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## **The Effects of Land Degradation on Food Supply in Mongolia**

The price of food across the globe in the last several years has risen at a dramatically fast rate. This increase is directly related to the soaring price of grains including wheat, soy, rice and corn. There are a multitude of factors that influence how these rising prices ultimately affect the consumer and in particular, the small-scale subsistence family farmer. How specific countries fare in relation to these rising prices is directly related to responses by government and humanitarian efforts to understand, develop, and implement plans and projects that deal specifically with that country's needs to secure more financially accessible food sources.

The focus of this paper will be on the unique problems of food scarcity in Mongolia. Like other regions, many factors effect agricultural productivity. These factors include historical practices, government sensitivity to the sources, climate, access to markets, and world interest. This paper will discuss how natural resource degradation, water scarcity and climate changes are affecting food availability in Mongolia. It will also discuss what government response has been to these issues and recommendations for improving the food availability for people in Mongolia.

Mongolia has been around for over ten centuries. In the thirteenth century, it was the most powerful country in the world, stretching over vast areas of Europe and Asia. Under the rule of Genghis Khan, Mongolia spread across thirty million square kilometers of land. After his death, Genghis Khan's vast Eurasian empire was divided into several Mongolian states. Later, the Mongolians returned to their Asian steppe homelands and came under Chinese rule. In 1921, Mongolia won its independence from China with backing from the Soviets. A communist regime was then installed and the borders of Mongolia as we know today were established. Despite the many disadvantages of a communist government, under the communist rule of the Mongolian People's Revolutionary Party (MPRP), illiteracy was virtually wiped out, there were jobs for everyone and food was grown on large, state-run farms. Then, in the early 1990's, MPRP yielded their power to the Democratic Union Coalition. Mongolia now has a free market economy and is a democratic nation. Although many Mongolians believe that they are on the road to improving their country, they are now dealing with the problems that come with adjusting to a free-market economy, which are all relatively new problems for this ancient country. The large climate changes, trends to urban living, increased mining and poorly planned economic development are all new problems that have led to land degradation and depletion of agricultural resources.

The typical Mongolian family is a classic nuclear family, consisting of a father, mother and two to three children. Mongolians are unique among poor populations in not valuing extended families. It is common for Mongolians to live with only their nuclear family and perhaps a widowed or elderly parent. Rural families typically live in a *ger*. A *ger* is a round felt tent that is perfectly suited to a rural herder's nomadic style of life. It is warm in the winter, cool in the summer and, most importantly, it can be disassembled and easily transported by an ox or a camel.

The dietary staples in rural Mongolia are meat, milk, and flour. Meat is usually grilled or stewed with onions and cold-weather vegetables. Daily dairy foods are cheese, yogurt, and airag, a bowl of lightly fermented mare's milk. Porridges made of millet, barley or oats, steamed buns, noodles and flat bread made of wheat flour are common carbohydrates.

Mongolians are traditionally herders and originally disdained growing crops. They now grow wheat, barley, potatoes, vegetables, tomatoes, watermelons, sea-buckthorn and fodder crops. Mongolians stay true to their roots and also herd sheep, goats, horses, cattle and camels. Their growing season is very short and lasts only about one hundred days. This makes it difficult to grow crops, especially if planting is delayed for any reason. The crops that do get planted though, are typically organic, and the meat that is produced is free-range. Demand for organically grown foods and free-range meat is increasing in wealthy countries of Europe and North America. Improved access to these markets could be a source of new income for Mongolian agricultural producers.

What little wealth there is in Mongolia is very unevenly distributed. More than a third of the population in Mongolia lives below the official poverty line, and the level of inequality is increasing with each year. As of 1995, thirty-seven percent of the household income or consumption by percentage share was held in the highest ten percent of the population while only 2.1% of this is going to the lowest ten percent. The GDP-per capita purchasing power parity is \$2,200 based on a 2005 estimate made by the World Fact Book. The Gini-index, an index that measures the degree of inequality in the distribution of family income in a country, measured 44 in 1998 in Mongolia.

