Western literature, while there is one short article defining 7 classes of the built-up area of capital city (Hofstee, Radnaabazar & Kuffer, 2004).

Therefore, the main purposes of this paper are: first, to describe an urban internal structure of Ulaanbaatar, as a former socialist city; and second, to interpret some observable transformations of the internal structure of the capital city occurred during the transition period.

II. THE FORMATION OF URBAN STRUCTURE OF THE FORMER SOCIALIST ULAANBAATAR

The capital of Mongolia established 360 years ago and has been seated at the present location since 1778. It has been only since 1954, however, that Ulaanbaatar has developed in accordance with a scientifically based city plan. During the past 'socialist' regime, the capital city's master plan was revised four times according to the city's development needs and phases. The plan guided and resulted in the internal structure of the contemporary socialist city.

Tselmeg (2003) suggested five phases of urban planning development in Ulaanbaatar between 1950s and 1990s:

-In 1954-1965, the first general plan of Ulaanbaatar was adopted, and the location and construction layouts were initiated; but land mapping and comprehensive surveys were not completed.

-In 1965-1975, the general plan was formulated with the economic efficiency estimations based on the land maps and comprehensive engineering and geological surveys

-In 1975-1985, urbanization works were carried out based on the national policy, methodological directions and norm-documents; the works were well adjusted to the nation's topographic and climatic conditions and to the traditional nomadic and sedentary ways of life of the people.

-In 1985-1990, a number of experts on urban projects were trained, thus enabling the national manpower to carry out independently the projects well fitting to the Mongolian local conditions.

-From 1990s a radical new trend emerged in the Ulaanbaatar urbanization plan in conjunction with the socio-political transformations and transition to the new market economy, and is now in force legally serving as the basic norm documents.

It is possible, little be changing, to use these phases describing the processes how the internal structure of Ulaanbaatar had been evolved.

1) The first phase

The first master plan of Mongolian capital was formulated at the “Giprogor,” an urban planning institute of Moscow and then adopted since 1954. The plan covered a 20-year period from 1954 to 1974. The plan expected that Ulaanbaatar population would reach 120 thousand by 1974, but the population already counted 180 thousand in 1960.

Most of the current central area was built during this phase. And the area was surrounded by “Baga toiruu”, the inner ring, and so called “I and II 40 thousands” residential districts equipped with the basic infrastructure such as streets, water, sewer, electricity and heating. At this time, all of the central functions including central government and ministries, banks, universities, diplomatic and international organizations, and so on were concentrated within this central area, thus named “Baga toirog” referring to the relatively compact urban area. Since then the inner ring, Baga toirog, begun to perform the role of the central business district (CBD) of Ulaanbaatar

Industry began to develop substantially after World War II, when Soviet aids increased and Soviet-style central planning was introduced, as well as in the 1950s when Chinese assistance started. In this time period the industrialization occurred most rapidly in Ulaanbaatar. Major projects were completed with the Soviet assistance including the modernization of the Ulaanbaatar industrial complex, which is located in separate from the city centre. The newly built central area and industrial zone were surrounded by traditional ger-settlements.

2) The second phase

The second-phase master plan was established by the Soviet urban planning institute, Giprogor too. The time horizon of the plan was 20-25 years since 1964, and it expected the city’s population to be 250 thousands by 1984. The population, however, already reached to 349 thousands in 1975, exceeding 100 thousand people more than its goal and 10 years earlier than the planned end year of 1984. The master plan also designed about 80 thousands ha of built-up area, 20 km long and 7 km wide along the Tuul River valley and with some satellite towns.

During this phase, most of residential blocks or districts were built in the traditional inner city area, such as XII, XY, XIX “horoolol” (residential neighborhoods) and “120 thousands horoolol” in complexes which include schools, kindergartens, hospitals and shopping and public service centres (Bumerdene and Chinbat, 2002). The former “ger-horoolol” places were converted to urban edges.

Three industrial and warehousing zones were built in the city edges, such as the central zone located in the traditional industrial area, the west zone located in the area of “Tolgoit” with some

residential apartments for industrial workers, and the east zone located in the “Amgalan”. These zones were separated from residential areas by the green belt.

3) The third and fourth phases

The master plan was renewed third by Giprogor and ”PI 2” institutes of Moscow. The time span of the plan was 25 years since 1976 to 1990. The city’s population was expected to be 440 thousands by 1990. But the population grew faster and reached to 493 thousands in 1986, so that the plan had to be renewed again.

