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An Analysis of Housing and Community Environment and Questionnaire Survey in Ulaanbaatar, Mongolia

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ABSTRACT

This study is intended to analyze housing, communities, and related public policies in Ulaanbaatar, Mongolia along with a citizen questionnaire survey. New policy directions on housing and communities were to be established based on the results of the study. According to the survey, Mongolian citizens wanted the government to be more active in resolving air pollution and traffic congestion. Also, citizens wanted the government to invest more into low-cost housing and give more attention to building material industries. Citizens were upgrading their housing quality with growing satisfaction in their housing. However, in the neighborhoods where satisfaction levels tended to decrease, the reasons were because of transportation problems, lack of infrastructure, and unsafe features of neighborhood. Another large problem in Ulaanbaatar is that the ger areas are spreading out too much. To upgrade the squatter areas, the Mongolian government frequently implements urban redevelopment projects, characterized by the demolition and construction of high-rise buildings. This study recommends a site-upgrading strategy implemented through self-help efforts, which impose a smaller burden on the poor in most of the cases, except some downtown development areas. It also recommends that the city adopt the "compact city" concept, which should prevent too much urban sprawl.

Keywords: Developing Countries, Ulaanbaatar, Urban Environmental Problems, Questionnaire Survey, Direction of Housing Policies

I. Introduction

Most of the cities in developing countries are suffering from poverty, housing shortages, and lack of infrastructure, and one of the reasons for this could be rapid urbanization while the economy and industries do not develop as rapidly. People immigrate to cities because of inferior socio-economic living conditions in rural areas, while city areas provide better economic and socio-cultural opportunities (Drakakis-Smith, 2005, Jenkins et al., 2007).

Obviously, Developing countries have tried various strategies to alleviate urban environmental problems through establishing industries, providing urban infrastructure, and reviving housing industries. However, in most of these cases, their situations have not yet improved (Tipple and Speak, 2009), which speaks of the seriousness of the problems that they face. In addition, they have limited financial resources and/or inappropriate policy directions. The same is true for Ulaanbaatar, where this researcher has visited and surveyed many times over the last six or seven years.

Mongolia is a large country with abundant natural resources. But it is categorized as a low income developing country with $4,000 as their per capita income. While the population of Mongolia in total is around 2.8 million, the population of the capital city, Ulaanbaatar has 1.3 million and is growing rapidly. Thus, urban sprawl is continuing while housing and infrastructures are not yet adequately developed. As a result, people are suffering from poor living conditions, including low-income, air and water pollution, low quality housing and communities, and other things. Before the year 2000, as mentioned by the Asian Development Bank (ADB, 2008), the unban sector was not accorded sufficient priority. Since the year 2000, the Mongolian government developed urban policies to reduce various urban problems, but the results were not very impressive.

Until 1990, the Mongolian Government had maintained the socialist system, modeled on the system of the Soviet Union. After the Soviet Union collapsed, Mongolia adopted the capitalist system. After Russia stopped all its economic and military support, Mongolia has experienced social and economic hardships; businesses and industries went bankrupt; the unemployment rate was growing rapidly; household income was greatly reduced in 1993. Starting from year 2000, the discovery and exploitation of vast mineral resources began transforming the economy, which diminished the importance of livestock and increased the growth of the informal settlements in the cities (Caldieron, 2013).

Due to unequal distribution of wealth, there are high income groups that enjoying luxurious living with expensive houses. However, most of the people are suffering from poverty and the housing shortage.

According to the Global Monitoring Report, which is the 2011 interim report of Millennium Development Goals (MDGs) (World Bank, 2011), slum dwellers in developing countries have increased from 657 million in 1990 to 767 million in 2000, and are expected to be

approximately 828 million in 2011. However, as Drakakis-Smith (2005) argued, many governments in developing countries have persistently refused to see the provision of adequate shelter as a priority issue in the development process. In particular, low-cost housing is considered to be resource-absorbing rather than productive, and it loses out to investment in industry or industrial infrastructure.

II. Purpose of Study

The purpose of this study is to analyze housing and community environments, and related public policies in Ulaanbaatar, Mongolia. Also, it is intended to recommend appropriate public policies to upgrade housing and community environments. For the study, urban environments were surveyed and analyzed, related data, government documents, and research papers were analyzed, and a citizen questionnaire survey was conducted in downtown, Ulaanbaatar. The questionnaire survey was performed during November 28 to December 1, 2012. People were asked to compare qualities of current and previous housing satisfaction on current and previous housing and communities and upgrading strategies of housing and communities. Based on the results, policy guidelines and implementation strategies were to be established to upgrade living qualities of the people in Ulaanbaatar.

III. Housing and Community in Ulaanbaatar

In Ulaanbaatar, 60% of families live in ger area. Of course, it does not mean that the other 40% of families in Ulaanbaatar live in decent housing. Housing units in the formal sector are mostly dilapidated except for some newly built houses.

Ger areas are located everywhere in Ulaanbaatar, but we can divide them into two areas, downtown ger areas and suburban ger areas. Downtown ger areas were built 10-20 years ago, while suburban ger areas were built more recently.

In downtown ger areas, each parcel is divided by a wooden fence. Inside of the fence, there are usually located several small buildings. Some are built like the traditional ger, while the others are modern style housing built of wood and bricks. Also, there is a restroom constructed from wood. Road systems and electricity are provided, but most of the roads in the neighborhoods are not paved and they do not have waste and storm drainage systems. As a result, dusty streets during dry seasons and muddy streets during rainy seasons, as well as garbage in the streets are common problems.

The houses do not have a potable water system, and water is mostly provided by the city. There is a ‘water house’ in the neighborhood, to which the government transports water by trucks and fills the large containers regularly. People purchase water at the water house. It is said that one family purchases two or three small plastic containers (5-10 liters) every 2-3 days.

