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Rural Exodus and Standard of Living

Raising the Standard of Living and the Productivity Of Mongolian Nomadic Households

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Abstract

As in many other countries of the world there is migration in Mongolia. The quality of life in cities is developing rapidly, while progress in the countryside is only slight. A research project by GMIT and TUC is investigating the causes of rural exodus and ways to prevent it or slow it down. In a first phase, an inventory of the income situation and living standards of nomadic households was carried out. It is based on an intensive qualitative and quantitative survey of nomadic households in different spatial and socio-economic life situations.

The results show that the nomadic households' income is too low to make the purchases of typical consumer durables that are common in urban regions. Almost all nomads have telephones, television, solar collectors and light. Motorcycles, a car and/or a truck are much less common. Other durable consumer goods, owned by 74 % of urban households, are possessed by only 10 % of the nomads.

Nomads wish for better sanitary facilities like toilets, showers or running water supply. They also desire improved living conditions with separate living and sleeping areas, windows, wardrobes and a simpler heating. Nomads also long for equipment to make work easier, such as washing machines, gas or electric cookers or refrigerators and freezers, which only account for 31 % of nomads, compared to 84 % in urban households. All appliances should be robust and suitable for relocation.

Overall, the study shows that the migration of nomads from the steppes to the cities can be explained by a change in lifestyle in order to achieve a higher standard of living.

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1 Introduction

As in many other countries of the world there is migration in Mongolia. Today, 67 % of the Mongolian population lives in urban areas, and 40 % of those again live in Ulaanbaatar. The quality of life in cities is developing rapidly, while progress in rural areas is slow. All this leads to the nomadic farmers perceiving a widening gap between their own lives and the lives of the urban population and becoming increasingly dissatisfied with their situation.¹ This makes people migrate from the countryside to the city, as observed in many parts of the world.² Nowadays, modern societies feature

- (i) An easier life through relief from everyday activities such as heating, cooking and washing,
- (ii) Greater cleanliness, individuality and privacy,
- (iii) Participation in modern entertainment and amusements.

The Mongolian government wants to raise the standard of living of nomadic farmers and increase their productivity. A research project by GMIT and TUC is to find out how this can be achieved.

The project is of utmost importance for Mongolia not only from an economic point of view, but also from a political and geostrategic one. Mongolia is currently still a thinly populated country, but it is very positive that all areas are inhabited. If the rural exodus drives people to the few cities, especially Ulaanbaatar, they will leave an open space behind that is perceived as unfavorable. Kazakhstan has moved its capital from the south to the north, closer to the Russian border to document its claim to the entire country. This is why the Mongolian government has a special interest in maintaining the nomadic way of life. For this reason, the fundamental maintenance of the nomadic way of life was formulated as a constraint of the project. It is not a question of centralizing meat production according to the Western model and bringing all nomads into the cities. Nomadic farmers live dislocated in the wilderness and look after their herds from there. This should be maintained. It would also be desirable if the new developments did not disturb the "culture" of the nomads. Ancient cultural traditions should possibly remain untouched.

¹ Cf. Batayev (2013), p. 59 ff.

² Cf. Jankechova (2018).

1.1 Project and Research Question

The aim of the project is to identify ways that could contribute to stopping the migration of nomads from the countryside to the cities. The project was divided into three phases.

- I. The first phase examines ways to reduce the tendency of nomads to migrate to cities.
- II. The second phase investigates possibilities to increase the productivity of the nomadic economy.
- III. The third phase merges the results of phases I and II to form a synopsis with final proposals.

The literature shows that the aspect of underdevelopment of rural areas is primarily considered a cause of migration.³ This fact is being examined with regard to two phenomena. On the one hand, there is the supply of *public goods* such as kindergartens, schools, health facilities, emergency support and direct subsidies, this has been addressed before. Deficits have been identified and removed.⁴ On the other hand, there is *private prosperity*, i.e. the equipment of nomadic households with private goods such as television, household appliances, etc. We take up this less discussed second aspect in the present study and raise several questions:

- What goods do nomadic households have at their disposal?
- What kind of equipment with goods is common in larger cities in industrialized progressive areas?
- What do the nomads wish regarding their living conditions and equipment with goods?
- How desirable are goods that are considered standard in urban families for nomadic households?

1.2 Inventory: The Nomads' Situation

A typical nomadic farm consists of two yurts. One of them is mainly used for residential purposes; the other is the farm yurt. There is also a large paddock for the adult animals and a small one for the young ones. In addition, there is a pickup truck or a cart as well as a car or a motorcycle (Figure 1). There is also a weatherproof shed for the winter time (Figure 2).⁵

³ “The underdevelopment of rural regions in Mongolia represents the actual reason for the dissatisfaction and mass migration into cities”, Cf. Batayev (2013), p.197; cf. Kingsley (2017).

⁴ Infrastructure is supposed to be offered in the larger Aimag cities: “The development of the smaller and intermediate towns therefore is of great importance for Mongolia in order to stabilize rural regions and to prevent migration from the countryside into cities. This also helps against a too high concentration of inhabitants in Ulaanbaatar”, Cf. Batayev (2013), p.197; cf. Batayev (2013), p.188.

⁵ Cf. Pasotti (2017); cf. Kingsley (2017).



Figure 1: Typical Nomadic Farm

A nomadic farm usually has sheep and goats, sometimes cattle and horses, and in some areas camels. The animals complement each other and provide the nomadic household with a variety of goods necessary for independent survival in the steppe. Horses and camels also ensure the mobility of the nomadic household.

The problem with this equipment is the low productivity it allows. The yurt is not suitable for efficient work processes. Many operations have to be carried out in unfavorable positions. The farmer works bent and kneels or sits on the ground. The tools are not arranged efficiently. An efficient production of farm products (milk, yoghurt, quark, butter, meat products) is hardly possible. The farmer often has to switch between standing, kneeling and sitting on the ground.

There is practically no separation between private life and work. The production takes place between private things like clothes or entertainment objects. During the winter, some nomads take young animals into the farm yurts⁶, thus reducing their personal living space. Dung for heating is situated between private things. All this lowers the quality of life. Basic tasks like heating, cooking, washing cause great effort and consume a lot of time, which reduces the productive phases. The preparation of meals or warm drinks in between is burdensome. Usu-

⁶ Cf. Chiu (2016).

ally, nomads store leftovers in bowls and eat them cold as each warming up would mean a high effort. Hot water or tea is stored in thermoses for later consumption. After dirty work, physical cleaning is hardly possible, even hand washing its difficult. The clothes are worn continuously for a long time without washing. Yurts are difficult to keep clean. Some interviewees complained about mice that they could hardly keep out of the yurt. Life is unpleasant on rainy days, because yurt life is optimized for dryness. Rain lowers the quality of life to a very low level.⁷



Figure 2: Winter Shed

Instruments have been developed to improve nomadic life and have meanwhile become widespread. These include solar panels, batteries, televisions, deep well pumps, electric stirrers for airag, motorbikes, etc. These devices must be purchased. They disturb the self-sufficient cycle of nomadic everyday life. They require monetary income and thus the existence of markets for nomadic products. However, various nomadic products cannot be sold well on markets. Very low prices are offered for animal skins. Cow and horse milk products can only be sold near cities or roads. The nomadic farm is small and does not reach significant lot sizes. In this way there is an increasing imbalance between the goods that a nomadic household wants to use and the goods that it can procure due to the low monetary income.⁸

⁷ Cf. Genté (2013).

⁸ Cf. Chui (2016).

One consequence of the low marketability of nomadic products is that the nomadic household is forced into its traditional self-sufficiency. It must remain there because it is unable to enter the money cycle due to a lack of marketable products. The fact that the conditions in yurts remain unchanged does not correspond to a *wish*, but is a *consequence* of the lacking marketability of the products. The traditional conditions in yurts are often interpreted as an apparent sign that the nomads *do not want* to change their situation, whereas they *cannot* change anything due to the lack of income. The only practicable alternative for the nomads is then the so-called "*voting by foot*", namely the abandoning of the nomadic way of life as a whole and change into another way of life that allows for a better income to expenditure ratio.

2 Research Methodology

In the first phase of the project, an inventory of the nomadic situation should be drawn up, as far as this has a possible relation to the tendency of migration.

