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Ger Districts in Ulaanbaatar, Mongolia: Housing and Living Condition Surveys

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ABSTRACT: Mongolia has been facing an onslaught of rural migration to the urban areas with negative consequences. Traditionally the country's economy was based on a survival livestock herding. Nowadays, the country's economic prospects are bright due to rich and abundant mineral deposits. Some researchers believe Mongolia will be the next Dubai. However, the general panorama of the country is not completely brilliant. In Mongolia's growing cities migrants have erected rural nomadic felt tents, known as a ger. The traditional ger are sustainable structures very well adapted for a nomadic society but, when they are located in high-density, unplanned, informal settlements they create many issues. These informal urban areas lack sanitation, adequate vehicular access and other basic services. The traditional use of wood and coal for heating contributes to heavy air pollution, especially in winter. This paper presents some of the findings of more than 100 householder surveys, held in the summer of 2011, related to housing conditions in four informal Ger districts of Ulaanbaatar. This paper describes some aspects of ger households, discusses how quickly the Ger districts are growing and explains their relation to the increasing problems of the city. Finally it concludes how Mongolia needs to develop and grow according with sustainable parameters or its pristine nature and cultural values such as the vernacular architecture will be lost.

KEYWORDS: Mongolia economy, Ger districts, informal settlements, householder surveys, felt tents.

1 INTRODUCTION

This paper presents some findings of more than 100 householder surveys related to housing conditions in four informal Ger districts of Ulaanbaatar. The capital of Mongolia is growing fast thus creating many urban problems associated with a developing country's booming economy.

1.1 MONGOLIAN ECONOMY

In order to understand the vicissitudes of the traditional rural Ger in Mongolia and its transformation into urban informal settlements it is necessary to comprehend the shift of the country's economy. Mongolia was considered a predominately nomadic society until recently. The region has been influenced during its millenary history by its two giant neighbors, Russia and China. As with other developing landlocked countries, it depends on their neighbors' infrastructure to access ports and international markets. As a result, landlocked countries often lag behind their maritime counterparts in overall development and external trade [1]. Among the independent countries of the world, Mongolia has the lowest population density. The country's rural population has been decreasing proportionally to the urban population's exponential growth, especially in Ulaanbaatar. It is notable that the country's high-density areas are located in the capital and few smaller administrative regions related with manufacturing or mineral exploitation [2].

Even though the total population of the country has increased by eighty percent since 1979, in most Mongolian rural areas the population has either remained low or decreased, particularly in the last 20 years. The population growth has been mostly in urban cities, chiefly in Ulaanbaatar. There are two periods of urban population growth in Mongolia; the first was during the Soviet era and the second was after their independence. Following the introduction of the Socialism system,

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policies encouraging fixed residency were adopted [3]. The establishment of factories and industries in communist Mongolia and the resulting construction of thousands of concrete apartment buildings established a more urban society. Under the socialist regime, Mongolia made great progress in improving its economy and human development indicators. When the Soviet assistance to Mongolia collapsed starting in the 90's, the country went into a deep recession [4].

The livestock collectives of Mongolia depended on the machinery and subsidies from the communist regime. With the failure of the Soviet Communist Regime, they transformed into individual or family ownership ventures. Those private ventures were able to expand 27%, from 1990 to 1998; Mongolia livestock augmented from 26 million to 33 million animals. The majority of the livestock growth can be attributed to the increase of goats. Mongolian goats are renowned for the quality of their cashmere and their numbers have more than doubled, from 1990 to 1998, as a result of strong demands for cashmere products [5]. Additionally weather conditions were favorable and the numbers of almost all types of livestock grew during that period. However, the situation is tentative as the country is very vulnerable to climate change.

1.2 CLIMATE CHANGE

Mongolia has been affected by the dzud or extreme winter conditions during the past years. Dzud consist of extremely cold temperatures accompanied by a lack of snow resulting in a winter drought, or by heavy snow or rain which freezes over the grass. These situations affect a large percentage of the animals with some dying of starvation. For example, the harsh winter in 2010 resulted in the loss of nearly one fifth of the nation's livestock. About nine thousand herders lost their entire herd and several thousand herder households lost a majority of their livestock. The vulnerability of Mongolia is highlighted in the connections between its environmental, economic and social aspects. The changes in the number of livestock can be seen on Table 1.