Suburban ger areas are growing continuously.[1)] The settlements are frequently located far from the road, and community facilities rarely exist. Some ger areas are more upgraded than others, but the overall quality of the suburban ger area is inferior to the downtown ger areas. Each parcel is much larger than that of the downtown ger area, and people have installed wood fences or have drawn property lines with black coal powders.

People in a ger area mostly build their houses for themselves. A major problem would be the price of building materials. Most of the building materials, such as steel bars, window frames, cement, and marble plates, are imported from China and Russia, and are very expensive. For example, at the market, a 45kg cement bag was 5,500 Tg (Tugrugs) in 2008, but increased to 9,000 Tg in 2012. While the price of the same weight cement bag in Korea was 4,500 – 5,000 Won (5,000-5,500 Tg) in 2012.

The residents of a suburban ger area usually have jobs in downtown Ulaanbaatar, and they no longer engage in cattle breeding and/or farming. They usually commute by driving their own cars because public transportation is not well developed in Ulaanbaatar. Only in the core downtown area can some electric cars and buses be found so people must drive their cars for commuting and for businesses, and maintaining their cars is a very heavy burden for low income families. Most cars owned by low income persons are imported from other countries like Korea and Japan, and they emit large quantities or hazardous exhaust fumes.

In Ulaanbaatar, air pollution is a serious problem, especially so during winter time because, in addition to car exhausts, city power plants emit hazardous fumes, and house firewood smoke make things worse. The air quality in downtown Ulaanbaatar is so low that people have difficulty breathing during rush hours.

Water pollution is another serious problem in Ulaanbaatar. Ulaanbaatar is a dry area. The Tuul River is the only river near downtown, except for some small creeks. Except during the rainy season, the Tuul River flows only a small quantity of water. The small quantity of creek water is often a source of water for ger dwellers, but the creek water is mostly contaminated and the edges of the creeks are usually covered with garbage and other refuse.

In Ulaanbaatar, apartment complexes were constructed from the 1950s to the 1980s. However, after the collapse of the Soviet Union, apartment development almost stopped for 10 years. After 2000, a construction boom began and the annual increase in the rate of apartment prices reached as high as 30% (MAD, 2014).

In Ulaanbaatar, even during the economic recession, luxurious housing the size of 150 ㎡ or larger were constructed. The size and shape of the new town style development are similar to newly built apartment towns in Seoul, and the average price for such housing in Ulaanbaatar is $250,000–300,000 (USD) (Koo, 2013).

In 2012, the sales price of a newly-built apartment unit is $1,500-2,000 (USD)/㎡. Sizes vary from 30 ㎡ to

300 ㎡. For the apartment unit of 55 ㎡ or below, as much as 90% of the housing price could be loaned, but only a few buyers can benefit from this because of complicated financing requirements. A new one bedroom apartment of 60 ㎡ is sold for $90,000–120,000 (USD). The same unit could be rented for $800 - 1,300 per month (MAD, 2014). There are many old apartment complexes in downtown Ulaanbaatar, and many of them were built before 1990. The prices of 60 ㎡ units were $50,000–80,000 (USD) in 2012 (Koo, 2013).

In sum, the research team identified the following urban and environmental problems in Ulaanbaatar:

- Quantitative and qualitative shortages of affordable urban housing; consequently urban housing is very costly and out of the reach of low-income families
- Dilapidated downtown area
- Urban sprawl and insufficient public transportation
- Air and water pollution
- Expensive building materials and underdeveloped building industries

IV. Government Policies

The Mongolian government and the city government of Ulaanbaatar are trying to solve these urban and environmental problems. They established and implemented housing and city development policies such as a 'State Housing Policy' approved in 1999 and called the 'Ulaanbaatar City Development Strategy of 2001', and '40,000 Housing Program' (ADB, 2008).

The 'State Housing Policy' was established to increase the housing construction capacity, in order to improve the design and quality of housing, and to support every household to obtain a healthy and safe apartment unit in accord with the rule of market economics. The Ulaanbaatar City Development Strategy was established to guide the direction of future development in Ulaanbaatar and was the first participatory urban planning exercise undertaken in Mongolia (ADB, 2008).

With the help of Japan International Cooperation Agency (JICA), the city of Ulaanbaatar revised its Master Plan in 2007, which was originally established in 2001. The Plan includes downtown redevelopment, new town development, and an improved transportation system. Until 2020, Ulaanbaatar is planned to maintain a maximum population of 1.6 million (1.3million in city area, 0.3 million in suburban area) (Kim et al., 2007).

The '40,000 Housing Program' was intended to build such number of housing units during the 2004-2008 years, but the goal could not be reached because of lack of governmental resources, and the fact that low-income families could not afford to buy the units.[2)] After a new president was elected, the government established a '100,000 housing' program, which incorporates the previous, delayed '40,000 Housing Program' (MAD, 2014).

Because of the worldwide economic recession, the building industry in Mongolia is not very active. Even though the Mongolian government wants to invite foreign investment, progress is not strong because of the recession in 2009-2013 (MAD, 2014). Only some comparatively luxurious housing projects have been initiated in Ulaanbaatar, and such expensive houses are not affordable to low- and middle-income families (Koo, 2013).

Mongolian government officials said that the government is making as great an effort as possible to provide city infrastructure, such as roads, transportation systems, and telecommunication networks (Koo, 2013). Ulaanbaatar also wants to redevelop dilapidated downtown areas and construct many new towns in suburban areas. These redevelopment projects are also confronted with financial problems, by both the government and by the citizens who wish to buy the units. They are focusing much more on the 'demolition and high-rise approach' rather than the 'site-upgrading' through self-help efforts.[3)]

In Mongolia, there are various projects being implemented with the participation of international organizations such as Asian Development Bank (ADB) and the World Bank. The ADB has assisted Mongolia through providing loans and grants for basic urban services in the ger areas. The ADB also provided some technical assistance for the project as 'Urban Development and Housing Project' (ADB, 2008).

