## **HUMANOR RESEARCH BRIEFS- Issue 1**

# Climate change adaptations as social-ecological transformations in Mongolia. A long-term perspective

Nomadic pastoralist socio-ecological systems (SES) are currently experiencing rapid and challenging climate and socio-economic changes. We investigate their present strategies and options for adapting to these changes by comparing current situations with recent (decadal) and more distant past (centuries) adaptations. We investigate in particular changes in land use patterns, human-animal relations, and administrative arrangements. Our preliminary results indicate that there are valuable historical adaptations that could be beneficial nowadays, and illustrate which current stressors limit pastoralist systems ability to transform towards sustainability.

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#### **Research objectives**

(1)Place past and ongoing pastoralist SES
transformations in the context of climate change;
(2) Understand to what extent contemporary
institutions governing indigenous land use facilitate
or hinder long term adaptation and resilience;

#### Methods

1) **Environmental histories** from different Proxys (palynology of dung deposits and salt lakes; herders' accounts of use patterns);

2) **Life histories** of herders/managers active in collective farms during 1950-1900.

3) **Photovoice diaries** (herders illustrate essential aspects influencing their adaptations). The methods are intended to illustrate how social context influences adaptation to similar environmental problems in other pastoralist systems.

#### **Background- Mongolia case study**

We investigate events that have taken place during different periods during the last millennium (since ca. 900 A.D.), with emphasis on the transitions to the communist period (1921-1990 A.D.) and to the market economy (1990-present). The period is marked by clear climatic and social changes (e.g. transition from warm and moist, to cold and dry period around year 910 AD; land tenure, changes around 1955 and again around 1995).

During the last 2 decades Mongolian pastoralism has been affected by extreme weather events that are more frequent and more intense than at any time in living memory. Environmental history (conversations during landscape walks; Dung deposit sampling)











#### **Preliminary Findings**

During the communist period, collective farms were organized better, and herding was proffesionalized. This made herders better able to deal with «winter disasters» (*dzud*) and droughts.

Despite its stricter rules, the pastoralist system was in many ways **more flexible** at that time, tackling better extreme winter weather, or prolonged droughts. The **solution** of the cooperatives was coordination and cooperation across spatial scales: from subdistrict(2,000 km<sup>2</sup>), to province (75,000 km<sup>2</sup>). **Coordinated** migration of herds allowed flexible utilization of available resources and even distribution of grazing pressure. **Cooperation** between different areas implied a national system of distribution of emergency fodder and sharing of labour in times of need. These adaptations have disappeared with the dissolutions of collective farms in early 1990s.

### Herders' photovoice diary entries

«If winter is very hard, we have to water animals more during spring»

Unusual weather has become more frequent: «Snowstorm on 20 Nov 2015. It's unusually early.»



Camels (most resilient against bad weather), not profitable: «Their wool is too cheap.»



Cows (least resilient), decreased significantly in recent years.



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