Table 1. Livestock in Mongolia 1990-2010

	1990	1998	2002	2009	2010	% Change 90-98	% Change 98-02
Horses	2.3	3	1.1	2.8	3.3	33	-64
Cattle/Yak	2.9	3.7	1.9	2.2	2.1	30	-49
Camels	0.5	0.4	0.3	2.6	0.26	-26	-35
Sheep	15.1	11.1	9.1	19.3	14.4	-3	-28
Goats	5.1	11.1	9.1	19.6	13.9	117	-18
Total	53.3	69.9	39	44	63.31	26	-44

Source: [6]

In 1998 the count of animals was 69.9 million but diminished in 2002 to 39 million. Since the beginning of the transition to a market economy, herders in Mongolia are encountering enormous challenges. Degradation of pastureland, as a result of overgrazing, seriously jeopardizes the vulnerable livelihood of small herder households. According to the United Nations Development program, in 2012 Mongolia had the highest proportion of people living on degraded lands within Asian countries, but due to the low population density it still a relatively pristine country. The numbers of livestock have improved in the last few years despite Mongolia's extreme climate changes, ranging from freezing temperatures and heavy snow in the winter to strong droughts in the summer, that have proven fatal to livestock which are a fundamental resource to the nomads [7]. When the nomadic families were unable to be self-sufficient some of the members migrated to the cities, especially to Ulaanbaatar, in search of better jobs.

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Climate change and economic development are the main reasons explaining the growing rate of the urban population in the country. In 30 years the population of the country's capital, Ulaanbaatar, grew from 400,000 inhabitants to more than 1.2 million. Still, more than 30% of Mongolians live in the countryside and most of them are nomads.

2 MONGOLIAN TRADITIONAL DWELLINGS

In Mongolia nomads live in traditional dwellings called ger. The ger, also known as yurts in Russian, are round felt tents which are a very common housing type among nomads in many Central Asian countries from Turkey to China [7]. Tents are recognized as one of the most interesting examples of vernacular architecture in Central Asia and the Middle East. Mongolian ger are composed of a primary structure consisting of a circular lattice wall made out of wood. On the top of the wall a number of wood beams are set to create a circular roof with the structural support of two columns and the circular wall. (Fig 1) On the top of this igloo-shaped structure, a thick layer of felt and a traditional white cotton fabric complete the ensemble. Ger can be built in a couple of hours by a group of four people. The gender division of the space in the ger is harmonious because the objective is to reinforce the accord of the family [8].

As a rural dwelling, ger are sustainable and have many advantages: they are portable, made out of traditional materials, structurally sturdy and they are highly resistant to the strong winds of the Mongolian steppes. During the summer the layers of the ger cover can be folder in the ger base allowing for natural cross-ventilation, an important characteristic of sustainable architecture. They are impressively adaptable to the changing weather conditions of the continental climate countries where summers can be hot and winters are very cold. Ger have been recognized as a very adequate dwelling, supporting the nomadic lifestyle, in the harsh climate of the country.

Fig. 1. Building a ger is a fast process. A small group of three or four people can built a ger in few hours.

Fig. 2. Traditional ger in the outskirts of Ulaanbaatar. In the Ger districts there are also dwellings made of wood and masonry.

The use of ger is considered sustainable and adequate for a nomadic population. Due to the low density of the rural sector, the impact can be controlled and Mongolians have a strong tradition of respecting nature. Unfortunately, when a ger appears in an urban high-density district the impact can be very negative. As explained, because of economic growth and climate change more and more Mongolians are moving from the countryside to the cities. The only dwelling they can afford is a ger assembled in any available urban plot; some of which are then transformed into permanent dwellings. (Fig. 2) These urban ger in Mongolia are built without plans or services, such as sewers and water supplies. This phenomenon of land invasion is unfortunately similar to the uncontrolled growth of urban slums in many developing countries. One of the particularities of Mongolian informal settlements is their residual pollution due to their location in a cold climate. The use of wood and coal in burning stoves pollutes the city's air at an alarming rate. [9].