The World Bank in cooperation with the City Alliance, established the 'City Development Strategies' for Ulaanbaatar and the secondary cities. USAID (United States Agency for International Development) implemented initiatives and business developments in the ger areas which promoted small businesses owned by low-income families (Battulga, 2012).

Notwithstanding such efforts, urban sprawl continues and the ger areas, lacking infrastructure are still growing, and low-income families hardly benefit from the new projects. As Koo (2013) and Battulga (2012) argued, it is time for the Mongolian government to adopt new approaches to relieve these problems, along with adopting strict evaluations and monitoring.

V. Questionnaire Survey and Its Results

This citizen questionnaire survey was performed in downtown Ulaanbaatar during November 28 and December 1, 2012. The questionnaire asked about housing and community environments in Ulaanbaatar. One professor and six students of Handong Global University along with two translators participated as interviewers mostly on the streets near Mongolian National University and Mongolian International University. 39 effective answer sheets were collected.

Q1 were intended to learn age of the respondents. Results show that most of the respondents were 20 – 39 years old, which constitute 83.2%.

Table 1. Age of Respondents

Q1 Age		
	#	%
① Under 20	1	2.6%
② 20-29	20	51.3%
③ 30-39	14	35.9%
④ 40-49	1	2.6%
⑤ 50-59	1	2.6%
⑥ Over 60	2	5.1%
Total	39	100%

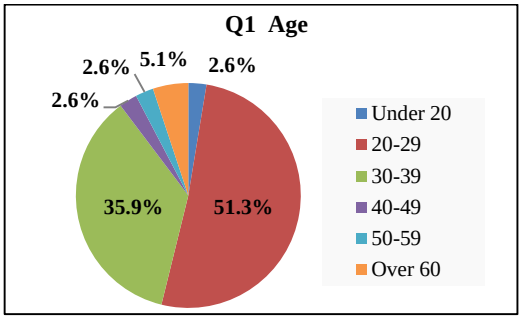

Figure 1. Age of Respondents

Q2 was for gender information of the respondents. 74.4% of respondents were female, while 25.6% were male. It was not an intended result, for, at the interview site, more females were available and friendly enough to participate in the survey than were males.

Table 2. Gender of Respondents

Q. 2 Gender		
	#	%
① Male	10	25.6%
② Female	29	74.4%
Total	39	100%

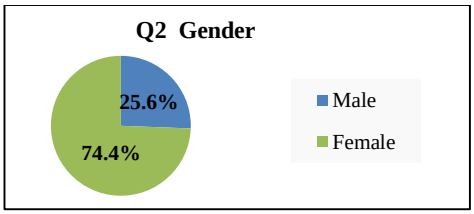

Figure 2. Gender of Respondents

Q3 was for occupation of the respondents. 28.2% of the respondents were professors/professionals and 17.9% are business owners, which is another weakness of this survey. Because of cold weather, most surveys were done on the streets near Mongolian National University and Mongolian International University, which is where the research team officially visited. It was therefore natural that the higher-profiled groups would be interviewed.

Table 3. Occupation of Respondents

Q. 3 Occupation		
	#	%
①House Wife	4	10.3%
②Student	4	10.3%
③Government Official	0	0.0%
④Professor/Professionals	11	28.2%
⑤Technician	3	7.7%
⑥Own Business	7	17.9%
⑦Service Worker	2	5.1%
⑧Agriculture	0	0.0%
⑨Others	8	20.5%
Total	39	100%

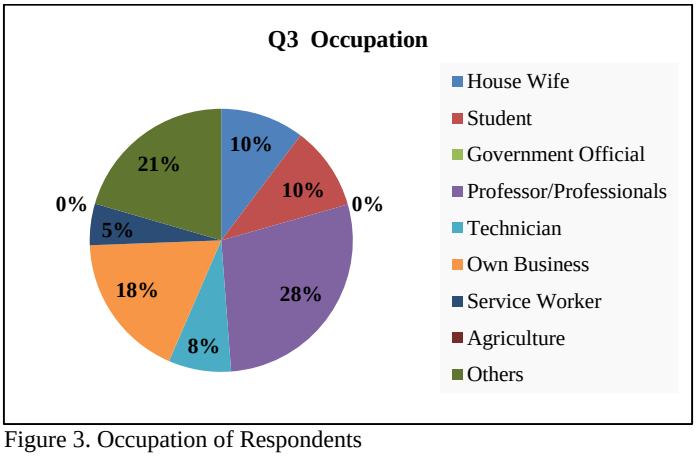

Figure 3. Occupation of Respondents

Q4 was a question about household income per month. Median household income could be estimated at about 450 thousand Tg (Tugrugs) per month.

Table 4. Household Income

Q. 4 Household Income		
Thousand Tg	#	%
① Under 200	2	5.1%
② 200 -400	10	25.6%
③ 400-600	11	28.2%
④ 600-800	7	17.9%
⑤ 800-1,000	2	5.1%
⑥ 1,000-1,500	3	7.7%
⑦ Over 1,500	4	10.3%
Total	39	100%

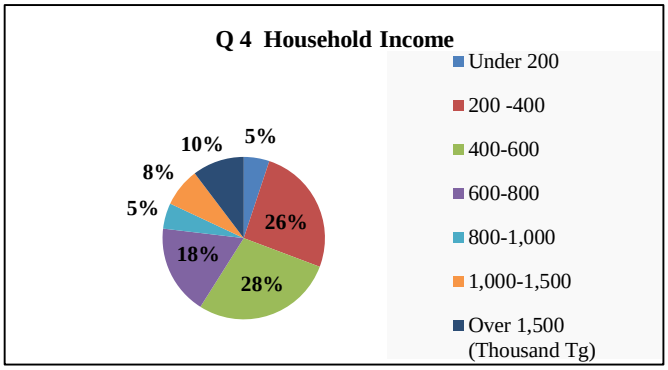

Figure 4. Household Income

Q5 asked about what priority should be made for upgrading overall quality of housing. 35.9% of the respondents responded that increasing investment in public housing for low-income persons is necessary. 20.5% believed that broad scale redevelopment of the dilapidated areas is necessary. 17.9% believed that supplying construction materials at low prices is important.