In the first week of September 2018, a survey of 21 nomadic households took place in an area of about 20,000 square kilometers, extending from Nalaikh (east of Ulaanbaatar) to Saikhan about 400 km west of it (Figure 3). Nomads were interviewed in various situations:

- Nomads close to the cities (Nalaikh, Ulaanbaatar, Erdenet)
- Nomads near provincial towns (Aimags)
- Nomads away from cities, but close to busy highways
- Nomads far away from cities and roads
- Nomads in environmental problem areas (Erdenet)

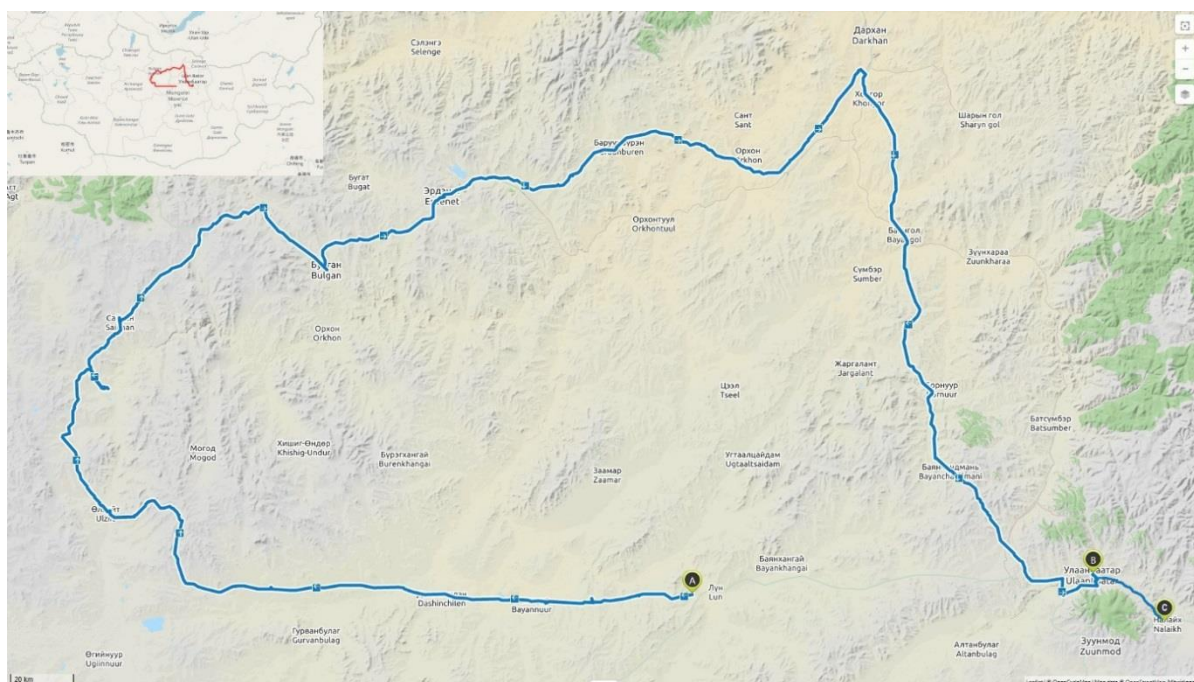


Figure 3: Map of the Research Area

Figure 4 shows the distribution of herd sizes of nomadic households throughout Mongolia⁹ and in the survey. This shows that the survey tended to cover households with herd sizes slightly above the national average.

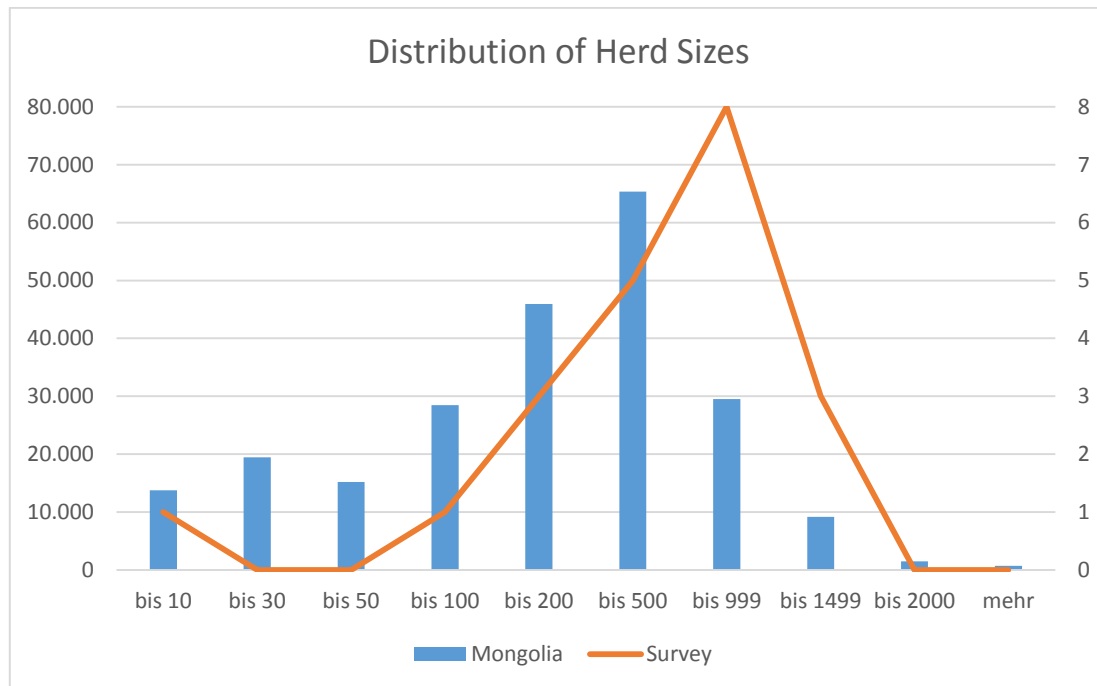


Figure 4: Distribution of Herd Sizes¹⁰

The survey was based on a structured questionnaire that collected both quantitative and qualitative data, belonging to the following aspects:

Quantitative:

- Current equipment: Availability of goods of “durable consumer goods” to nomadic households
- Desired equipment: Hedonic valuation (i.e. attractiveness assessment) of goods in the “durable consumer goods” category
- Income from business operations
- Expenditure on business operations
- Revenues in the private sector (e.g. child benefit, pension)
- Private expenditure if it reaches a significant level which places a significant burden on the budgetary position

⁹ National Statistics Committee (2018), p. 112-115.

¹⁰ National Statistics Committee (2018), p. 112-115.

Qualitative:

- Perceived shortcomings of the current situation
- Proposals for changes to the current situation

The collected data was compared with household data from urban environments. However, we did not choose Ulaanbaatar as the comparison city. On one hand, this is because necessary data was unavailable. On the other hand, the city is in a state of rapid changes in important kinds of ways so that the current situation is only transitory and cannot serve as a yardstick for longer-term steady states. Instead, we used data from mature industrial nations for comparison. For reasons of completeness, we chose data from the German Federal Statistical Office.

The survey of the nomads took about 1 hour per household. Usually at least one couple was present, but often a large group of elders, children, friends and relatives. The youngest interviewee represented her parents and was 17 years old. The oldest were a retired couple. When wives were present, the valuation of the goods differed; wives often corrected their husbands. This was especially true for the valuation of flowers, washing machines and separate sleeping and living areas. Since no influence could be exerted on who answered the questions, there is a slight distortion in this respect. However, the survey results are very clear overall, so that a significant result bias can be excluded.

The valuation of goods was supposed to be carried out on a usual Likert scale with at least 7 groups. This turned out to be impossible. The nomads did not differentiate enough. They also did not differentiate enough between the desirable and the realizable. Therefore, in the end only three grades were used (strong, medium and weak desire, rated with 8, 5 or 2 points, respectively). 0 points were awarded if a good was definitely rejected.

A further peculiarity arose in the determination of trade income and expenditure: The nomads were not able to tell the exact number of animals sold or certain expenses. We obtained rough estimates that not always were realistic. In one case, 175 % of available animals were reported as sold. For this reason, data on commercial income that range very far from average were corrected by mean values. One nomad explained the lack of financial accuracy of financial data with the high importance of nature and the resulting uncertainties: Revenue and expenditure are strongly influenced by the development of the herds. They cannot be planned, but are a random result of weather conditions. Therefore no exact planning is worthwhile.¹¹

¹¹ In the future, the new internet based system for determining sales tax can help to estimate income and expense of nomads more precisely. However, better internet availability is needed.