The Mongolian economy has always been linked to a pastoral livestock production and its importance has been increasing even during economical crisis [10]. However, the discovery and exploitation of vast mineral resources are transforming the economy, diminishing the importance of livestock, and increasing the growth of the ger informal settlements in the cities. Experts believe there is one trillion dollars-worth in minerals that have already started to be exploited [11]. The economy of Mongolia can be a roller coaster; an example is the decrease in metal prices, especially copper which was down 65% from July 2008 through February 2009, that diminished the exportations and the country stock market fell again. Nevertheless, in late 2009 and the beginning of 2010, the market had begun to recover once again.

In 2013 the Asian Development Bank calculated the economical growth of Mongolia to about 14% still other international forecasters put the figure at 20% while some others even believe it can be 40% if the informal market economy is taken into account [12]. How the growth of cities like Ulaanbaatar can be successfully planned is a difficult question. Like many other developing countries, Mongolia has not been able to build cheap dwellings for the new migrants and it may not be able to do it in the future. However, as many other informal neighborhoods, Ger districts could be relatively successful, if some sanitary service conditions are met.

3 SURVEY METHODOLOGY

Economists tend to analyze the progress of the inhabitants through financial data, although, the personal opinions and the daily life of the common people are also an important part of any society that wants to be progressive. For this study surveys collecting the householder's data were planned in several Ger districts of Ulaanbaatar. Since the collapse of Socialism and the rapid expansion of the Ger districts, surveys have become a tool increasingly relied upon for assessing rapidly unfolding social demands in Mongolia's Ger districts—often for public health situations, but including those impacted by infrastructural components [13].

Some examples are environmental sanitation studies in Darkhan [14] and the evaluation of energy government programs in Ulaanbaatar [15].With the help of the Japanese International Cooperation Agency (JICA) several studies were founded years ago. One interesting study divided in three parts was made by Sugimoto, Kawagishi and et al, comparing the living environment of nomads in the outskirts of Ulaanbaatar and a permanent Ger district in the capital [16], [17], [18], [19]. Some studies about the urban planning of Ulaanbaatar are related with ger conditions [20]. Finally, part of the results of the research, here presented, were analyzed by the author in a study of householder satisfaction [21].

To establish a general picture of current conditions in the Ger districts, a lateral survey was given to about 114 householders in four different Ger districts of which over one hundred households were completed. It is important to understand that in a Ger district not all dwellings are ger. Some of them have been improved for dwellings made of permanent materials such as brick, concrete or wood. Also a few dwellings in Ger district are very well constructed and even luxurious. Not all dwellings in Ger districts are oflow-income households. The term 'lateral' is used in characterizing this survey, which takes place across several Ger districts of the city. In contrast to a longitudinal survey, the data were collected over the brief span of a few days, with the portions related to any one neighborhood collected in a single day [13].

This survey was administered using a form specifically designed by the author containing thirty-three questions and data was recollected in the summer of 2011. This survey allows for the isolation of answers and the possibility to compare and contrast the data with similar surveys used by the author in several informal settlements in other countries. The survey covered a wide range of socio-cultural aspects related with the dwellings, including both material realities of Ger district housings as well as such intangibles such as the expectations of Ger district residents. From the four districts selected for this research, two are on the outskirts of the city (Beix, Uliastai) and two are in vicinity of the city center, (Zuun, Ayushin).

Written surveys were not arduous to administer because Mongolia has a literacy rate of 98.5%. This impressive rate for a developing country allowed the researchers to prepare a written questionnaire in the Mongolian language to be answered by the householders. The rate of success recollecting the questionnaires was about 98%. The householders were always ready

to help researchers answering the questions and collaborating with this research (Fig. 3).

Fig. 3. The response of the inhabitants in answering the survey was very positive. From 116 householders visited, only two were unable to do the survey in the subsequent two hours.

4 RESULTS

For this paper only some of the thirty-three questions are analyzed. Future analysis of the data will complement this research.