Table 5. Factors for Upgrading Housing

Q 5 The most impart things for upgrading overall quality of housing		
	#	%
① Supplying construction materials at low prices	7	17.9%
② Increasing investment to public housing for low-income families	14	35.9%
③ Incentives of tax and building permit for vitalization of construction market	9	23.1%
④ Executing broad scale of redevelopment for the dilapidated area	8	20.5%
⑤ Others	1	2.6%
Total	39	100%

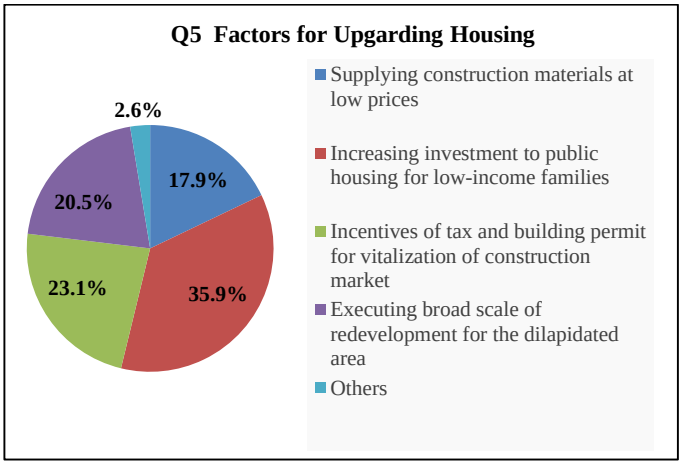

Figure 5. Factors for Upgrading Housing

Q6 asked what factor would be the most important for vitalizing building material markets. 34.2% believed that the market system should be improved, while 26.3% believed bricks should be mass produced and its price should be reduced, and 23.7% believed the price of steel and cement should be decreased.

Table 6. Vitalizing Building Material Market

Q6 The most important thing for vitalizing building material markets		
	#	%
① Mass production of bricks and the price reduction	10	26.3%
② Decreased prices of steel and cement	9	23.7%
③ Improvement of the market system	13	34.2%
④ Others	6	15.8%
Total	38	100%

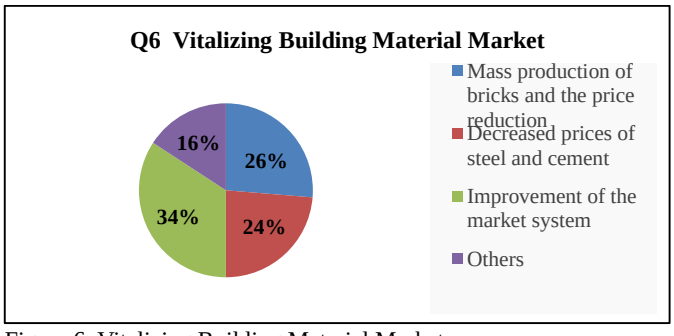

Figure 6. Vitalizing Building Material Market

Q7 provided a list of urban environmental problems and the person being surveyed was asked to point the three most serious in the list. 32.5% of respondents believed that air pollution is the most serious problem; 25.6% pointed to transportation; and 21.4% pointed to a shortage of infrastructure.

Table 7. Urban Environmental Problems

Q 7 Serious Urban Environmental Problems		
	#	%
① Transportation	30	25.6%
② Air pollution	38	32.5%
③ Water pollution	14	12.0%
④ Shortage of housing	7	6.0%
⑤ Shortage of infrastructure	25	21.4%
⑥ Others	3	2.6%
Total	117	100%

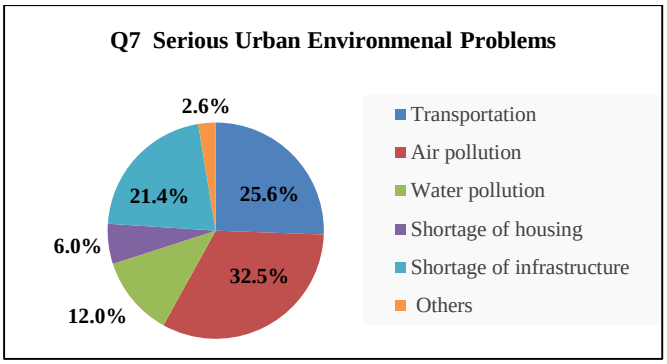

Figure 7. Urban Environmental Problems

Q8 asked about what was considered the best method for improving air quality. 64.4% of respondents said that improving the heating system would be the most important factor. In Mongolia, ger dwellers use coal and wood for heating, while heating for downtown dwellers is provided by large scale city power plants. All these sources of heat produce much smoke.

Table 8. Remedies for Air Pollution

Q 8 Best Method for Alleviating Air Pollution		
	#	%
① Improvement of heating system	29	64.4%
② Improvement of public transportation system	3	6.7%
③ Making effective land use by adopting the compact city concept	6	13.3%
④ Others	7	15.6%
Total	45	100%

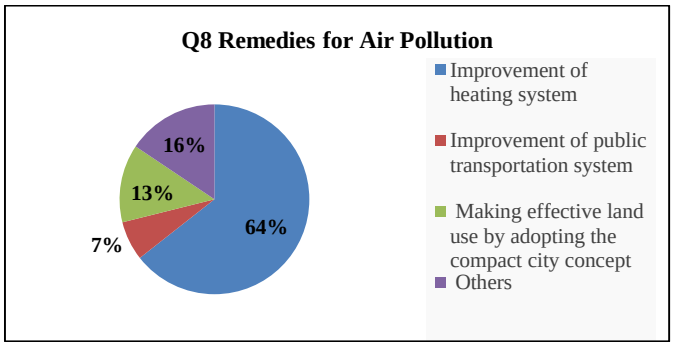

Figure 8. Remedies for Air Pollution

Q9 asked how long the respondent lived in his/her current house. 54.3% of respondents moved to their current housing 3-5 years ago, while 11.4% moved within 1 year.