3 Findings

The results of the study are presented as follows:

- Equipment
- Wishes and ratings
- Financial situation

3.1 Equipment

The reasons for the rural exodus are considered to be the poverty of the nomads and their low standard of living.¹² The standard of living is typically measured in relation to two categories of goods as far as the supply of goods is concerned:

- *Public goods*: Infrastructure such as roads, health care, education, kindergartens and schools, practical training courses, city centers with leisure facilities.
- *Private goods*: Yurt equipment, supply of durable consumer goods, food, travel, etc.

The investigation covered only the private goods sector. The survey asked about the equipment of nomadic households with durable goods which are an important part of their standard of living.

The query included goods that in western industrial countries are regularly determined by the statistical offices. These are those goods that are more or less standard in industrialized countries and are also becoming more and more standard in Ulaanbaatar. This list was supplemented by a few objects which are available in nomadic households for commercial reasons (e.g. trucks). Figure 5 shows the list of queried objects. It should be noted that the survey may be slightly distorted by the following circumstance: The survey took place in summer. The nomads lived in "light" summer yurts, partly without ovens. Other equipment they had in winter storage may also have been missing. Some nomads explained that they had more equipment in apartments in the city. Where the city apartment was nearby, we have taken its furnishings into account.

Figure 5 shows that the vast majority of nomadic households does not have more than 6 of the equipment items surveyed. Mobile phones are the most popular. This is followed by television sets with satellite reception and solar-supported power supply. Motorcycles, sewing machines and trucks follow at a distance. Only up to 30 % of nomadic households have cars, refrigerators, freezers and other goods.

¹² Cf. NN (2015); cf. NN (2013).

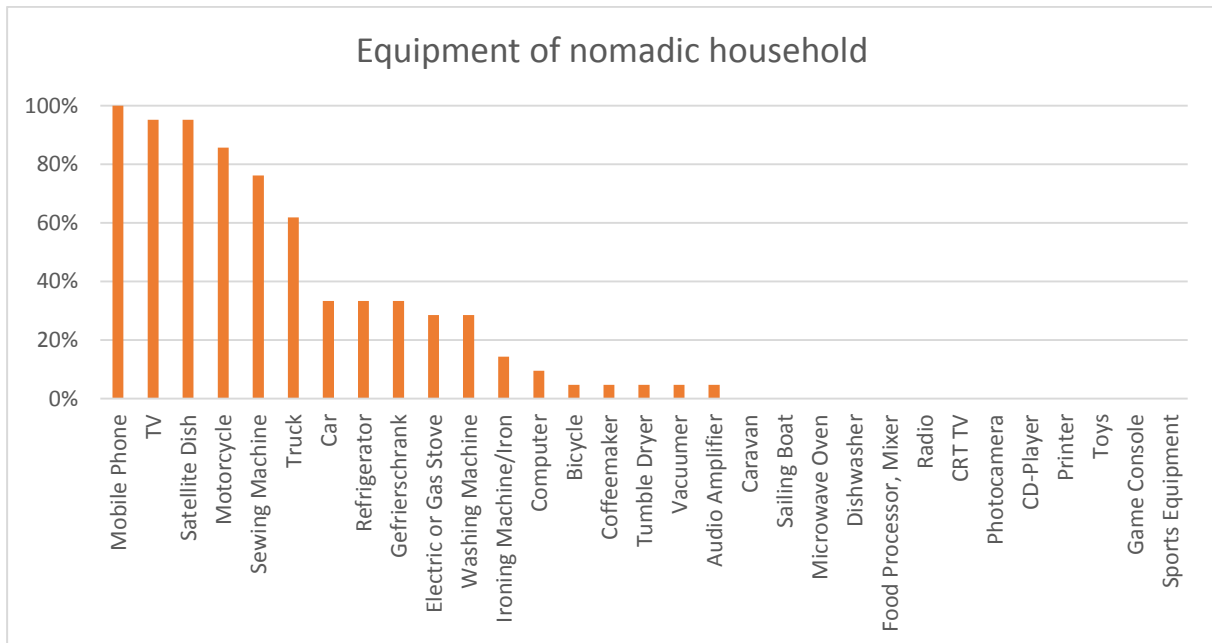


Figure 5: Equipment of Nomadic Households

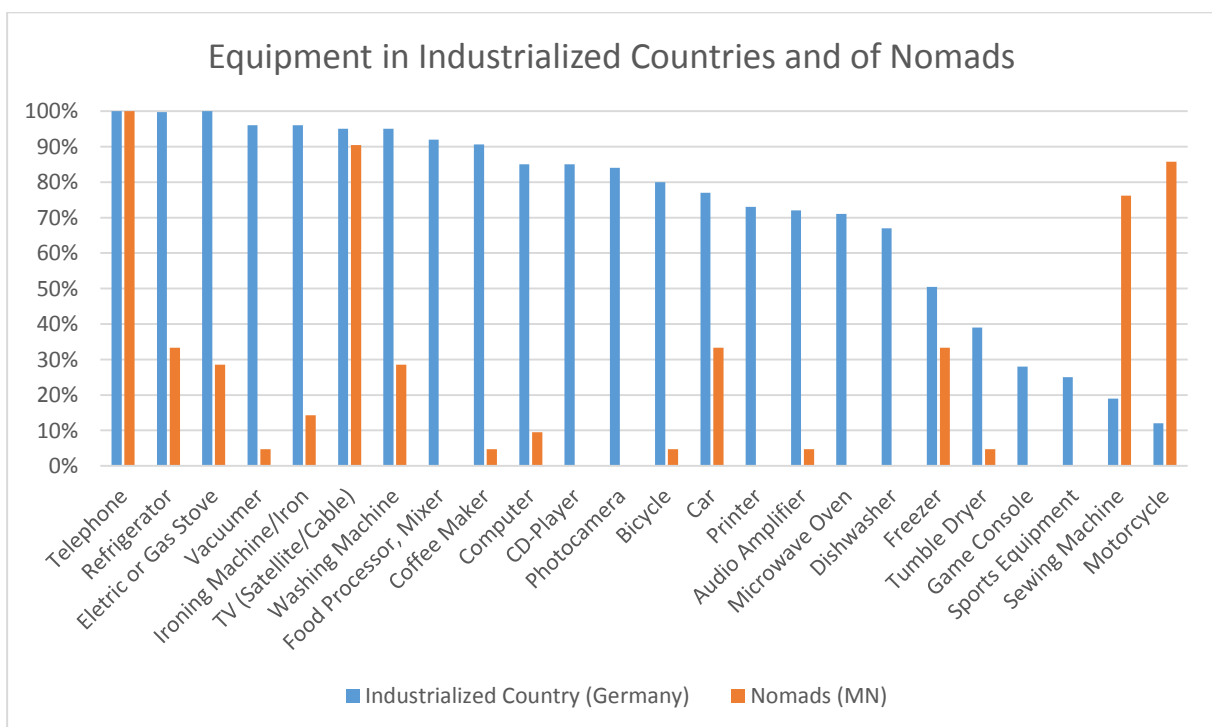


Figure 6: Equipment in Nomadic Households and Households in Industrialized Nations

Comparison to equipment in advanced industrialized region

How does this equipment compare to that of households in industrialized nations? Figure 6 compares the availability rates of 24 consumer durables in nomadic households and Western industrial nations. The average availability rate in Mongolian households is 23 % compared to 72 % in Western countries. A system of differences between nomadic households and households in industrial nations can be observed. Figure 7 shows the results and is sorted according to nomadic availability rates.