4.1 PERCENTAGE OF HOUSEHOLDERS WITH A FIX DOMICILE THE FIRST TIME

Approximately 48% of the Ger district householders were living as nomads in the countryside before moving to their present domicile. In other words, for half of the families, this is the first time they have lived in a permanent place. (Table 2) Therefore half of the selected householders did not live in the selected neighborhood or in any other city before moving to the capital. It is appropriate to conclude that a country that once was a nomadic rural society is transforming to a highly urbanized society.

Table 2. Percentage of householders that use to be nomad

Householder was a nomad before moving to the present location?	%
Yes	48
No	52

4.2 LAND TENURE

It is widely known that land tenure must be a right of every citizen [22]. It is also an important factor to improve the quality of the self-built dwellings of low-income inhabitants, even when there is a perception of land tenure [23]. The land tenure situation in Mongolia is completely different from any other developing country. As explained, since antiquity, Mongolia has been a pastoral society. Traditionally the land is a position of the state for the common use of their inhabitants. Since 2002, every Mongolian citizen is entitled to a free piece of land one time in his or her lifetime. In some circumstances, the assigned land can be sold. This is obviously a completely different situation compared to other developing countries.

An impressive 79% of the householders that are part of this study are owners of the piece of land where they live (Table 3). This is especially outstanding when considering that most of the Ger district inhabitants are typically new arrivals. Dwellings built on invaded lands in the Ger districts of this research represent less than 9% of the householders. This situation is very different compared to other developing countries, where usually self-built informal neighborhoods and slums are originally built on invaded land, except in some countries such as India. In Mongolia, the dimension of the free plot

of land for every citizen depends on the location, which is a driver of the market price. In the outskirts of Ulaanbaatar the dimension of the allowed free piece of land will be much smaller than that of the more rural countryside area. In this survey, only 21 percent of householders do not have land tenure. Some of the householder may have a property in a different area of the country.

Table 3. Dwelling land tenure status

Land tenure of the dwelling	**%**
Own land, the householder has documents	79
Rented land	12
Invaded land or free use	9

4.3 ROOMS PER DWELLING

The number of rooms per dwellings in the high-density informal settlements is an important fact to measure the inhabitant's well being. In the selected neighborhoods, 50% of the householders live in a dwelling of one room, which coincides with the number of householders living in individual ger structures. The number of dwellings with two rooms is 23% and the proportion of dwellings with three or more rooms is only 12% (Table 4).

Table 4. Number of rooms per dwelling

Number of rooms per dwelling(s) (except kitchen and restroom)	%
One	50
two	23
three	15
Four	8
Five or More	4

4.4 NUMBER OF INHABITANTS PER DWELLING

The percentage of inhabitants per dwelling is show in table 5. About 70% of the dwellings in this research are occupied by three to five people. As explained before, half of the dwellings are single ger structures. The dimensions of traditional ger are between 16 to 23 square meters, depending on the radius of the surrounding lattice wall. In the countryside gers are erected in open areas and nomads spend most of the time outside maintaining their livestock. In the urban areas of Ulaanbaatar, gers are located in small plots, where districts and density are incrementally divided. This fact, together with the lack of sanitary services, explains the challenges related with living in an urban ger.

Table 5. Number of rooms per dwelling

Number of inhabitants per dwelling	%
One	3
two	6
three	22
Four	23
Five	25
Six	7
Seven or more	14

4.5 DWELLING MAIN STRUCTURAL MATERIAL

As previously explained, the 50% of householders living in a one room dwelling only have a ger tent, the rest were able to build permanent dwellings. Table 6 shows the main structural material used to build the dwellings. A part of the 50% prevalence of ger, bricks houses are 21% and log or wood houses are 21% (Table 8). Many of the permanent dwellings are still under construction. About fifteen percent of the householders who participated in this research still have a ger as a secondary housing structure; or as in the case of some large families, there are two or more ger forming a family compound.

Table 6. Dwelling Main Structural Material

Main structure material of the dwelling	%
Traditional ger structure	50
Bricks	21
Concrete	7
Log Wood / wood	21
Steel or metal	0
Other	2

4.6 WHO BUILT THE DWELLING

Usually, most of the dwellings in informal settlements of African and Latin American cities are self-built on invaded land. In several Asian countries, landlords renting shacks is a very common practice. In Mongolian Ger districts, according with this survey, there are a high percentage of self-built dwellings. Of the surveyed dwellings 81% have been built by the householders themselves, or with the assistance of friends (Table 7). This is to be expected as fifty percent of the housing plots have as a main dwelling a traditional ger that can be assembled in a few hours. However, most of the permanent dwellings, those made out of wood or bricks, are self-built with only 6% of the dwellings having been built by housing specialists. These dwellings are mostly legal dwellings built by the speculative private market or renters of the land that own their own mobile ger.