Table 9. How long resided in the house?

Q 9 How long has the respondents resided in the current house?		
	#	%
① Less than 1 year	4	11.4%
② 1-3 years	6	17.1%
③ 3-5 years	19	54.3%
④ 5 years or more	7	20%
⑤ Others	0	0
Total	35	100%

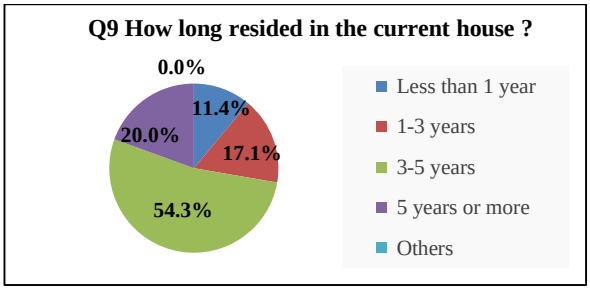

Figure 9. How long resided in the house?

Q10 asked what type of housing was the respondent living in, both current and previous. Currently, detached housing is 33.3%, apartment 43.5%, and ger 15.4%. When comparing current and previous housing type, a typical feature is the reduction of ger, reduced from 34.2% to 15.4%.

Table 10. Housing Type

Q 10 Housing Type				
Type	Current		Previous	
	#	%	#	%
① Ger	6	15.4%	14	34.2%
②Detached House	13	33.3%	10	26.3%
③Apartment under 5 story	10	25.6%	9	23.7%
④Apartment 6 story and over	7	17.9%	6	15.8%
⑤Others	3	7.7%	0	0%
Total	39	100%	38	100%

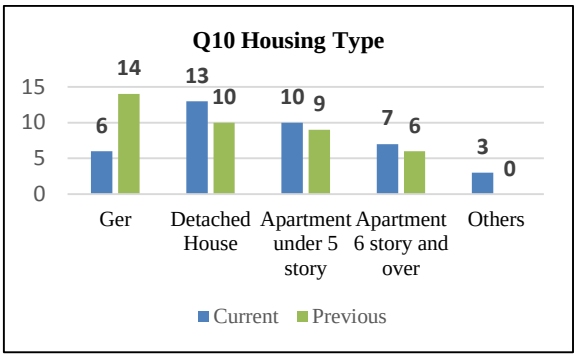

Figure 10. Housing Type

Q11 asked how many rooms were in the respondent's house, both current and previous. The average number of rooms for each household increased from 1.94 to 2.74.

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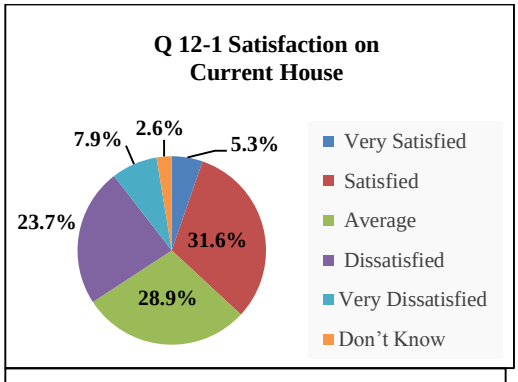
Table 11. Room Numbers?

Q 11 Room Number?		
	Current #	Previous #
Minimum	0	0
Average	2.74	1.94
Maximum	13	7

Q12 was a question about the level of satisfaction in the respondent's housing, both current and previous. More people were satisfied with their current housing than with their previous housing.

Table 12. Housing Satisfaction

Q 12 Housing Satisfaction				
Level	Current		Previous	
	#	%	#	%
① Very Satisfied	2	5.3%	2	5.3%
② Satisfied	12	31.6%	4	10.5%
③ Average	11	28.9%	21	55.3%
④ Dissatisfied	9	23.7%	7	18.4%
⑤Very Dissatisfied	3	7.9%	2	5.3%
⑥Don't Know	1	2.6%	2	5.3%
Total	38	100%	38	100%



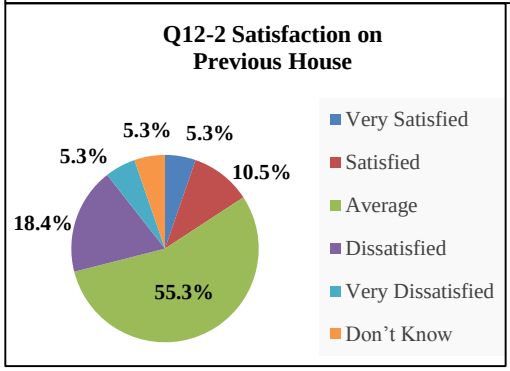


Figure 12-1 Satisfaction on Current House
Figure 12-2 Satisfaction on Previous House

Q13 asked the location and type of the toilet in the house, both current and previous. There was a higher percentage or restrooms inside the house among the current houses than in the previous houses.

Table 13. Type of Toilet

Q13 Type of Toilet				
Type	Current		Previous	
	#	%	#	%
①Inside of the house	21	53.8%	13	34.2%
②Outside of the house	18	46.2%	25	65.8%
Total	39	100%	38	100%

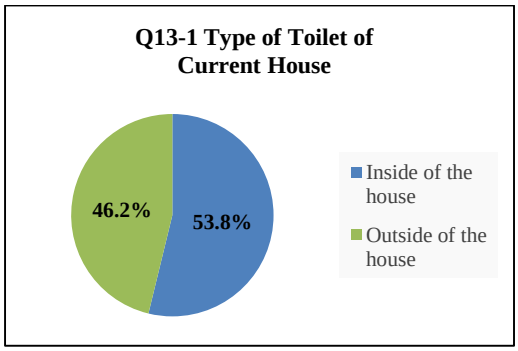


Figure 13-1. Type of Toilet of Current House

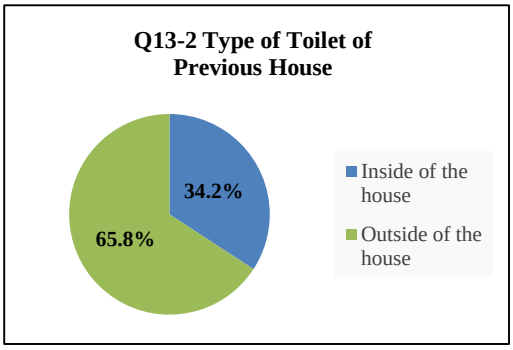


Figure 13-2. Type of Toilet of Previous House

Q14 asked what type of kitchen was in the respondent's house, both current and previous. A higher percentage of indoor modern kitchens were found in the current housing than in the previous house.