Primary school, secondary school and upper secondary school, which combined last a total of eleven years are all state sponsored. Although only the first nine years of school are compulsory, the literacy rate in Mongolia is almost 98%. It is not uncommon for girls to stay in school and complete all, or nearly all eleven years of school while the boys enter the workforce after the compulsory years are completed. Despite the fact that women are frequently better educated than their rural male counterparts, it is women in Mongolia who are more susceptible to poverty than men, especially those women who are heads of households. The higher level of education makes them over qualified for many jobs in the informal market, such as mining or transportation. In rural Mongolia, women have little to no collateral, as the land and livestock are in the name of the man.

In Mongolia, there is a large “gray” or “shadow” economy. This economy is largely cash based and therefore it does not meet the hands of tax authorities or the banking sector. This makes it even more difficult to calculate. Despite this, the World Bank and other international financial institutions estimate that this grey economy is at least equal in size to that of Mongolia’s official economy. Having this “grey” economy reduces the government’s capacity to fund economic development programs because there is no tax revenue being collected from it.

Economics and changing governments are difficulties for the typical Mongolian subsistence farmer. However, currently, climate and the toll it has taken on pasture land are an immediate threat to survival for these semi-nomadic herders.

Inhospitable weather is nothing new to Mongolians. Its climate has always been harsh and has large daily and seasonal temperature ranges. In the winter, day temperatures reach below negative twenty degrees Celsius, and night temperatures dip to negative fifty degrees Celsius. Extreme summer temperatures are as high as thirty-eight degrees Celsius. Recently, however, Mongolians have had to deal with exceptionally bad weather. Between 1999 and 2001, Mongolia suffered the worst droughts in sixty years. This drought, which brought on destruction of pasture land, soil erosion and the loss of many streams and lakes, was followed by the worst winters experienced in thirty years. This “*zud*”, an extreme winter condition, brought on unusually large amounts of snow which resulted in the death of over seven million livestock. No one felt this toll

worse than the rural, nomadic-herding families whose livestock and main source of income was dramatically compromised.

After these periods of undesirable weather, many rural herding families lost all, or almost all of their livestock. Some of these families decided to move their ger to a more urban environment to be closer to markets and alternate employment opportunities. In Mongolia, moving to an urban environment means moving to Ulaanbaatar, the capitol city. As of 2006, 38% of the Mongolian population lives in the capitol, and the number is growing every year.

Agriculture accounts for almost twenty two percent of Mongolia's economy; it is also the main cultural focus. Ninety-seven percent of the land in Mongolia is used for pasture land for their numerous herds of livestock. Many rural Mongolians are nomadic herders, this means that they follow and herd their livestock to seasonal pasture land. With the collapse of the communist rule in Mongolia came the collapse of the large state run farms that have now been reclaimed as pasture land. Currently, subsistence farmers in Mongolia have returned to a more traditional, nomadic style of life, moving their families to accommodate livestock needs as they arise. This means moving to new pasture land as it is needed. In Mongolia, if you move your herd, you move your farm. Because subsistence farmers move a lot, there are no permanent crops in Mongolia. The crops that are grown by subsistence farms tend to be chemical free and environmentally friendly. Although the environmentally friendly aspect of this food is appealing, the poor quality of the products, mainly caused by poor crop protection, difficult growing conditions, and lack of post harvest transportation, coupled with unreliable delivery, related to poor road conditions, inhospitable terrain, and vast distances from any market, are not.

The poor quality and the unreliable delivery of Mongolian products are some of the major barriers to the commercialization of their products. Another barrier in marketing is that their products cost more than average. This is directly related to the high cost of intense labor and the transportation of the goods. Mongolia is completely land locked and therefore has no port from which they can export their goods. It is also difficult and expensive to travel within Mongolia. If they were to set up a more efficient form of transportation for their goods, the prices might go down and Mongolian products would be even more appealing.