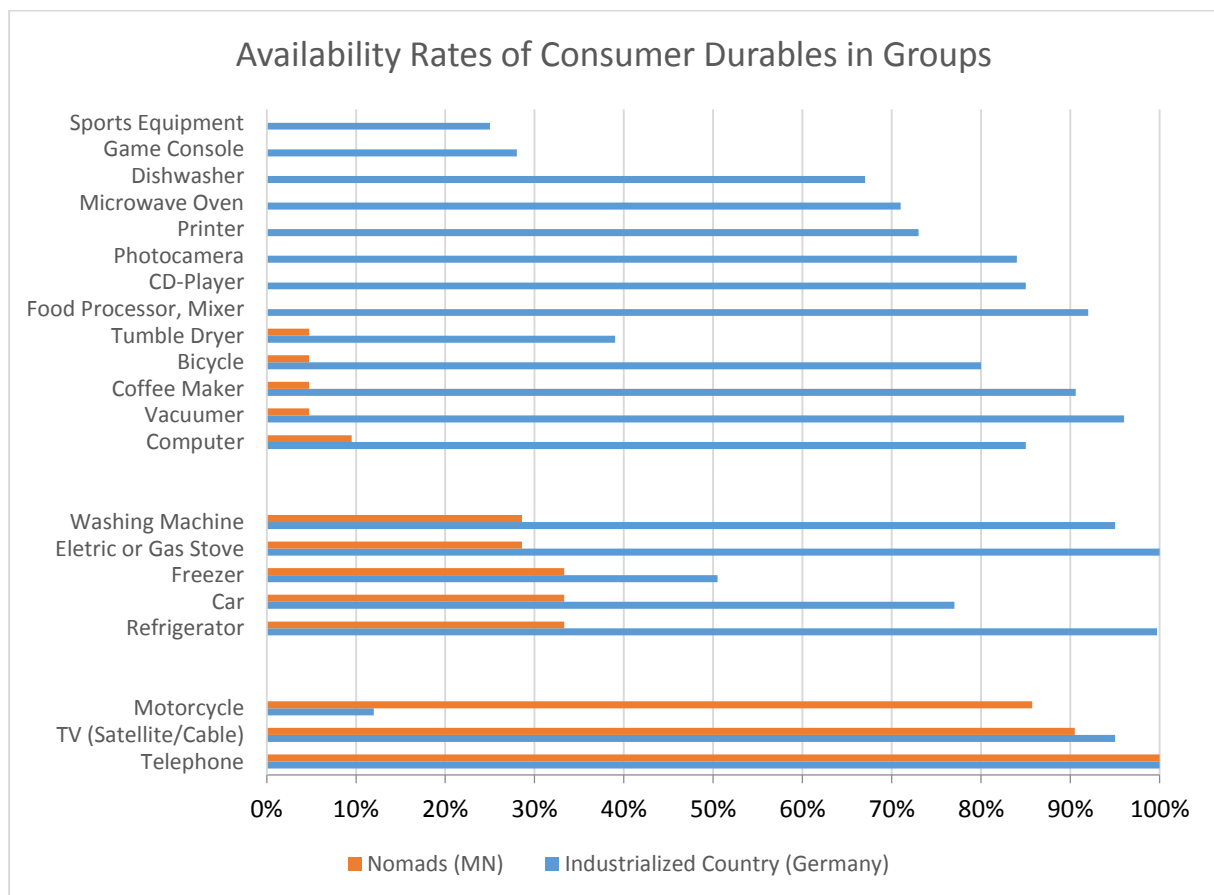


Figure 7: Availability Rates of Consumer Durables in Groups

We distinguish three groups of durable household goods:

Group 1: For the first three objects (telephone, television and motorcycle), a very high availability of 92 % is achieved in nomadic households.

Group 2: In the next group, which includes washing machines, gas or electric stoves, refrigerators and freezers or cars, only one in three nomadic households still has an appliance, while 84 % of all households in industrialized countries have one.

Group 3: For all other durable consumer goods, nomadic households have a disposal rate of only 2 % (!) compared to 70 % of households in industrialized nations.

To sum up: Nomads have a high level of equipment for a few *entertainment items*, a low level for some *goods to make work easier*, and practically no other equipment.

One possible explanation is the hypothesis that the nomads have so little income that they can afford only a few very highly valued and at the same time sufficiently cheap goods, while the income is not sufficient for other goods.

This hypothesis is supported by the fact that nomads with better equipment have larger herds and more income. Nomadic households with second group consumer goods (i.e. electric or gas cookers, refrigerators, washing machines) have about 40 % more animals than nomads who cannot afford consumer goods in this category (842 instead of 613 animals).

Equipment and Income

The relationship between the provision of nomadic households with consumer goods and their income is illustrated in Figure 8 and Figure 9.

Since the income could not be queried directly, the size of the herd is chosen as a proxy in Figure 8. It shows an impressively high correlation between the size of the herd and the number of durable consumer goods used.

Meanwhile, Figure 9 shows the relationship between the number of consumer goods used and the (financial) surplus of business income over business expenditure in Mongolian tugriks (MNT)¹³, i.e. the difference between income from livestock farming less expenditure on the same. The correlation is not quite as high, partly because many nomads estimated their income and expenditure roughly and also gave unrealistic data.

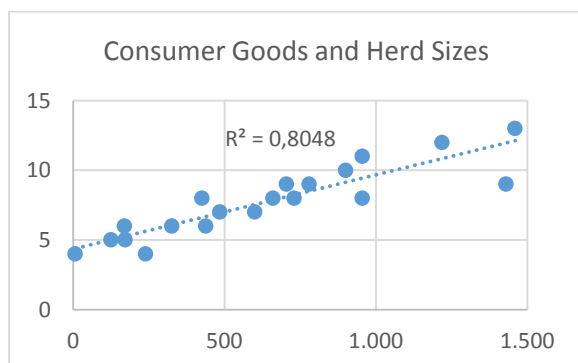


Figure 8: Number of Consumer Goods Depending on the Herd Sizes

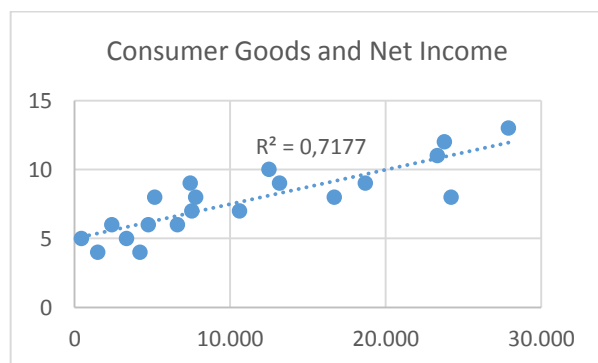


Figure 9: Number of Consumer Goods Depending on Net Income

¹³ 1 Euro equals about 3,000 tugriks.

Summary:

- The equipment of nomadic households with durable consumer goods is well below the level reached by households in industrial regions.
- Above all, there is a lack of equipment that makes daily work easier, like washing machines, gas or electric stoves, refrigerators and freezers.
- Only mobile telephony and entertainment goods (TV) that are solar powered and whose signals are received via satellite are available nationwide.

In the following we want to examine whether the nomads also value those goods which they themselves have most and whether they want those goods which they do not have to be less strong. Perhaps there is also a discrepancy between the appreciation of goods and their availability in nomadic households.

3.2 Valuation of the Attractivity

In the following, we examine the value that nomadic households attribute to certain consumer goods, furnishings and circumstances in their yurts. Do they want to have a particular consumer good urgently and with high-intensity, or would it just be "nice to have"? In the following we will use the terms "desire intensity" or "attractiveness".

The specialist literature speaks of attractiveness when a characteristic is

- (i) is *pragmatically useful*, i.e. effective, efficient ("useable" for any task), and
- (ii) has beneficial *hedonic quality*, i.e. conveys joy and fun as well as positive feelings in general.^{14 15}

The subjectively perceived attractiveness of goods was tested in our study with a three-stage Likert scale (high, medium and low attractiveness). The three levels were rated with 8, 5 and 2 points, respectively. In addition, there were 0 points for a rejection of a good. For the evaluation we calculated the attractiveness also as a relative value. This is obtained by dividing the absolute attractiveness value by the maximum achievable attractiveness value of 8. 50 % means, for example, that the respondents awarded an average of 4 rating points.

Nomadic Households' Wish List

Valuations were asked for typical consumer goods, furnishings and living conditions in private households. They were also asked about furnishings such as kitchen units, fresh flowers

¹⁴ Cf. <https://www.usabilityblog.de/das-geheimnis-attraktiver-produkte-und-wie-man-attraktivitat-messen-kann/>

¹⁵ The hedonic quality adjustment is a statistical procedure with which the influence of individual product features, such as the hard disk size for desktop PCs, on the price is calculated (regression). In this way, the monetary value of the quality difference between a replacement model and a replacement model can be determined and thus excluded from the price change. Cf. Statistisches Bundesamt (2018).

and books. Such facilities are standard both in Ulaanbaatar and in industrialized regions. Figure 10 and Figure 11 show that such facilities, namely flowers and front yards as well as modern kitchen units with worktops at normal sitting heights, are currently used to advertise in Ulaanbaatar in order to raise people's interest in real estate.