Table 7. Main builder of the dwellings

Who was the main builder of the dwelling?	%
The owner or family owners	70
Owner together with friends or other external family members	11
Owner and building specialists	6
Building specialist	6
No owner participation including houses built by specialist.	7

4.7 SANITARY SERVICES

In Mongolia there are public and private apartments complexes, some of which are within Ger districts. These structures are connected to urban services, including, running water, heating and sewerage. A traditional Mongolian ger does not have plumbing or sanitation services, which is one of the reasons why a high percentage of Mongolians living in ger would prefer to move to an apartment. Living without sanitary services is acceptable when living as a nomad, but in a cramp urban neighborhood it is not.

Dwelling sanitary services provided on Table 8 shows the percentage of dwellings with sanitary services. Some ger householders in Ulaanbaatar dug latrines on their plots. This can be problematic because such waste disposal is not adequate in high-density areas leading to soil and water pollution. Only 13% of the households participating in this study are connected to sewers where about 36% do share latrine with other families. The dwellings connected to sewers are almost always made

of permanent materials. The situation of services in Ulaanbaatar's Ger districts is worrisome, as it will contribute to health problems and environmental risks.

Table 8. Sanitary Services

Percentage of dwelling with sanitary services	%
Service with sewerage.	13
Services without sewerage	42
Services Shared with other families	36
No services in the area	9

4.8 A Dedicated Space to Prepare Food

In developing countries the availability of kitchens in dwellings, located in informal settlements, is measure of level of hygiene. In rural Mongolia the kitchen is located in the center of the ger and during the winter it is used as a source of heat. In the selected urban Ger district only 20% of the householders surveyed have a dedicated space for food preparation. (Table 9). Because ger do not have restrooms the issue with a room dedicated to cooking is not as a great of a concern as in informal settlements in other parts of the world.

Table 9. Dwellings with a reserved space to prepare foods

There is a kitchen or room reserved to prepare the food	%
Yes	27
No	73

4.9 Energy Source For Heating

In Ger districts of Ulaanbaatar there is a significant pollution issue. Most inhabitants use the same type of traditional heating stove that burn large amounts of wood or coal and produces a high quantity of smoke and pollutants. As explained, this in not of consequence when the gers are located in the countryside, however high-density urban settlements are really are of concern. The householders responding to this survey, as most inhabitants in Mongolia, use multiple energy types. (Table 10). For heating 87% use coal and 69% use wood. Only 21% use electricity. This is why, in winter, the capital has high levels of smog. The government has been promoting a new type of stove that limits pollution production and is energy efficient.

Table 10. Energy source for heating

What type of energy sources do you use for heating?	%
Coal	87
Wood	69
Electricity	21
Gas/Petrol	1
Other	2

4.10 Energy Source For Cooking

The same stove used for heating is also used for cooking in the traditional ger during the winter. The questionnaire was conducted during the summer when some of the food is cooked outdoors or using electricity. Coal is utilized by 44% the

householders to cook (Table 11). The difference between the percentage of coal used for cooking and the percentage used for heating is due to coal being a long burning fuel. This characteristic allows for the householders to get uninterrupted sleep during the cold evenings. Wood is used by 61% of the householders and but the most popular, in summer, is electricity which is used by 67% of the householders. As previously referenced, most inhabitants of Mongolia use multiple types of energy sources for cooking and heating.

Table 11. Energy source for cooking

What type(s) of energy sources do you use for cooking?	%
Coal	44
Wood	61
Electricity	67
Gas/Petrol	14
Other	1

4.11 MONGOLIAN HOUSING PREFERENCES

A key fact to understand the future of Ger districts in Ulaanbaatar is related to how permanent or provisional are traditional Ger districts. The first point is the will of the inhabitants to move from the neighborhood. When asking if the householder wants to move from a Ger district, about half of them answered positively [21]. That means many of them are not satisfied with living in their current circumstances. This number is quite high when compared with most of the neighborhoods around the world where the author has been doing research. The main reason why the householders want to move is because they live in a felt tent or because the location is bad. Some of the Ger districts householders want to move even if they live in an adequate dwelling of wood or brick.