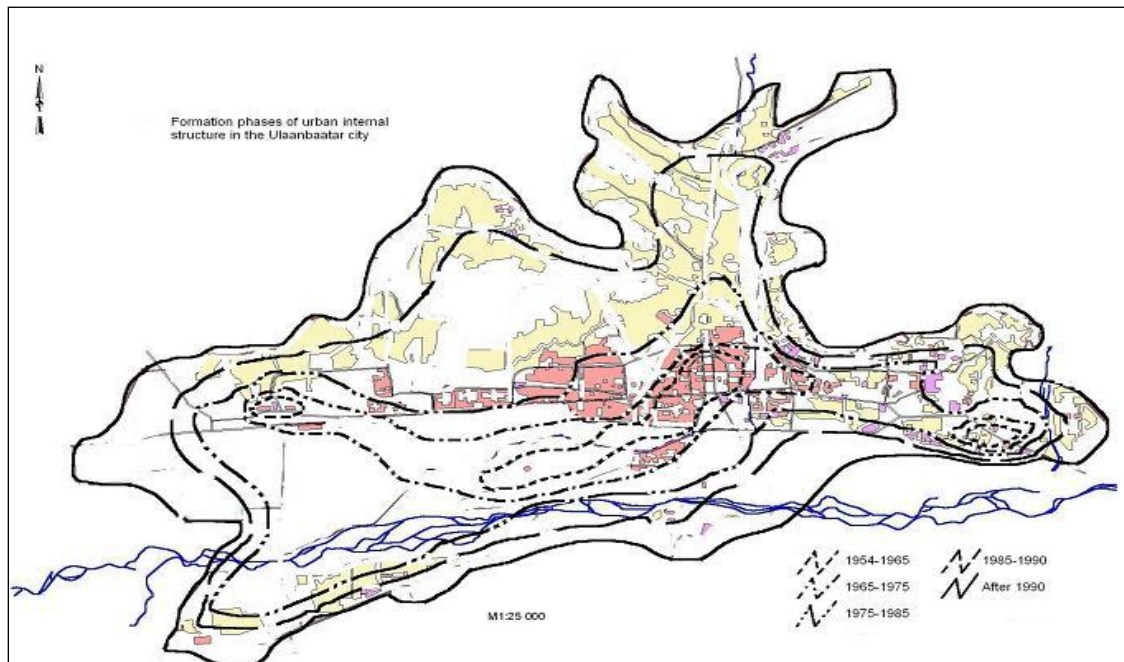


Figure1. The phases of urban development in Ulaanbaatar, (Source: author)

In the 1987 the city government prepared the fourth plan with Soviet technical assistance, setting the end year to be 2010. The major features of the plan were as follows: 1. In order to achieve a unified settlement system, Ulaanbaatar’s growth was coordinated with the urban development of nearby zones, and several small satellite towns such as “Nalaikh,” ”Bio-Songino,” “Shuvuu,” “Gachuurt” (the names of local settlements) were established. 2. Limits were set to check the ever-increasing population of the capital city. 3. Some industrial, warehousing, and military activities were relocated from the central city to satellites towns. 4. Unprofitable activities concentrated in the inner area of the city (for example 17 objects) were removed to the industrial zone and other areas.

Many residential blocks were built during 1976-1989, mostly consisting of prefabricated high-rise apartment buildings in the current residential zones and some in the inner city, such as I, III, IY, Y, YI, X, XI, XIII horoolol and “220 thousands” horoolol. These residential complexes were accompanied with all necessary infrastructure and local public facilities.

The governor of the capital city implemented the fourth plan with central planning budget until 1990. After 1990 the city government decided to implement short term planning scheme because of the large-scale in-migration and of the market conditions. But there were not enough financial resources to prepare for a new plan during the 1990-2000, and as a result the city government has given approvals and permissions building by building without having general planning criteria.