Since 2001, many Mongolians have turned to mining as a source of income. Mongolia is rich in natural minerals such as copper, coal, molybdenum, tin, tungsten and gold. These resources have been exploited in the past during the communist rule of Mongolia. There are now several abandoned coal plants and mines that are being bought by private organizations. Although mining is a large source of income (it employs over 12,000 people), it contributes greatly to increased levels of land degradation and reduced water quality. The minerals get into the groundwater, which accounts for eighty percent of Mongolia's water supply. If this water is contaminated, Mongolians have to rely on surface water.

Many rural households rely on the limited amount of surface water as their main source of water. After the severe droughts between 1999 and 2001, many small lakes and streams dried up, leaving even less water for Mongolia. Rural herding families get their water from wells or nearby streams and rivers. The recent increase in mining activity has greatly contributed to the reduced water quality. In 1995 Mongolia implemented the Mongolian Law on Water and relevant legislation act. This law set up guidelines to protect water reserves and water quality, set up plenary rights to deal with water shortages, and set up safeguards against water pollution along with many other important plans and regulations to better the water quality in Mongolia.

In the past, the herder's response to a low food supply was to increase the size of their herds and plant extra crops. This approach however, is short sighted. Presently, the pasture lands of Mongolia are under serious threat. Lands are currently recovering from the soil erosion and land degradation that occurred following the droughts and horrible winter conditions during 1999 to 2001. Because of the loss of pasture herders are having to find new lands on which their livestock can graze. In areas around Ulaanbaatar, the land is severely overgrazed due to the outskirts *ger* communities of part time herders who moved there in an attempt to be closer to the markets. These facts combined with increased land use for mining are major contributors to land degradation and desertification in Mongolia. If even more livestock are given to rural subsistence herders, over grazing would continue. If there is nothing to feed the livestock, the animals die, and that is not good for anyone involved. Before small-scale subsistence farmers and herders increase their productivity, pastureland needs to be regulated to allow for re-growth. The Mongolian government realizes this and emphasizes fixing this problem in their Poverty Alleviation Programme set up under the Millennium Development Goals. One of the top priorities is increasing the number of livestock, but it is followed by managing lands efficiently and improving supply of feed and water for grazing lands. In April 2008, The German Development Ministry made a financial commitment for the next two years to help support environmental protection projects and to provide continued support for economic reforms in Mongolia. In the long run, increased productivity of rural subsistence herders and farmers will be a good thing not only for the herders but for the economy, as the excess production could be sold.

I think that in order to increase productivity by subsistence farmers and nomadic herders, the best thing that we can do is show that there is a market for their products. Implementing increased productivity is easy, just give the herders more livestock; they have a tradition of knowing what to do with it. However, if there is no market for them to sell their products in, herders will not have the money to sustain their herds, and livestock will die off. The United States has already showed support of relations with Mongolia and Japan has also proven to be an important "third neighbor" trading partner.

Corporations, national governments and other organizations could support trade with the official economy. Maybe if the people involved in the "grey" economy see that the official economy is doing well, they will switch over. The end of this unofficial economy in Mongolia would bring a lot of unseen revenue to the official economy further funding land and economic development projects. Outside organizations can also continue to show support of Mongolia's efforts to bring their country into the modern world where it has the potential to be.

Increased demand for food is not really a problem in Mongolia; there are less than 2 people per square kilometer. Food security on the other hand, is a problem for nomadic herders. These people rely on their herds not only for a livelihood, but for their food supply. If these people cannot afford to keep their livestock, or their livestock continue to die due to the harsh climate, lack of food, and low fresh water supply, rural nomadic herders will suffer greatly and perhaps cease to exist.

Many people in the West would view the Mongolians as primitive, and in some ways, they are. Thirty-five percent of the population does not have a permanent residence. They are semi-nomadic herders that live off of their livestock. Mongolia is the only country in the world where the number of horses surpasses that of people. It is very strange to us that there is a country where a large portion of the population does not have running water, electricity or heat and they carry their home with them on the back of a camel. Even though all of this is going on in Mongolia, they are working hard to make life better. Efforts are being made to implement new ideas and laws to protect their land from degradation, their water from contamination and their

people from being stuck in poverty. They do not have much money and their climate is less than desirable, but Mongolians are a tough people. They have made it though the last ten centuries, and will probably be around for many more to come.

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