Figure 10: Flowers and Front Yards



Figure 11: Modern Kitchen Units

What results have been achieved? Figure 12 documents the attractiveness assessments in extracts. The percentages reflect the relative attractiveness. The figure shows that for a number of goods which are typically *not* available, in nomadic households there is high desire intensity. The most urgent wish is a washing machine, desired with an intensity of 92 % of the maximum. Next are a toilet, television, a shower and a comfortable heating, each with about 90 % intensity of desire. Of these things, nomads practically only realize television. The next ranks are a bedroom separated from the living area and a wardrobe. These are practically all attributes of modern life that are usually available to everyone in apartments in large cities. Big-city apartments therefore have exactly what nomads want for their lives with high intensity.

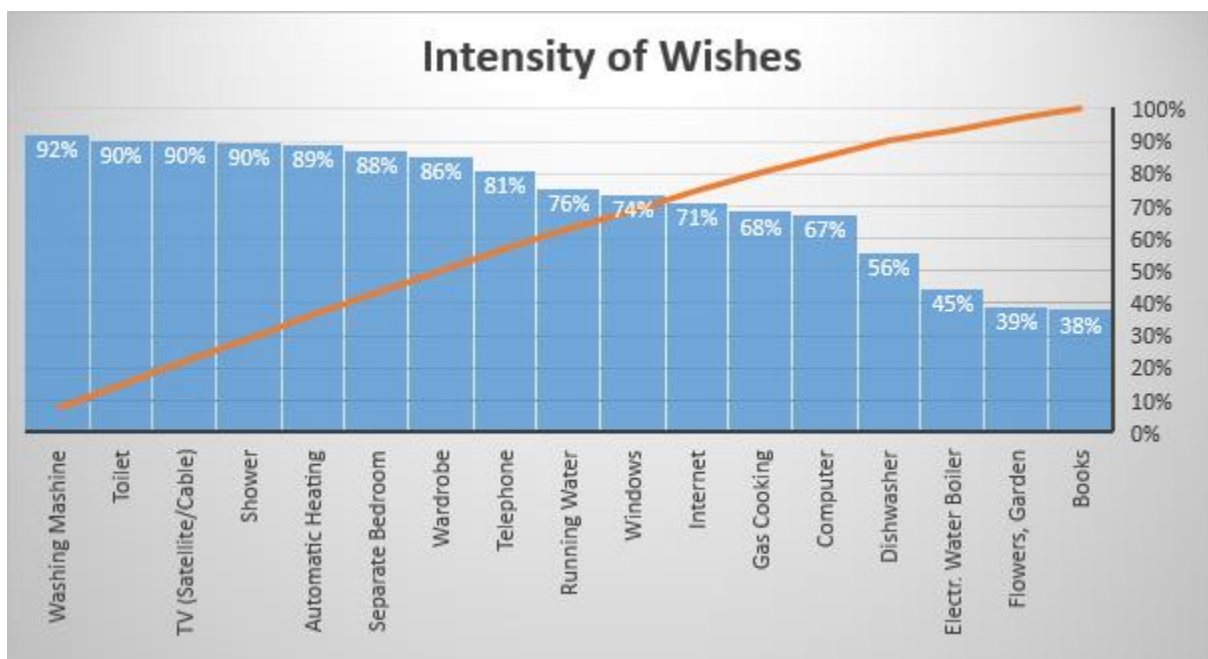


Figure 12: Intensity of Wishes for Household Equipment

Wishes and Reality

The question arises as to which of the goods desired with high intensity the nomadic households already possess? This will be considered in the next study. Figure 13 illustrates the divergence between desire and reality in nomadic households. It shows nomads' desire intensity in comparison with the actually available equipment of the nomadic households. Both are given as relative attractiveness, i.e. as a percentage of the maximum. 50 % wish intensity means that half of the nomads want a good of high urgency (or the average of the nomads surveyed chooses a good with half urgency), while a degree of equipment of 50 % means that the good is actually available in half of the nomadic households.

Figure 13 shows by how much desire and reality diverge. In fact, they only coincide more or less with regards to television and the internet. With all other goods, which essentially determine the modern quality of life, the realized or realizable is far behind the desired.

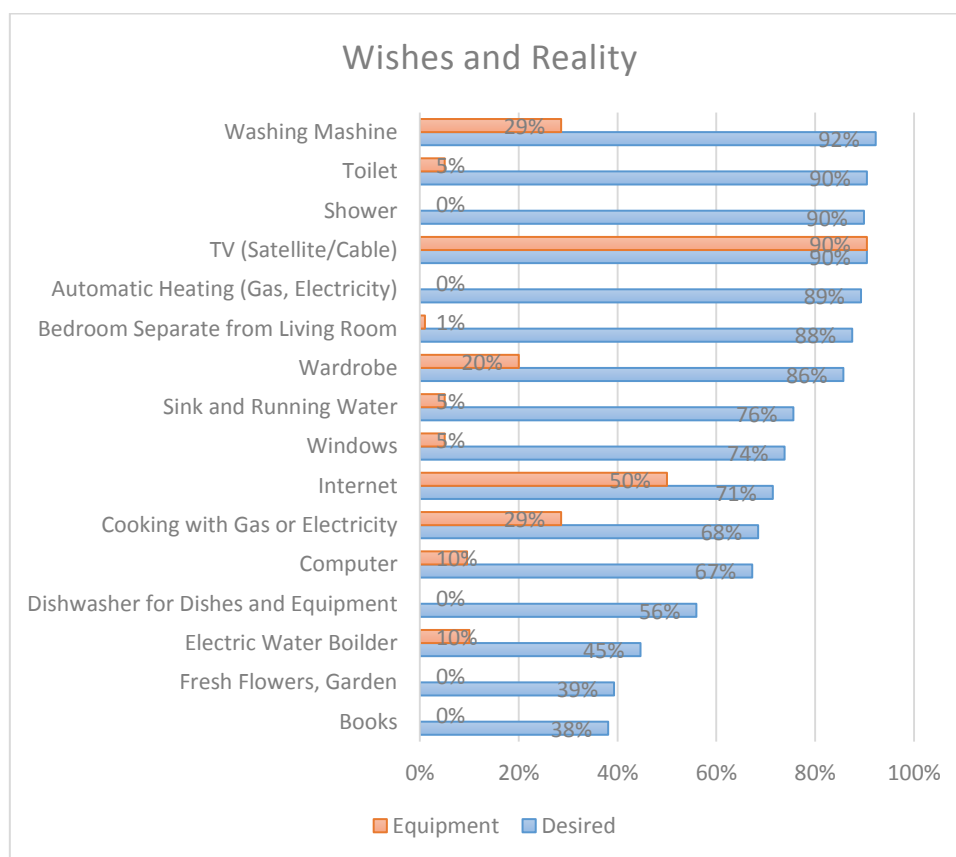


Figure 13: Equipment and Wishes of Nomads

Why do desire and reality differ so much? During the survey the nomads often complained about the difficulties of realizing their wishes. The financial means for this would not be available. The income was just enough to cover the most necessary current expenses. Even for

repairs of the existing, the funds are often not sufficient; new acquisitions could not be considered. Repairs frighten the nomads. If repairs occur, more animals than desired have to be sold, which increases the income risk for the next years. Nomads complained that things often break down during relocation. They want more durable material. Expensive items such as yurts or log cabins are often not self-generated, but inherited. There are households in which trucks, motorcycles or television sets are broken and cannot be repaired for lack of money.

Testing for Biases

Finally, we discuss the question whether the nomads were possibly guided by the (lacking) feasibility of their desires when naming the desired intensities, i.e. whether they indicated a low desired intensity due to the lack of a chance of realization. If the above-mentioned desire intensities had been distorted by this, then there would have to be a correlation between the desired intensities and the income or the size of the herd. This can be tested empirically. Figure 14 and Figure 15 relate the number of animals (herd size) or the surplus of commercial income over expenditure (both abscissa axes) to the desire intensities (ordinate axis). There are no correlations - the broad point clouds prove that on average there is no relationship between the expressed intensities of desire and the financial circumstances of the nomads. This means that on average the desired intensities are not distorted by income relationships.

