

A summary of: ‘Human-hazard interaction – social exposure and system resilience in the Gobi Desert, Asia’. By Dr Troy Sternberg, The School of Geography and the Environment, Oxford University, 2012.

This project aimed to document and increase understanding of human-hazard interaction in a region affected by droughts and extreme winter conditions that challenge ecosystems and communities across the southern Mongolian and northern Chinese dryland. Findings were based on eleven weeks of fieldwork.

The three fieldwork locations:

China

(i) Minqin County

This is located in Gansu Province and is an agricultural zone. The region receives 115mm of precipitation annually; thus farming requires heavy government investment in infrastructure, water resources and crop support to be productive. Local officials control water supply, dictate crops to be grown and exert great impact on local livelihoods.

(ii) Xilingol

This region of eastern Inner Mongolia Province is a traditional herding region area now undergoing great change. Government policy has encouraged economic growth in this region through promoting mining and farming in this area and thus herding has declined. There is a state policy of ‘ecological resettlement’, restricting herding (and thus a nomadic lifestyle) and encouraging the ethnic Mongolians of the region to shift to settled livestock raising and even outmigration to urban areas.

Mongolia

(iii) Dornogov, Dundgov, Omnogov Provinces

This is an area of low population, moderate development and a nomadic herding lifestyle. The area that herders move around in is vast, however it is changing as large scale mining and mineral exploration has begun.

Key Findings

Minqin County, China

Approximately 300,000 people live in Minqin County. The area has been considered militarily important as centuries ago it was on the invasion route used by others to enter this area. The local government has been very effective in getting money from the central government to stop this strategic region from being swallowed up by the desert. Government support has kept the area going. Though considered a marginal area, farming is promoted and organised by the government with significant investment and financial support. This is needed due to the very low precipitation so heavy investment is needed in water infrastructure. Historically there have been high levels of Han – Chinese migration into the area and population levels have increased. Food is often monoculture and produced for export to other parts of China. Crops might include corn, millet, onions and also pig farming. To support farming in this county farmers are given loans, however they can struggle to pay them back if their farming is not profitable. This then ties them under the control of the government. Water access is controlled through quotas.

This is a disaster risk dry land. The physical environment is challenging with hot and cold extremes and low rainfall. Wind is also a major hazard. These hazards can ruin crops and make little available for export, so farmers are forced to buy from local markets which make them vulnerable to high food prices.

Despite the low rainfall in the area, the heavy government involvement means management systems exist to supply water, thus reducing the hazard that low rainfall presents. Government support and loans had paid for plastic covered green houses with dirt foundations which protects seedlings in spring and enable plants to survive cold winters. These greenhouses were costly however, often consuming half a farmer's income. They were also very vulnerable to windstorms in winter which tore the plastic covers and damaged plants. Although there had been a lot of government support for them to be initially built; the government did not necessarily invest when there had been a disaster. Whereas previously winter windstorms had been an inconvenience (i.e. when populations used to herd cattle here), they were now the major natural disaster in the modified farming system. The option of building stronger greenhouses that could with stand wind was not considered worth the expense involved.

Ultimately if the farmer could not make financial ends meet (due to damage to greenhouses) they moved away and abandoned the farm. There area is limited in jobs and other economic opportunities. Many moved to the east coast urban industrial areas. The

remaining population tends to be ageing and there is a less fit and active work force to maintain these farms.

Xilingol, China

This area was traditionally a herding region populated by ethnic Mongolian people. It is a semi-arid region and hazards include drought in the summer and extreme cold conditions in the winter. It is an area of rapid change with many of the ethnic Mongolian herders now settled into villages, encouraged to do so by the Chinese government. There is a restriction on livestock numbers in the area, arable fields are protected with fences and loans are not available for cattle related investment. The result is this blocks migration routes for herders; if they cannot move the cattle may run out of food. Therefore herders are forced to buy fodder (food for their cattle) at market, potentially spending 25% of their income on cattle feed. This makes a herding way of life unviable – resulting in a ‘closing down of the grasslands’. Many herders are losing their traditional way of life and becoming individually unresilient to dealing with hazards.

When there is a hazard e.g. drought in the summer or a winter storm, there will be high government intervention. They will encourage fodder purchase and housing the animals in the winter to protect them. However when eventually becomes economically unviable and thus some herders will not be able to continue to herd. The herders then become reliant on central government solutions to their problems.

Just like in Minqin County, farmers (in this case ethnic Mongol herders) are forced to move to urban areas – frequently the industrialised east coast. An additional challenge these farmers may face is discrimination in the predominately ‘Han’ Chinese urban centres.

Dornogov, Dundgov, Omnogov Provinces, Mongolia

In Mongolia’s southern Gobi region, herders encounter multiple hazards – dry summers, the extreme cold and windy winters called the ‘dzud’ and insect infestations causing cattle to die.

Life here is very different to China. Herders are free to practise their traditional nomadic farming. They move their cattle around to find food. They survive off fermented horse milk & sometimes rice & flour in these rural areas. The communities here are very resilient to hazards and common strategies include migrating away from challenging weather and using seasonal pastures (pasture = where cattle graze for food). There are very strong family and friend ties – they support each other and offer each other advice e.g. where the nearest water source is. In fact traditionally the winter ‘dzuds’ used to be seen as a positive thing as it killed off weak cattle.

The major challenge in this area is there is very weak support from central government. When disaster does strike there can be little support for the herders. The winter dzud of

2010 killed around 25% of the national herd. The country became dependant on international aid and due to lack of organised central infrastructure there was delay in giving out relief.

The big change and challenge within Mongolia herder communities has been a move towards a more capitalist economy. Herders now farm twice as many cattle as they did 50 years ago and this has led to intensification particularly at water wells. Between 1990 (the collapse of communism) and 2005 about half of the country's hand wells (roughly 10,000) and 80% of the engineered deep (about 3000) wells ceased to work. This was in part to a lack of maintenance and the cost of repairing the engineered wells. The Soviet technology was such that it is cheaper to build a new well than attempt to fix an existing well. They rely on more imported food than years ago. Most of this comes from China. There are concerns about the quality of this food from China with many complaints of the food being 'polluted' because it has been farmed on large industrial farms in China.

There are increasingly more economic opportunities in Mongolia other than herding. Women especially are no longer encouraged to continue with this life style and more and more women attend university. 70% of the university in Ulan Bator (the capital) are women. There is a huge amount of foreign investment in the mining industry which will attract young able bodied workers away from herding. Increased settling may reduce Mongolia's independence in producing its own food and increase reliance on international imports.