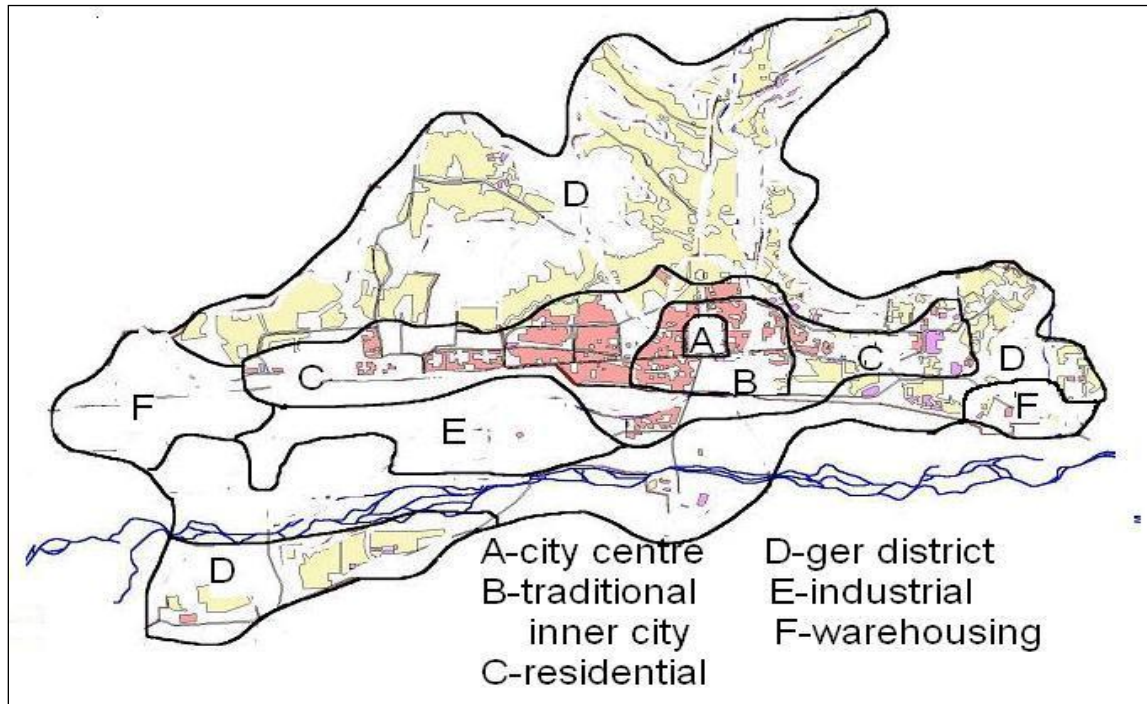


Figure3. The spatial structure and dominant land use of Ulaanbaatar (Source: author)

In this way the city has grown through concentric additions of the following five zones or areas (Figure3.): 1. the central area in the city core, surrounded by the inner ring where the most of central functions are concentrated; 2. the traditional inner city area of mixed land use, surrounded by the outer ring; 3. the residential zones consisting of apartment blocks, consisted mostly of prefabricated high rise buildings; 4. 'Ger'-settlement zones which are quarters consisting of compounds surrounded by wooden fences mainly containing Mongolian yurts, the traditional felt for nomadic dwelling; and 5. the industrial and warehousing zones, separated from other functional zones.

III. CHANGES IN SPATIAL AND FUNCTIONAL STRUCTURE OF THE CITY

The physical expansion of the city and increasing functional complexity of urban life, in other words the changes of urban internal structure of Ulaanbaatar, occurred during the transition period. Such changes were conditioned by basically transforming politico-economic and social environments in the entire country. The main transformations of the political, economical and social environments were as follows:

1. Since the transition period the government implemented policies step by step to privatize state and collective assets and liberalize prices. As results of that market principles were

established irrevocably, and the private sector became dominant in Mongolian economy. To date, the private economic entities produce 56 % of the total industrial products; carry out 42 % of construction and erection works; and occupies 76 % of total retail turnover (Tseltmeg, 2003). In the case of Ulaanbaatar, there were 13,559 registered businesses and 13,853 licensed businesses operating in 2002 (Herro, et al, 2003).

2. Economic restructuring involves another set of processes, which have determined the contemporary urban changes. Most of the state industrial plants have been closed and privatized due to declining employments in the industry as well as the structural changes of traditional industries. Instead, commercial and service industries have grown rapidly. New private companies operate mostly in trade and advanced services, such as finance, audit, consultancy, real estate, public relations, media, tourism, and compete for profitable locations within the city.