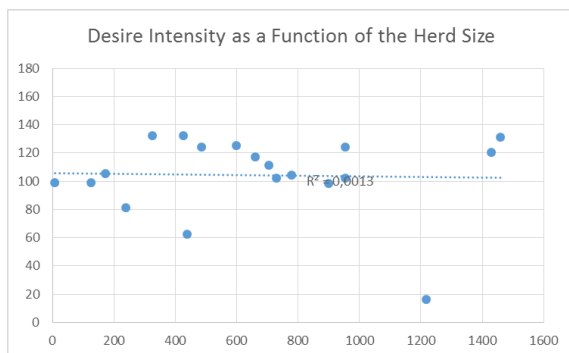


Figure 14: Wish Intensity and Herd Size

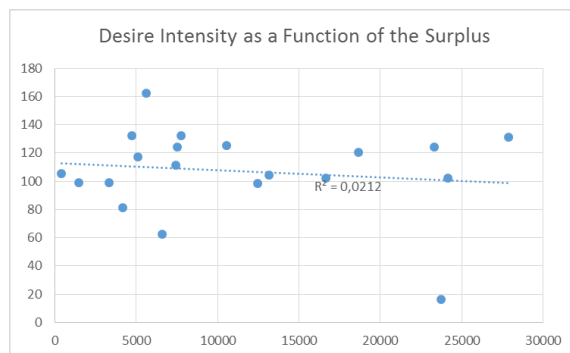


Figure 15: Wish Intensity and Financial Surplus

The Nomads' Wishes versus the Current Situation in Mongolian Cities

In the following, we examine how the wishes of the nomads relate to the situation of households in large cities and industrialized regions, as a yardstick for which we again use the results of surveys in industrialized countries. Figure 16 shows the results for those goods for which the necessary data could be determined. We find that the nomads' desired intensities are highly correlated to the actual equipment of households in industrialized countries. The

wishes of the nomads are therefore exactly within the limits of what is usual and already achieved in wealthier regions all over the world.

Or to put it another way: Nomads have no other wishes than what families in large cities and industrial regions have already achieved. They do not have a different idea of desirable household items and facilities per se, simply because they are nomads.

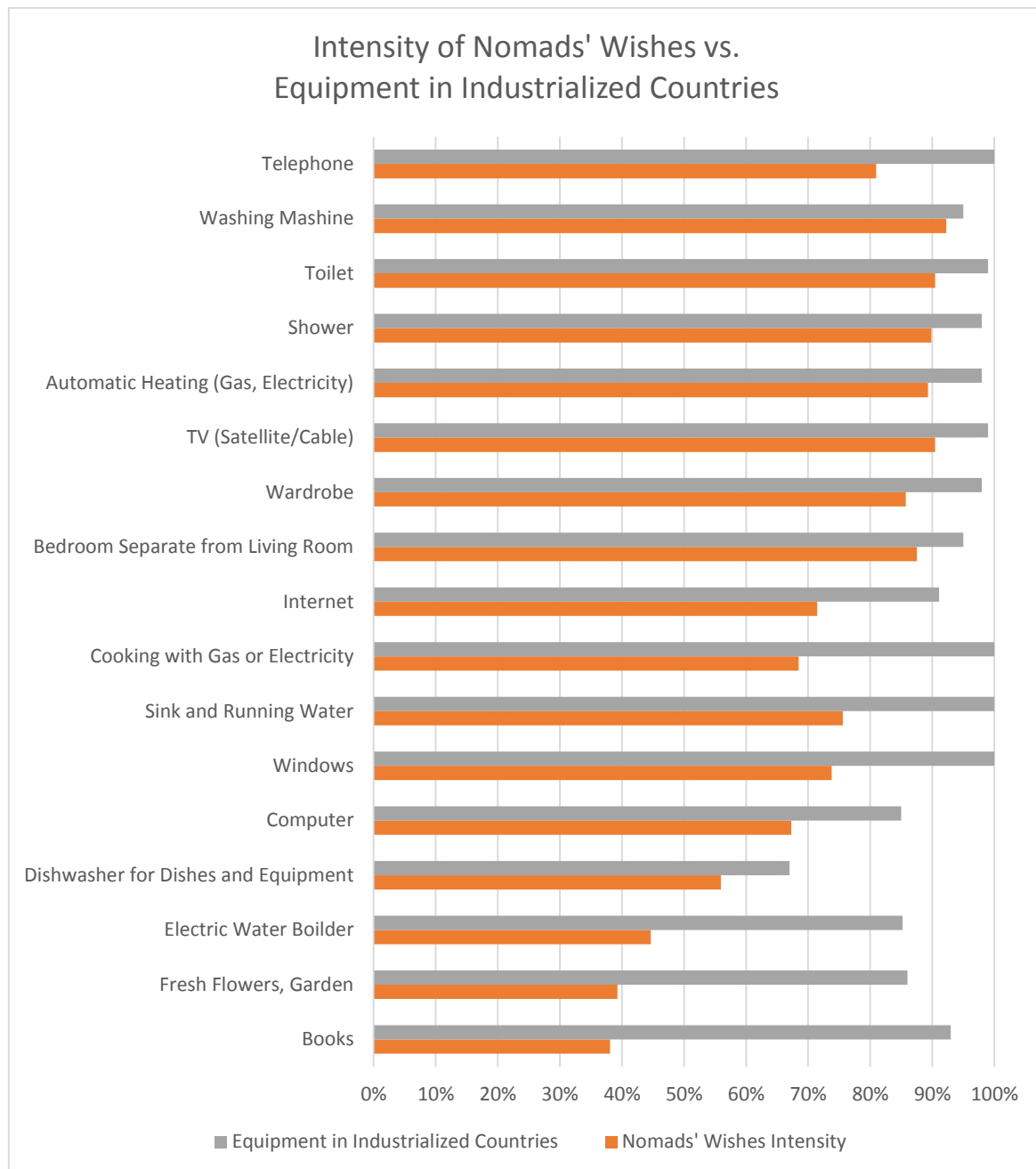


Figure 16: Nomads' Wishes vs. Equipment in Industrialized Countries

3.3 Financial Situation

This leads over to the discussion of the financial situation. It is about the central question: What revenues and expenditures do nomadic households have and what surpluses can they use for private purposes, especially purchases?

The survey collected data on commercial revenue and expenditure. It turned out that the nomads had no written accounts. They answered out of their minds. In individual cases data was unrealistic. Such information was corrected to average values. By and large, the picture was realistic (see Figure 17).

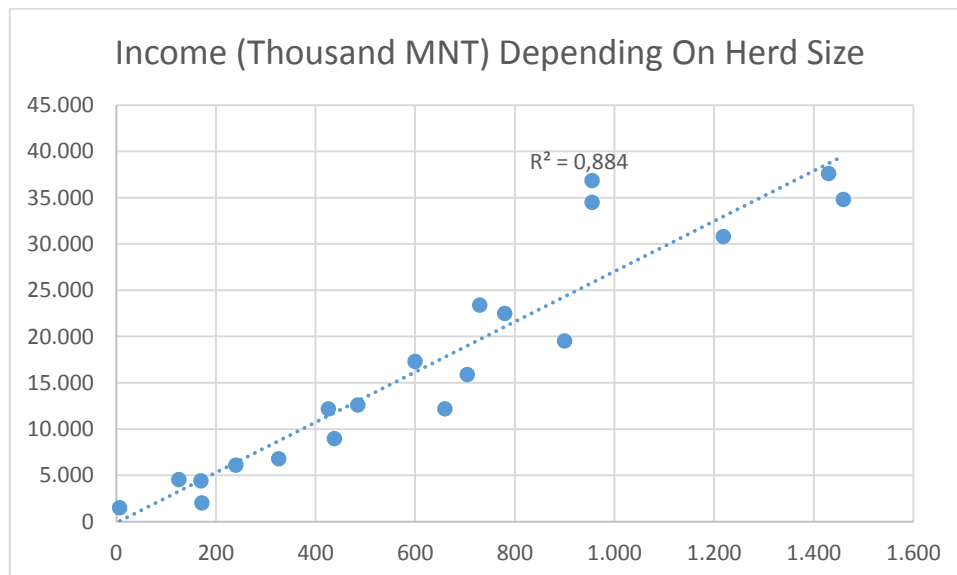


Figure 17: Income Depending On Herd Size

Figure 17 illustrates the relationship between the commercial income of a nomadic household and the size of the herd as measured by the total number of animals available.

On average, a nomadic household has revenues of 17 million tugriks.¹⁶ Half of this (52 %) is attributable to the sale of sheep, 35 % to Kashmir and 5 % to sheep wool. All other sources of income play only a minor role. Nomads with large herds have revenues of over 30 million tugriks.

There is an average expenditure of 6 million tugriks per household. The main items are winter feed and petrol, together they account for 90 % of all expenditure. In total, there is an average

¹⁶ According to the Statistical Yearbook of Mongolia (Agricultural Sector, Overview 2017), average income of a nomadic household is 11 million tugriks (table 25, p. 48 in XAA-2017-en.pdf). This is less than in our findings. The deviation is a suitable range of outcomes that is to be expected in small surveys. In our survey, Nomads with large herds of more than 900 animals are overrepresented, cf. Figure 4.

surplus of 11 million tugriks to the family's life.¹⁷ This corresponds to 4.000 Euro per year for families that consist of 4 and 8 persons.