Table 14. Type of Kitchen

Q 14 Type of Kitchen				
Type	Current		Previous	
	#	%	#	%
① Independent indoor kitchen	25	65.8%	18	47.4%
② Independent outdoor kitchen	2	5.3%	0	0.0%
③ Mixed with living room	7	18.4%	11	28.9%
④ None	4	10.5%	9	23.7%
Total	38	100%	38	100%

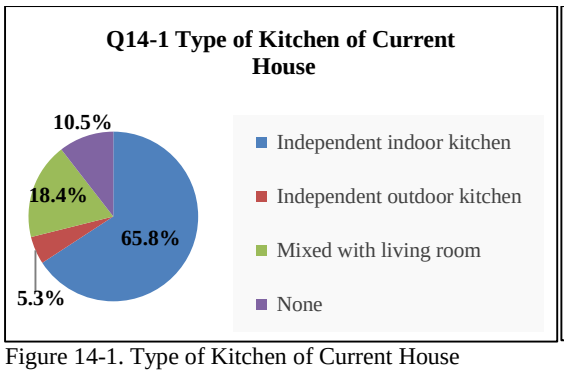


Figure 14-1. Type of Kitchen of Current House

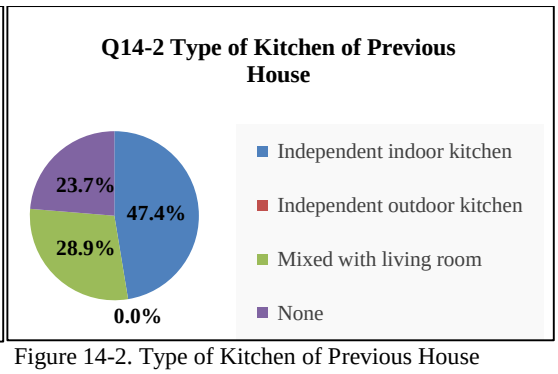


Figure 14-2. Type of Kitchen of Previous House

Q15 asked about the satisfaction level of the respondent with the neighborhood, both current and previous. The satisfaction level with the current neighborhood tends to be less than with the previous neighborhood.

Table 15. Neighborhood Satisfaction

Q15 Neighborhood Satisfaction				
Level	Current		Previous	
	#	%	#	%
① Very satisfied	0	0.0%	2	5.4%
② Satisfied	7	18.4%	9	24.3%
③ Average	12	31.6%	14	37.8%
④ Dissatisfied	13	34.2%	7	18.9%
⑤ Very Dissatisfied	6	15.8%	4	10.8%
⑥ Don't Know	0	0.0%	1	2.7%
Total	38	100%	37	100%

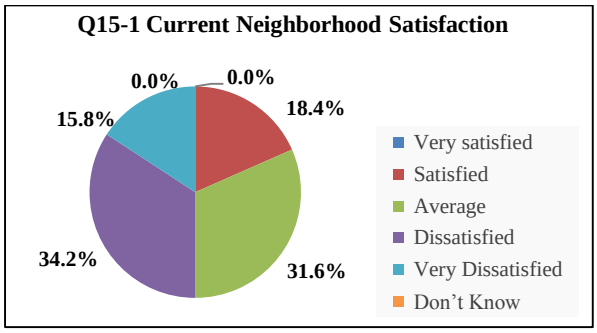


Figure 15-1. Current Neighborhood Satisfaction

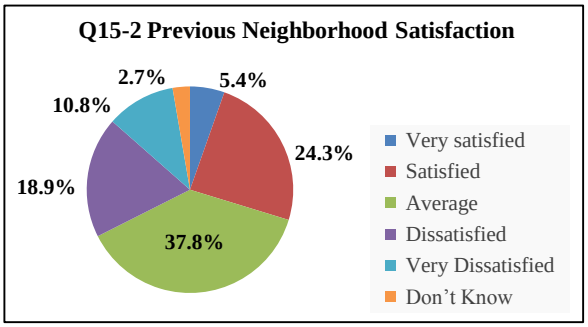


Figure 15-2 Previous Neighborhood Satisfaction

Q16 asked to assess what caused the respondent's satisfaction with the neighborhood. The major determinant of satisfaction with the current neighborhood is availability of public transportation, while the major determinant of satisfaction with the previous neighborhood is a sense of security of the neighborhood.