3. The central government and the municipality of the capital city implemented policies to limit a mechanical growth of population (until the early 1980s, rural-to-urban migration was under the strict control of the Government). The population growth of the capital city, however, was continuing during the socialist time, and this growth was accelerated even further since the transition period, especially after the new Constitution. The new Constitution was been in force 1992 and people had the rights of free circulation and settlement. The new situation caused a sudden and great migration flow to Ulaanbaatar where more jobs available for new comers. Ulaanbaatar's official population is in 2002 approximately 812 thousands and the city population has increased 48% since 1989.

4. Privatization processes have created a new class of owners some of whom became wealthy, and since the beginning of the economic reforms there has been a rapid increase of wealth differentiation among people. Furthermore, relating to privatization and liberalization of prices, the price differentiation has occurred also in the real estate sector and the housing prices became different depending upon the attractiveness and locations of the residences. In the other words, differentiated household incomes and the prices and rent of housing have contributed towards an increase of socio-spatial differentiation.

1) Changes in the city centre and inner city area

As mentioned above, the area "Baga toirog" (see Figure 1) performs the role of CBD, with concentration of commercial and government functions still now. At present, in addition to the Central Government, Parliament and headquarters of major political parties, Baga toirog contains approximately two third of ministries, one third of 40 major government organizations, half of diplomatic and international organizations, half of bank headquarters, one fifth of 10 state universities, one third of research institutes and theatres, museums, and one third of headquarters of trade and service companies (Table 1). Within Baga toirog, the Central Business Height Index (CBHI) is approximately 0.6 and the Central Business Intensity Index (CBII) 60%. This area has only 0.29 % of the total built-up area of Ulaanbaatar and accomodates 2.5% of the city population.

Since the beginning of the transition period, first of all, the Baga toirog area has attracted the attention of developers who were seeking valuable locations for establishing of their businesses and commercial services in this area, and so commercialization became the most important process and conditioned the changes in spatial and functional structure of the traditional central business district. The CBD was characterized as the functional core of the city towards which an accessible location for the economic viability or functional efficiency tended

to gravitate (Herbert, Thomas, 1990). Within the Baga toirog area the commercialization process has been driven especially by the development of banks, company headquarters, and tourist oriented services. The CBD consequently enjoys a concentration of nearly 50 % of newly established private bank headquarters, 20 % of company headquarters, 30 % of new and refurbished 10 top hotels, and 16 % of new restaurants.

Table1. Urban functional distribution within Ulaanbaatar

	City centre		Inner city		Other areas	
		%		%		%
1. Central government, Ministries	7	63.6	3	27.3	1	9.1
2. Governmental institutions	13	32.5	13	32.5	14	35.0
3. Diplomatic missions, international organization	16	44.4	20	55.6	-	-
4. Headquarters of Bank	8	50.0	6	37.5	2	12.5
5. Headquarters of trade and service companies	12	18.75	26	40.625	26	40.625
6. Universities and colleges						
-State	2	20.0	5	50.0	3	30.0
-Private	1	2.2	14	31.1	30	66.7
7. Research institutes	4	28.6	5	35.7	5	35.7
8. Industries; -Light	1	2.2	6	13.0	39	84.8
-Food	1	1.7	12	20.7	45	77.6
-Printing	3	17.6	12	70.6	2	11.8
9. Shopping; -Food stores	5	5.0	27	27.0	68	68.0
-Stores	4	5.7	30	42.9	36	51.4
-Depart. stores	-	-	4	40.0	6	60.0
10. Hotels	4	5.7	29	41.4	37	52.9
11. Restaurants	13	16.25	45	56.25	22	27.5
12. Hospitals; -State	1	4.0	12	48.0	12	48.0
-Private	1	5.0	9	45.0	10	50.0
13. Cultural -Theatres	4	26.7	8	53.3	3	20.0
-Museums	4	33.3	5	41.7	3	25.0

Source; field research in 2002-2003

At the beginning of commercialization process, developers have used usually the downstairs of apartment buildings, resulted in that the downstairs of virtually all residential buildings have been converted into multifarious commercial services, such as retail shops, cafés, small restaurants, hairdressers, photographers, banks, small company offices, etc. Then most of gentrified companies have required land for their offices and businesses. These land uses of largely low rise objects, consequently, filled not only almost all of the vacant lands in the central area but also many courtyards within the blocks.