As explained, Mongolia housing preferences are different to most countries and surprising at least, It is said that well-off people live in apartments and low-income live in houses. Taking into account that most of Ulaanbaatar apartments are decrepit, old soviet-style social housing, it seems housing preferences in Mongolia are unlike any other in the world. (Fig. 4 and Fig. 5)

Fig. 4. View of residential blocks at Bichel, the project displaced at least five hundred families living in the place, additionaly few of those families were later awarded apartments [13]

Fig. 5. A wall of Soviets style residential blocks in Ulaanbaatar

The respondents also may prefer to live in apartments because, as explained, in Mongolia an apartment is a symbol of status since well-off people live in apartments and the rest of the population live in houses or ger. Also, apartments in Mongolia are relatively expensive, even the public housing building under state socialism have premium prices. Some Mongolians believe they can elevate their economic prospects effortlessly with the rise of property markets.

5 CONCLUSIONS

Nomadic people of Mongolia have been traditionally respectful to nature and sustainability. In a country with a growing economy, new concerns have been emerging in the most recent years. The first part of this paper is a condensed version of particulars about the Mongolian economy that explains urban migration; however the reality is more complex. One of the main challenges is the general vulnerability of the country produced by the rapid increase of livestock, the mining exploitation, the climatic changes and the uncertainty of food availability. Reducing the vulnerability of the country is one of the first steps towards achieving a sustainable development. There is no doubt Mongolia is facing one of the most impressive urban population growths, as reflected in its new informal settlements or Ger districts, in cities such as Ulaanbaatar.

The conditions and nature of slums and self-built informal settlements of Ulaanbaatar are very different compared with other developing countries. In many countries informal settlements are part of an invasion of public and private property land. In Mongolia, all inhabitants have the possibility to receive free land from the government; tenure not of issue. Usually migrants move to Ulaanbaatar with their belongings including the felt tents or ger. The second difference is the type of housing since they do not build a shack of recycled material upon arriving to the city as is the norm in many other developing countries. Advantageous in a cold climate, the traditional Mongolian ger dwelling which is a product of a hundred years of cultural knowledge is well suited. However, as previously explained, a high concentration of ger is inadequate due to the lack of sanitary services in the traditional dwelling. Among the differences and challenges, the provisional nature of the ger is contradictory to permanent urban housing.

One of the most dangerous consequences of such rapid development could be ecological damage. Ulaanbaatar is a very polluted city during the winter. The demand of resources by Mongolian cities could damage not only the environment, but also cultural treasures as the popularity of the traditional vernacular architecture of the country wanes.

As explained by Miller [13]: The potential to transform the Ger districts into not only inhabitable space, but into a desirable place, for the majority of its residents does not necessarily lay in the demolition and replacement of tracts. Investment by the municipality in infrastructural improvements and services is an oft-cited need for these areas.

This research is the first part of this study that will continue in the future. This research is composed of a small amount of data recollected in a limited number of communities. The author believes permanent dwellings will substitute ger structures and this survey confirms that assertion. Almost 50% of the householders replaced their ger by building a permanent residence using concrete, wood or bricks. The survey shows that many of the householders would prefer to move out of their dwellings. However, residents may want to stay after the dwellings are improved and services installed. Many of the dwellings built during socialist time are showing their age. Cold winters and poor construction have contributed to making some of those buildings undesirable lodging. In time, as with slums in many other countries, Ger districts will improve. As the

GIP level of the country is quickly augmenting the government of Mongolia and investors are getting serious about the exploitation of the rich mineral resources of the country. The modern exploration of mineral resources has just scratched the surface and, as many people have suggested, Mongolia may become the next Dubai; for good and for bad.

The lack of a tax in some ger areas is one of the economical difficulties of the government to accomplish improvement. An economical boom in Mongolia can improve the conditions in the Ger districts.

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