The support of children during their studies is estimated at 2.5 million tugriks. The expenses for food for a medium-sized family amount to about 2 million tugriks.

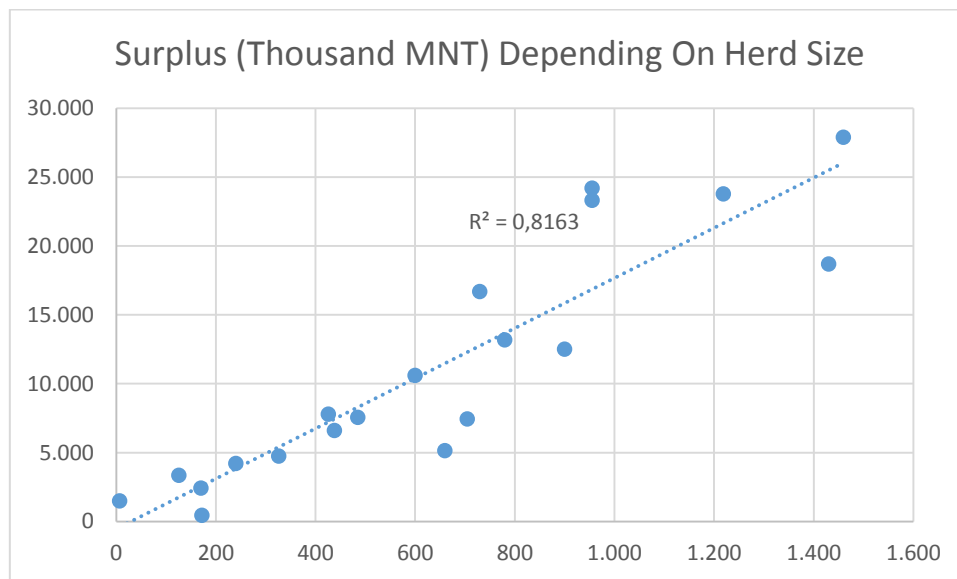


Figure 18: Surplus as a Function of Herd Size

Figure 18 illustrates the relationship between herd size and commercial surplus. We find that nomads with herds of over 900 animals can obtain a surplus of 20 to 30 million tugriks. On the other hand, nomads with very small herds have virtually no financial means to raise from their herds. They live from the natural products of their herds, have very little financial means for the most necessary expenses and have practically no chance of acquiring any durable consumer goods. Such households often respond to questions such as how they paid for yurts "inherited". Sometimes nomads with small herds also have additional income resulting from field work, restaurant operation or a pension plan.

Very large herds of over 1,000 animals have the disadvantage that the effort for the family becomes too great and wage work has to be outsourced, so that the net yield does not grow accordingly. This means that even the most productive nomads can practically not exceed an annual income of 30 million MNT (10,000 Euro).¹⁸

In summary, given the income situation outlined above, it is understandable why nomads have such a limited supply of durable consumer goods.

¹⁷ According to the National Statistics Committee (2018), the surplus is 9 million tugriks (p. 48, table 25).

¹⁸ Cf. Chiu (2016).

4 Suggestions for Improvement

4.1 Improving the Quality of Life

In the following, the proposals made to improve the situation of nomadic households in Mongolia will be reviewed and briefly outlined. They will be compared and evaluated with the results of this study.

First we summarize the most important findings:

- The equipment with television reaches almost 100 %.
- The equipment with goods to facilitate the work in the household (washing machine, stove, refrigerator or freezer) is less than 30 %.
- The equipment with goods of quality of life such as separate living and sleeping areas, kitchen units, worktops at an ergonomically reasonable height and windows is below 2 %.
- The equipment with goods of the sanitary area such as toilets, showers, sinks with running water is also below 2 %.
- All these goods are desired with a high intensity.
- The desired intensity of the nomads with regard to the goods mentioned correlates with the level of equipment achieved in industrial regions. Nomads want what has been achieved in industrial regions.
- The commercial income correlates with the size of the herd. The sale of sheep and Kashmir contributes the most to the income.
- Commercial expenditure mainly concerns petrol and winter fodder, and to a lesser extent heating material.
- An average family of 4 to 6 persons has a surplus from a business of about 11 million tugriks p. a. (about 4,000 Euro).
- Nomads with large herds have higher surpluses. But the surpluses cannot be increased arbitrarily, because the expenditure becomes too large for a family and wage work must be assigned.
- Nomads are afraid of repairs and damages. They demand high robustness of all devices.

4.1.1 Windows

The survey showed a high attractiveness of more light and outlook in yurts. Some simple solutions were found with some nomads. One of the nomads surveyed had covered the roof hatch (which is traditionally covered with a piece of darkening fabric) with a plastic film,

making the yurt a bit lighter. He also solved the rain problem in this way. However, there was no opening for the stovepipe, which could be made right next to it.

There are solutions in the literature that work with additional doors in yurt walls filled with glass or plastic instead of wood (see Figure 19).



Figure 19: Doors and Windows

There are also solutions where the entire outer skin of the walls is made of transparent plastic film. This allows windows to be created in the desired places by means of appropriate interior cladding (see Figure 19 on the right).

Nomads knew such solutions. They were concerned about the costs and fear of damage to the glass in the event of a move. Nomads who had chosen solutions with foils complained about the poor quality of the foils – the solutions are not technically mature.

Suggestion:

There is a need for research into the use of suitable tear-resistant and long-term stable plastic films.

4.1.2 High-Quality Equipment

There are proposals to give yurts a higher quality and to create an appearance similar to that of apartments in fixed buildings (see Figure 20).



Figure 20: High-Quality Equipment

Our survey confirmed the usefulness of such approaches. The surveyed nomads value a wardrobe. In addition, a separation of the living area from the sleeping area was desired with great urgency. The illustrations show examples of luxuriously furnished yurts. Such suggestions certainly represent a certain improvement. But they cannot solve the wardrobe problem, for example, because they do not deviate from the shape of the yurt. Moreover, they do not solve the problem of separate living and sleeping areas. What is more, the use of furniture with dirty clothes is problematic as the elegant and clean state cannot be maintained in the long run.

All in all, such proposals of luxurious yurts, like those in Figure 20, certainly do not meet the demands of nomadic everyday life. The elegant furnishings will not survive many removals. A high need for replacement with corresponding running costs is likely. And not even the above-mentioned wishes for separate living and sleeping areas will be satisfied.

4.1.3 Room Height

During the interviews, the wish was expressed for a greater room height in the yurts, also at the edge (i.e. near the yurt wall), in order to be able to use the yurt more comfortably.



Figure 21: Wooden hut

There are already solutions for this. On the one hand, Figure 20 above shows that outwardly curved roof poles exist which also allow a greater room height at the edge without having to raise the walls. On the other hand, in some parts of the country we have found solid wooden huts which nomads erect at their summer locations (Figure 21 and Figure 22). These are built with the necessary room height; material cost is about 1.5 million tugriks. Thus, they are not prohibitively expensive.

Suggestion:

It would be conceivable to develop standardized hut constructions that include more desirable functions such as an acceptable room height at a reasonable cost.



Figure 22: Wooden huts

4.1.4 Sanitary Facilities: Toilets

There is a desire for toilets. This wish could be fulfilled relatively easily by the nomads themselves even without money. It would only require a shed that is covered by tent cloth and a pit, which would be dug at some distance from the yurt. In a few places we noticed such toilet facilities, so they are basically known. Nevertheless, they are little used. But toilets were desired in the questioning with large intensity.

Suggestion:

As an alternative to self-excavated pits, chemical toilets – now standard in camping in industrialized countries – can be considered, especially in connection with the "unit" discussed below. The extent to which such toilets are practical in the steppe and in nomadic use would have to be examined.

4.1.5 Running Water for Washing

According to our survey, the wishes with the highest degree of urgency include not only toilets but also other sanitary facilities. Nomads want a *shower* and a supply of *running water* for washing hands and cleaning appliances.

These desires coincide with developments in industrialized countries, where bathrooms are becoming central spaces of family life and increasingly lavishly furnished. In addition, bath-

rooms are regularly renovated and adapted to the latest fashions. The importance of sanitary facilities can also be seen in the developments in caravans and motor homes, where a toilet, washbasin, sink and shower are installed even in the tightest of spaces. This proves the intensity of the wishes for such facilities.