It appears to be worthwhile to mention that the country did not have enough financial resources to prepare for a new plan during the 1990s, so that the city government has given approvals and permissions on a building by building basis without having general planning criteria. Such practices have caused severe competitions among new developers for valuable land

and also exacerbated conflicts between the former and new land users. It is enough to mention only one example that two night clubs and three company offices were allowed to build in the courtyards of the student's dormitories or the campus of Mongolian National University.

The commercialization process has appeared not only in Baga toirog, but also across the entire municipality, especially in the traditional inner city. During the transition period, the inner city accounts for 37.5 % of new private bank headquarters, 41 % of company headquarters, 31 % of new private universities and colleges, 56 % of restaurants, 45 % of private hospitals, 70.6 of printings (see Table 1).

The central functions are largely located within or nearby the CBD. Central functions such as the central governmental and international organizations, headquarters of banks and companies, top universities, colleges and research institutes are spatially contiguous. These functions have not only concentrated within CBD, but also expanded gradually into the traditional inner city area, and this is one observable change in the internal structure of the capital.

2) Urban expansion with the growth of “Ger-settlements”

Ulaanbaatar is different from the cities in other countries in that it has “Ger-settlements”. The Ger-settlements are suburban estates at the edges of city, including quarters of compounds surrounded by wooden fences mostly containing Gers (Mongolian yurts), the traditional felt-made nomadic dwelling. The Ger-settlements have been sprawling in that the settlements with over 440,000 residents account for 70 % of the city's total residential area, and 58 % of the city's residents (Table 2).

Table2. The ger-settlements population by districts in Ulaanbaatar, 2002

District	Entire population	People in Ger-settlements	Proportion of Ger-area population
Khan-Uul	76,934	52,764	31%
Bayangol	147,550	35,707	76%
Songino	169,002	109,251	35%
Chingeltei	116,164	88,433	24%
Sukhbaatar	96,076	57,164	41%
Bayanzurkh	160,571	100,447	37%
Total	766,297	443,766	58%

Source; Statistical offices of the Districts. 2002

Ulaanbaatar's official population is approximately 812 thousands in 2002, and an additional 150000 unregistered persons are estimated to living in the city. The city population of Ulaanbaatar has increased 48% since 1989, while the birth and death rates

dropped from 28.1 per mill (1990) to 15.4 per mill (2001), and from 8.6 per mill (1990) to 6.3 per mill (2001) respectively. Within the urban built-up area of the city the average population density was 141 per/ha in 2002, and which has distinguished by the areas as