Table 16. Determinants for Neighborhood Satisfaction

Q16 Determinants for Neighborhood Satisfaction				
Determinants	Current		Previous	
	#	%	#	%
① Convenience of using public transportation	6	42.9%	5	27.8%
② Good SOCs such as roads and sewage system	4	28.6%	1	5.6%
③ Security of neighborhood	3	21.4%	10	55.6%
④ Others	1	7.1%	2	11.1%
Total	14	100%	18	100%

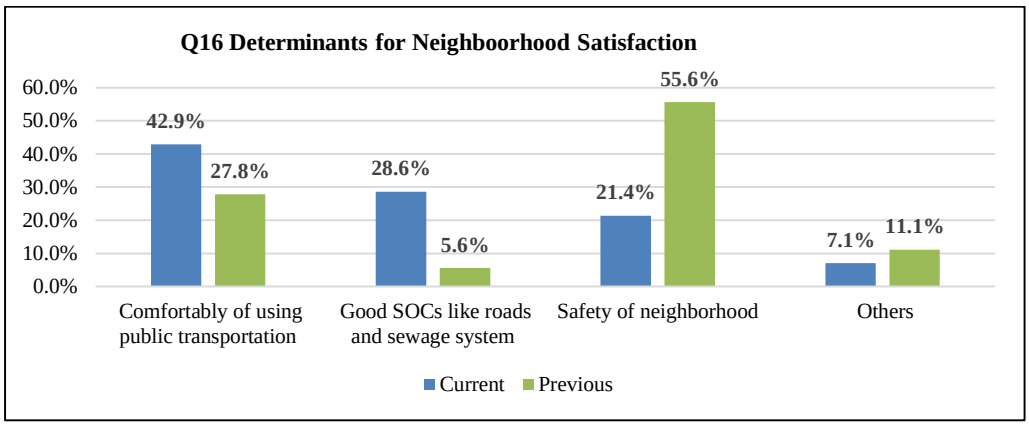


Figure 16. Determinants for Neighborhood Satisfaction

Q17 asked to assess what caused the respondent's dissatisfaction with the neighborhood. The reasons for dissatisfaction with the neighborhood, both current and previous, were shortage of SOCs and bad safety.

Table 17. Determinants for Dissatisfaction on Neighborhood

Q17 Determinants for Dissatisfaction on Neighborhood				
Determinants	Current		Previous	
	#	%	#	%
① Uncomfortable public transportation	2	10.0%	1	4.2%
② Shortage of SOCs like roads and sewage system	9	45.0%	12	50.0%
③ A bad safety of neighborhood	7	35.0%	9	37.5%
④ Others	2	10.0%	2	8.3%
Total	20	100%	24	100%

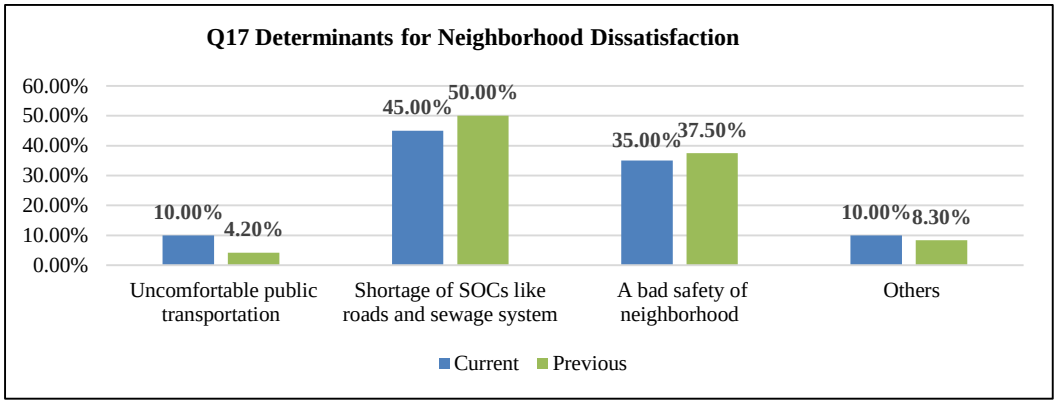


Figure 17 Determinants for Dissatisfaction on Neighborhood

Q18 asked what type of future housing did the respondents prefer to live in. 56.8% indicated that they prefer low story apartment, while 8.1% indicated that they preferred single detached housing.

Table 18. Preferred Type of Future Housing

Q18 Preferred Type of Future Housing		
	#	%
① Single Detached House	3	8.1%
② Apartment below 5 story	21	56.8%
③ Apartment of 6 story and over	4	10.8%
⑤ Others	9	24.3%
Total	37	100%

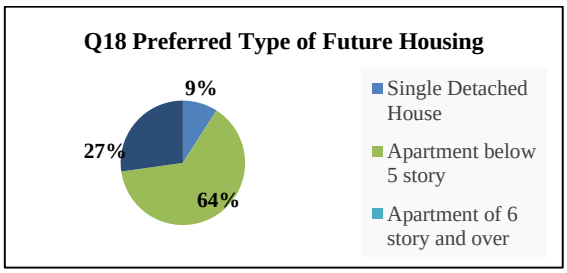


Figure 18. Preferred Type of Future Housing

Q19 asked the desired number of rooms of the respondent's future housing. Respondents want 4.34 rooms, while the number for their current housing unit is 2.74.

Table 19. # Rooms of Future Housing

Q19 # Rooms of Future Housing		
	Future room #	Current room #
Minimum	0	0
Average	4.34	2.74
Maximum	15	13

VI. Discussions and Concluding Remarks

Because of the rapid growth of the city population, Ulaanbaatar faces serious problems in housing and infrastructure. 60% of the population lives in a ger area, usually in a squatter housing. Built-up areas are sprawling and lack infrastructure services. The city must make efforts to slow down its population growth and urban sprawl.

According to the survey questionnaire, citizens want the government to take more active measures to improve air quality and the public transportation system. Those factors would be by-products of a strategy to implement the compact city concept – the city must be developed more compactly. From the center to suburban sub-centers, public transportation including buses and/or light rail must be connected. Such reorganization of city structure and establishment of public transportation systems are very important to relieve severe air pollution and make more efficient use of the city land area.

According to the survey, people improved their quality of housing as well as housing satisfaction through moving. People mostly want to live in low-rise apartment units with 4-5 rooms, built in a safe neighborhood with good infrastructure. Such upward mobility is a good indicator for the housing market. However, the level of satisfaction with the neighborhood did not improve because of the move. Also, in Ulaanbaatar, the housing market is not active and the housing shortage is serious, especially for low- and middle-income families. The number of newly constructed housing would be much less than demand, not to say of needs. Affordability is a major problem for most of the families in Ulaanbaatar. As MAD (2014) mentioned, newly built houses are mostly occupied by high-income households.