In Mongolia, too, there are proposals to place sanitary facilities in yurts (Figure 23). However, many proposals (see example) seem rather artificial and impracticable for everyday use.



Figure 23: Sanitary Facilities

Some nomads hang a water reservoir above a small sink (Figure 24). This allows them to wash their hands without the help of other people.

Running water seems to be hard to imagine for nomads. They argue that it would be costly as they must get water by vehicle. In our survey, distances of 2 to 20 km were mentioned. Every trip to get water causes costs, whereby the nomads tend to minimize the trips and thus the water consumption.



Figure 24: Sink with Water Reservoir

Proposal water supply:

An efficient water supply for nomadic households is to transport as much water as possible at once. Instead of the current open barrels, large tanks and electric pumps are needed to pump the water onto a lorry and from there, upon arrival at the yurt, to a high water reservoir from where the water supply then takes place. Suitable water supply systems should be developed.

Proposal sanitary facilities:

Sanitary facilities such as toilets and showers as well as a running water supply with water (i) in the cooking area, (ii) for cleaning commercial appliances and (iii) in the private hygiene area (privacy required) cannot be realized in a practical way in a yurt. It is therefore necessary to think of an independent "unit" to accommodate these facilities. This is outlined below.

4.1.6 Facilitation of Daily Work

In addition to sanitary facilities, other wishes became clear in the survey. Thus a group of wishes became clear, which refer to facilitating the *daily work*. The most urgent wish was for a washing machine. Furthermore, an automatic heating system is desired, which saves the laborious heating with dung. At the same time, tedious cooking on a dung oven is to be replaced by cooking with electricity or gas. Appliances such as dishwashers and electric kettles were also desired, as well as refrigerators and freezers were. They facilitate the handling of food.

Such wishes make clear that a facilitation of the daily work processes is required. Cooking and heating with electricity is usually not necessary because there are no sufficiently powerful power storage units available. Occasionally wood or coal is used for heating, which is easier to use than dung. Cooking with gas could be found at some locations. Even though considered the most practical way of cooking, the supply for gas bottles is either not available or at least not reliable in remote regions.

Suggestion:

Nomads wish to replace dung as energy supply. Further research about alternatives is necessary, considering the entire use cycles from the procurement of energy to equipment for use.

4.1.7 Proposal of a “Unit” to Improve Sanitary and Labor-Saving Equipment

The solution to these problems is to think of a "unit", i.e. a mobile solution as a replacement for the traditional yurt, which

- (i) accelerates and facilitates the daily activities of life (heating, cooking) by means of pre-installed equipment,
- (ii) solves the problem of sanitary installations by appropriate installations (frost-proof water tank in elevated position),
- (iii) allows efficient operations to be carried out in the production of agricultural holdings.

The aim of setting up the unit is also to make work less exhausting by avoiding unfavorable physical postures. Work will then take place on tables. Necessary equipment is within easy reach; work results can be stored within reach. The unit is equipped with technology and electricity. The unit is conceivable as an independent mobile solution as well as – much cheaper – as an attachment for truck platforms or in trailer form.



Figure 25: Mobile Units with Certain Facilities

Such units can already be found under the keyword "Mobile Homes" (Figure 25).

Suggestion:

The unit provides all the technical installations of a nomadic household. They are permanently installed and are therefore not endangered during removals. The unit is moved by pickup or platform trucks that nomads often use. The unit is supplemented by a normal yurt, which is then free of technical facilities and commercial activities and can be equipped comfortably and cleanly.

Assuming the desired intensities that became clear in our survey, such a unit would have to have the following permanently installed fixtures:

- Devices for energy generation (solar collectors, wind energy)
- Batteries
- Heating
- Water tanks and pipes for washing, cooking and cleaning appliances
- Pump for transporting water to the roof
- Shower
- Possibly a toilet
- Worktops for processing food at an ergonomically reasonable height
- Storage for necessary tools
- Storage for processed foodstuffs
- Refrigerator, freezer
- Seating group for resting

The unit can be linked to the yurt.

4.2 Improving Income

As shown above, the main source of income for the nomads is sheep meat (53 % of commercial income), followed by cashmere (35 %). Sheep wool follows by a wide margin. An improvement of the revenue situation will be investigated in a later project phase. We give only a brief outline of basic solutions here:

4.2.1 Tourism Revenue

Nomads could open up further sources of income. As such, tourism revenues have already been proposed more frequently.

In Tajikistan, the German GIZ has developed a tourism program in which families in rural areas who traditionally receive guests out of hospitality set a flat rate for overnight accommodation and breakfast of 10 EUR or 10 USD per person, which each guest (automatically) has

to pay. The installation and promotion of such a system could increase individual tourism and help (some) nomads.

4.2.2 Swiss Solution: Protection of the Agriculture

Switzerland's objective is to maintain small-scale rural farming (which is unprofitable) at all costs. Strict import restrictions are imposed on certain foodstuffs in order to support national production. The consequence is relatively high food prices, especially for milk and meat products.

4.2.3 US and Pyrenees Solution: Shepherds

In the middle west of the USA, large herds in the steppes were raised exclusively (i.e. labor-saving) as slaughter cattle in the 19th century. The herds were brought for slaughter to central slaughterhouses (famous Chicago), where the work processes were carried out efficiently (beginning of flow production). The herds were not run by families, but by shepherds.

The same can be found today in the Pyrenees, where large flocks of sheep graze on the high alpine pastures. Shepherds look after them. Their families live (with a high standard of living) in the valleys in villages and towns.

Such solutions can increase agricultural productivity. In addition, the standard of living of the rural population – that under this system mainly lives in villages and towns – increases. However, the goal of preserving the nomadic way of life is missed.

4.2.4 EU Solution: Direct Subventions

The last solution is to subsidize the nomads. The EU can serve as a model, where small farmers receive direct subsidies. Subsidies are conceivable which are personal, which are product-related or which are area-related.

Suggestion:

The pros and cons of different solutions and their financial viability should be further explored.

5 Conclusion

As in many other countries of the world, Mongolia is a migration country. Meanwhile 67 % of the Mongolian population lives in urban areas. The quality of life in cities is developing rapidly, while progress in the countryside is only slight. It is a trend to observe that nomads are moving into cities. A research project by GMIT and TUC is investigating the causes of rural exodus and ways to prevent or slow it down. In a first phase, an inventory of income and

living standards of nomadic households was carried out. It was based on an intensive qualitative and quantitative survey of nomadic households in different spatial and socio-economic life situations.

It turns out that nomads often have an income that does not allow them to invest. The yurt is inherited. Larger purchases require the sale of animals, which in turn increases the income risks of the coming years and is therefore avoided. The consequence is a very conventional, traditional life, without influence by changes in cities.

The equipment with durable consumer goods is sparse. We took 21 permanent consumer goods into consideration. While 72 % of these are present in urban households, nomadic households have only 23 %. These 23 % again are very unevenly distributed among three groups of goods with an extremely skewed distribution to the right: 92 % of all nomadic households have telephones, televisions and motorcycles. Only 31 % of nomads (84 % in urban areas) have appliances to make their work easier, such as washing machines, gas or electric cookers or refrigerators and freezers. The remaining appliances (computers, coffee machines, cameras, vacuum cleaners, etc.) that 70 % of urban households have are only present in 2 % of nomadic households.

Generally we see that nomads *do* wish for modern equipment – despite of the nomadic way of life. The survey has revealed that the nomads want all the amenities of modern life that are already available in urban areas. The above-mentioned devices to make work easier are in great demand. There is also a desire for better sanitary facilities such as toilets, showers and running water supply. In addition, better living conditions with separate living and sleeping areas, windows, wardrobes and powerful, simpler heating are desired with high intensity.

An analysis of the income situation shows that the actual equipment with durable consumer goods shows a high correlation with the size of the herd. But moving to larger herds is not a solution because even the nomads with the largest herds that can still be farmed by the family themselves still have a standard of living far below that of urban regions. The reason for this is the few marketable products of the nomads: Sheep and cashmere wool are the main sources of income. Other products are of secondary importance. The achievable prices of the main products are too low to allow the nomads a higher standard of living.

Overall, the study shows that the migratory movements of nomads from the steppe to the cities can be explained by a change in lifestyle to the one that enables the desired higher standard of living to be achieved.

The research is to be continued in two directions: Possibilities for improving the income situation and possibilities to improve the equipment in order to raise the standard of living in the steppe in to match urban areas.

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