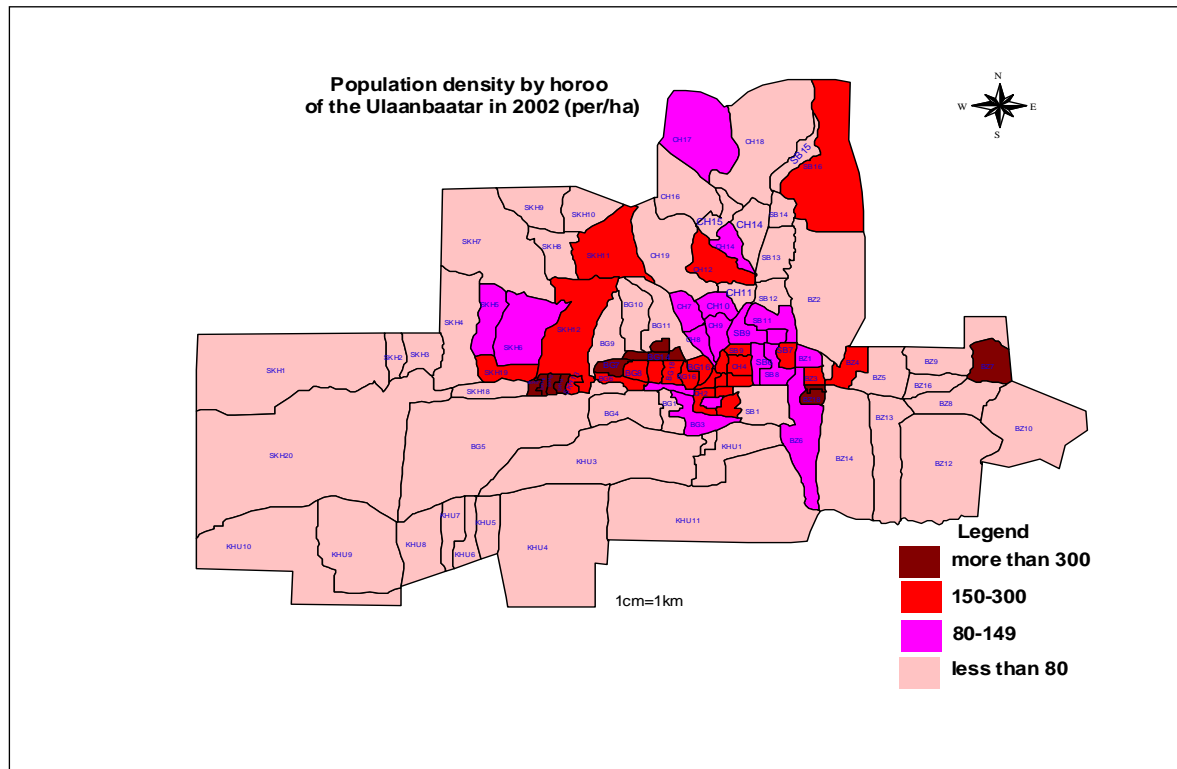


Figure3. The population density of Ulaanbaatar city (Source: author)

followings (Figure3); 1. Such residential areas as I, III, IY, XIII khoroolol mostly consisting of high rise apartments has more than 300 per/ha, 2. The residential areas mixed from middle and low rise apartments have 160-300 per/ha, 3. Residential areas mixed from apartment and Ger areas, have 80-149 per/ha, 4. The khoros mostly consisting of Ger settlements have less than 80 per/ha. The population density decreases from centre to outer area of city, although, the statistics of population growth by districts and khoros between the 1995 and 2002 are showing that population in the city centre decreased, while the population increased in the outer city, which consisting Ger settlements.

About 70 % of the resent rapid growth of population has been caused by in-migration. The contributing factors for such heavy in-migration are the lack of urban management, unemployment in the countryside, big differences in the living standards between the city and the countryside, and the concentration of universities and colleges in Ulaanbaatar (Bat, 2000). Given the fact that the ger-housing offers the cheapest way of living for new comers and poor families, the overpopulation causes the increase of unplanned as well as planned ger-settlements in the city and conditioned urban expansion by this kin settlements.

A study conducted by Hofstee, et al. (2004) shows that the land classified as urban increased by 696 ha (an increase of 11 %) between 1986 and 1989, and by 935 ha between from 1989 and 2000. In total, the urban lands increased by 1,631 ha from 1986 to 2000, and the majority of this increase (that is 1399 ha) has happened in the unplanned Ger-areas. This growth of urban lands

occurred mostly in north and north-west of the city, which are predominantly mountainous areas of steep slopes. There were 84,637 households living in 67,929 fenced yards within the Ulaanbaatar as of 2002. 13.3% (9,007 yards) of these yards had some conflicts, including:

- having permits but without the certificates of land use or possession -50.60 %
- the yards where households live without any authorization - 7.09 %
- the yards located on communication lines or ways -0.35 %
- the yards located on drinking water pipes -0.57 %
- the yards under high voltage lines -2.19 %
- the yards in the flood-stream ways -3.06 % (Tseltmeg, 2003).

A study (Janzen, et al., 2002).was conducted in the second “khoroo” (sub-district) of unplanned ger –settlement in ”Dari-eh” living area revealed a number of reasons why people were moving into the city and being of non-registrants (Table 3 and 4). There has been not much research done on this topic.

Table 3 .Reasons for moving into Ulaanbaatar

N	Reasons for in-migration	Number of responses	Percentage
1	To improve living standard	35	92.1
2	For employment	30	78.9
3	A better education for children	28	73.7
4	To follow children who are studying in the city	15	39.5
5	For better market access	38	100.0
6	Health facilities	5	13.1

Source: Janzen, et al., 2002.

Table 4 .Reasons for non-registration

N	Reasons for non-registration	Number of responses	Percentage
1	Registered	25	65.8
2	Unregistered because of:	13	34.2
	Missing movement warrant (from home municipalities)	7	53.8
	To high fee for registration	2	15.4
	Lot of work (several departments)	1	7.7
	Lack of information concerning the places for registration	1	7.7
	Carelessness	2	15.4
	Total	38	100

Source: Janzen, et al., 2002.

Table 5 illustrates the population growth of Ger-areas between 2000 and 2002, distinguished by districts and living areas of Ger-settlements.