The housing market has to be vitalized to provide more housing in various price levels in Ulaanbaatar. High-income housing units could be supplied by private sectors even without governmental subsidies. However, the government must invest more funds and/or provide more incentives to vitalize middle- and low-income housing markets. The government should adopt appropriate levels of supply-side and demand-side subsidies to vitalize housing markets and to provide low-income housing.[4)]

Also, it is important to reduce the prices of building materials. If the government encourages and provides incentives to establish building material manufacturing firms, cement, bricks, and other basic building construction materials would be produced at more affordable prices. It is also a good idea to invite foreign firms to establish such factories in Mongolia. For example, Korean companies will be able to produce various kinds of bricks at 1/2 – 2/3 of the current prices (Koo, 2013).

Through providing cheaper building materials, construction cost per unit will be reduced. Also, poor families in the ger area can improve their housing more easily through self-help efforts. People will upgrade their houses with their own efforts, through so-called 'sweat equity', while the government provides infrastructure and tenure as incentives. There are various successful self-help efforts in the world, but potentials for conservation and regeneration of squatter settlements vary with their characteristics and governmental incentives (Rahman, 2011).

The city of Ulaanbaatar seems to have ambition to redevelop most of the downtown area. Their major strategy could be the 'demolition and high-rise' approach, just like many examples in South Korea. However, the Mongolian government should consider this approach carefully before establishing such policies. This approach has positive factors, but there are also some serious and obvious negative factors as well.

In commercial areas of downtown, the 'demolition and high-rise' approach could be used more actively. However, most of the downtown residential areas should be upgraded through site-upgrading. For suburban ger areas, the site-upgrading along with the sites-and-services should be applied. The sub-centers could be developed as the transit-oriented new towns.

The Mongolian government wants to invite foreign investments for housing and redevelopment, but it is understandable that the Mongolian government and domestic companies cannot afford foreign investments. However, in order for foreign investments to be made vital, domestic legal and institutional barriers should be removed (Koo, 2013, Battulga, 2012).[5)]

In sum, there are certain policy guidelines that the Mongolian government can implement in order to relieve urban and environmental problems. They are:

i) Adopt the compact city concept and provide public transportation and infrastructure: Ulaanbaatar is growing too fast for its infrastructure to keep up. People are also suffering from long commuting time, poor public transportation, and air pollution. The growth of the city in terms of population and land area should be controlled. The city needs long range plans to be firmly established based on financial feasibility and on the compact city concept.

ii) Provide building materials cheaply: Ulaanbaatar is growing very rapidly and most of the people live in dilapidated and/or squatter housing, and housing prices are too high for their income level. Building materials are expensive since they are mostly imported. Mongolia needs cement factories, brick manufacturers, steel bar manufacturers, and other building material manufacturers. Through providing cheaper building materials, building costs can be reduced and poor families can upgrade their housing through self-help efforts. Also, it is recommended that prefabricated and/or preassembled module housing industries be developed

iii) Provide affordable housing and appropriate leadership for downtown redevelopment: to upgrade housing quality for low- and middle-income families, first of all, housing markets have to be vitalized through providing supply side subsidies and demand side

subsidies. Especially for low-income families, the government should allocate more funds to provide public housing and/or affordable housing units. For downtown redevelopment, some selected areas have to be redeveloped through adopting the 'demolition and high-rise' approach, while most of the ger areas are developed through self-help efforts including the site-upgrading and/or the site-and-services. The self-help approach in ger areas could be an inevitable strategy for providing affordable housing for the poor in poor cities in developing countries.

This study has limitations because of the weakness of the survey. Language barriers and cold weather caused a small number of surveys to be completed. Even though translators were hired, interview surveys on the street were not easy because of the cold daytime weather of -20° C. Thus, various levels of income groups and/or occupation groups could not be surveyed. Many of the citizens did not or could not cooperate with us, thus, the survey could be done mostly with some professional oriented persons and woman. However, this survey is sufficient as a preliminary study. Based on the result and feedback of this survey, better surveys could be conducted in the future. Even with time and financial limitations, this research team did very well for themselves.

Notes

Note 1. According to Chinbart (2013), the ger area expansion has resulted from fast rural-to-urban migration and the government's land privatization, allocating 700㎡ land for each household from 2002 and for each citizen from 2008.

Note 2. The Mongolian Housing Finance Corporation was established in order to promote the financing of the 40,000 Housing Program with the stated intention of providing lower than market interest rate mortgages for low and middle income families. However, with commercial banks taking the lead in pushing housing demand, and housing supply is driven almost entirely by commercial banks, so low-income families received little attention (MAD, 2014). According to Aldarjavkhlan (2009), during 2004-2008, 31,550 housing units were built under the 40,000 Housing Program.

Note 3. The 'demolition and high-rise' approach has been adopted for quick modern style development based on effective demands, while its negative factors are: relocation of low-income families and destruction of neighborhoods and local culture, etc. (Hall, 1998). Since 1960s, the self-help housing has been advocated by such scholars as Turner and Abrams. They insisted that the squatter is not a social malaise, but a place of triumph of self-help requiring 'dweller control' and 'anatomy' with limited intervention by governments (Jenkins et al., 2007).

Note 4. How much revenue should be spent on the housing sector? It is debatable that within the development process, how and what would be the role of housing development (Drakakis-Smith, 2005). Supply side subsidies are: provision of cheap land, provision of low-interest construction loans, density bonuses, etc., while demand side subsidies are: establishment of a mortgage system, tax reduction, housing vouchers, etc. (Linn, 1983).

Note 5. Foreign Investment Law was established in 1993, and revised in 1998, 2002, and 2008, and in theory, foreign investors could enjoy better investment climates. But there are still various legal and institutional barriers to foreign investors, such as complicated administrative procedures, generalized short way settlements instead of lawful compliance, limitations on land ownership, and consequent legal disputes between foreign investors and Mongolian agents or legal representatives.

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