Table 5 .Population Growth Rate by District and Living Area of Ulaanbaatar

	Area	Population		Growth rate (%)		Area	Population		Growth rate (%)
		2000	2002				2000	2002	
B A Y A N Z U R K H	Apartment	61243	60124	-1.8	C H I N G E L T E I	Apartment	26847	27731	3.3
	Ger area;	88404	100447	13.6		Ger area;	81912	88433	8.0
	Dari-eh	12190	16451	35.0		Zuragt	10577	11692	10.5
	Dist.depar	21779	24724	13.5		Denjiin	26693	28125	5.4
	Amgalan	25422	27826	9.5		Khailaast	28327	30425	7.4
	Sharkhad	22293	24454	9.7		Chingeltei	16315	18191	11.5
	Honkhor	2600	2869	10.3					
	Gachuurt	4120	4123	0.1					
	Total	149647	160571	7.3		Total	108759	116164	6.8
	%in ger area	59.1	62.6			%in ger area	75.3	76.1	
B A Y A N G O L	Apartment	108366	111843	3.2	S U K H B A A T A R	Apartment	41028	38912	-5.2
	Ger area;	29141	35707	22.5		Ger area;	54463	57164	5.0
	Zuragt	24591	27431	11.5		Centr. part	39659	40205	1.4
	Gandan	4550	5600	23.1		Outer part	14804	16959	14.6
	Sonsgolon	0	2676	100.0					
	Total	137507	147550	7.3		Total	95491	96076	0.6
	%in ger area	21.2	24.2			%in ger area	57.0	59.0	
K H A N U L	Apartment	27038	24170	-10.6	S O N G I N O H A I	Apartment	58177	59751	2.7
	Ger area;	45518	52764	15.9		Ger area;	100381	109251	8.8
	Yarmag/nis	39019	44829	14.9		Tolgoit	35215	38769	10.1
	Bio	3909	4170	6.7		Bayanhosh	42167	45769	8.5
	Shuvuu	2590	2760	6.6		Tov	19944	21180	6.2
	Olziit	0	1005	100.0		Jargalant	3055	3533	15.6
	Total	72556	76934	6.0		Total	158558	169002	6.6
	%in ger area	62.7	68.6			%in ger area	63.3	64.6	

Source: Herro, et al., 2004.

The areas experiencing the most rapid growth include Dari-ekh (35.0%), Gandan (23.1%), Bayanzurkh district department's Ger-area (13.5 %), Zuragt (11.5), etc. These areas are located in the inner city areas, and commonly related with the followings: 1. the land prices of the Ger-settlement quarters are differ from each other depending on their attractiveness and location, 2. the land privatization process began since 2003 and the land owners have been competing for sufficient locations. Actually, the living conditions of Ger quarters become increasingly unpleasant. They have virtually no infrastructure except low voltage electric lines and water distribution points. They have extremely polluted environments (soil, water and air), and their residents are predominantly poor and unemployed. So at present, the main intentions of the city's

government is to improve the poor living conditions in the ger-areas by providing infrastructure and making conditions in order to transform gradually the areas to single family settlements.

3) The emergence of satellite nodes

With the physical expansion of urban areas well beyond the original city centre a point is soon reached when significant numbers of people are located too far away from the CBD to be supplied conveniently with the most frequently required goods and services. Actually, satellite centers serve for the establishments seeking lower-priced sites, escaping CBD congestion, and locations more convenient to suburban retail markets (Herbert, Tomas, 1990).

The locations of satellite centers are mostly dependent upon the general form of the city. As shown in Figure 1, Ulaanbaatar's built-up area is developed along the Tuul River valley, forming an east-west linear band approximately 24 km long. In the south of city, the river valley between Tuul and the railway line is protected by law. The area is designated as the clean water zone, and thus no land use activities are permitted there. The north side of the city is surrounded by the mountains. Given this urban form, the most important suburbanization has been directed to the west or east outskirts. The residential neighborhoods consisting of relatively new apartment blocks of employed residents were largely concentrated in both the west and east suburban residential zones.

Furthermore, one of the noticeable changes in the distribution of commercial functions is that the development of large businesses has begun directed to outer suburban residential zones since the latter half of the transition period. Especially, some satellite commercial centers have been established near the main transport lines and suburban residential zones, such as "III, IY horoolol" and "TBD anduud" along the avenues of "Ard-Ayush" and "Peace", etc. In the case of "III, IY horoolol", nearly 30 stores have been established, including 3 department stores, 15 beauty and hair shops and photo saloons, and 15 bank branches instead of former local retail and service centre. The entire street has transformed into a retail service centre. On the contrary, the node of "TBD anduud" was clustered with mixed land uses such as 9 hotels, 8 restaurants, 8 private universities and colleges, and 4 bigger department stores and supermarkets.

The military complex, located within the eastern suburban area, was decreased and converted into a residential district after the fall of socialism. It triggered the changes in land use pattern and in distribution of residential population in this area. In the case of eastern suburban area, the "Ofitseruudiin ordon" area is nodal point, accommodating 6 private colleges, 5 research institutes, 6 state and private hospitals, etc. Some highway-oriented small service points have emerged within this suburban area, but the development of major nodes is yet to be seen.

4) Suburbanization in the outer city with single family housings

The single family housing settlements, contrary to the "Ger settlements," are new elements in the structure and land use of Ulaanbaatar. These single family housings have been emerged since the transition period. At the beginning of 1990 some wealthy people started to living in the western-style single family houses which was dispersed throughout the built-up area, and as time goes by more and more well-off people have been interested to own this kind of new housing. This new demand for high-quality housing also created new property markets and illegal land markets.

It is clear that the development of single family housing has been caused and conditioned by a number of socio-economic factors, preconditions and changes in life style. The most important among these factors were as follows:

1. During this time the government wanted to promote both the single family housing and private sector in the erection work, because the government did not have the resources to construct major accommodation or to transform ger-settlements into formal housings.
2. In comparison to 1989, there has been a three-time increase of private cars and the numbers reach more than 60 thousands in the city at the present. The rapid increase of private cars and traffics caused in one hand traffic congestions, air pollution and street noise, deteriorating the living conditions in the inner city, and in the other hand increased the commuting distances of households.
3. Since the political reform the globalization has influenced profoundly the social and economic sphere. The Western, especially American, life style and habits have consequently penetrated into the daily life of well-off people, and changed noticeably their consumption preferences and life conditions.

Table 6. The commuting distances of singly family housing clusters

Living area	Damba	Belkh	Uliastai	Bayan-hoshuu	Bayan-zurkh	Gunt	Gachuurt
Commuting Distance(km)	10	12	13	14	15	30	30

At present time there are already singly family housing quarters not only in the suburban edges, but also in the inner city area (Figure 2). At the first half of 1990s, most of the singly family housings in the inner city area have had their permissions of land to built, while the city government was giving approvals and permissions building by building without having a general planning scheme.

The “Zuslan” area was consisted of summer or second houses used by the city residents in the socialist time. The lands of Zulsan are now shared among new users and many small clusters of settlements have been established there. Moreover some people established their single family houses far away (in commuting distance over 30 km) from the city centre.

IV. Conclusions

The urban internal structure and land use patterns of the Ulaanbaatar, formerly a socialist city, have been formed and changed through the capital city’s master plans revised four times according to its development needs, scales and phases. The city grew through the concentric and sector additions in five zones or areas, such as 1. the central area; 2. the traditional inner city area; 3. the residential zones; 4. the ger-settlement zones; and 5. the industrial and warehousing zones.

Since beginning of transition period, first of all, the area “Baga toirog” has attracted the attention of developers who were seeking valuable locations for their businesses and commercial services in this area. So commercialization became the most important process, and has conditioned the changes in spatial and functional structure of the traditional central business district.

The commercialization process has appeared not only in Baga toirog, but also across the city, especially in the traditional inner city zone. Since most of the central functions are closely linked to CBD both spatially and functionally, the CBD area has expanded to the traditional inner city area. This is one observable change in urban internal structure.

Ger-housing is suitable for low-cost living of new comers and poor families, the large scale in-migration has caused the increase of unplanned as well as planned ger-settlements in the city, and led to the urban expansion by this kind of settlements. The growth rates of ger-area’s population are different from each other by districts and living areas. The areas experiencing the most rapid growth are largely in the inner city areas.

One of the noticeable alterations in the distribution of commercial functions is the satellite commercial centers established in the suburban residential areas.

The single family housing settlements created since the transition period are new elements in the internal structure and land use of Ulaanbaatar.

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