APAN Consultation meeting:
Pastoral Communities embedded in the Gobi embedded in Mongolia

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ASIA-PACIFIC CLIMATE CHANGE ADAPTATION FORUM,
October 21 - 22, 2010, UNCC, Bangkok, Thailand
• Introduction

• Vulnerability Assessment of Pastoral Social-Ecological Systems at multiple scales

• Integration of Climate Change Adaptation into Sustainable Development in Mongolia. APAN Consultative Meeting, 17-18 June 2010, Ulaanbaatar, Mongolia

• Climate Change Adaptation and Sustainable Development of Mongolia. 2nd International Conference: Climate, Sustainability and Development in Semi-arid Regions, August 16 - 20, 2010, Fortaleza - Ceará, Brazil

• Concluding remarks
Air Temperature in Mongolia, since 1940

\[ y = 0.031x - 0.946 \]

\[ R^2 = 0.469 \]
Regime shift since 1990: Poverty Trap?

Households with less than 100 livestock, %

Livestock number, millions

Privatization 1991-1993

Emerged attractor?

Lud 2009-2010?

2009
Regime Shift since 1990: Cashmire

Goat faction, %

Livestock number, millions

Adaptive Renewal (since 2002)
Collapse (1999-2002)
Exploitation (1990-1999)
Traditional management

Market forcing
Vulnerability and resilience of pastoral social-ecological systems in Mongolia

Community

River basin

National

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GLP Open Science Meeting 2010 – Land Systems, Global Change and Sustainability, Arizona State University, Tempe, Arizona, USA, October 17-19, 2010.
Vulnerability assessment methodology

- Climate change factor
- Human factor
- Drought assessment
- Drought-zud assessment
- Pasture use assessment
- Ecological Vulnerability Assessment
- Socio-Economic vulnerability assessment

Vulnerability assessment of social-ecological system
Coupled pastoral community-cultural landscape system

How
• Resilience
• Vulnerability
• Adaptation
of coupled pastoral social-ecological systems are changing due to
• Climate change
• Market forces
• Globalization?
Stakeholders’s Assessment: DDP application “caricature”

- Dynamics of H-E systems is defined primarily by climatic disasters events such as drought and zud;

- Global warming is a critical slow variable of pastoral H-E systems;

- Surface water shortage is already crossed the threshold level and its leading to collapse of social-ecological systems;

- Global (44%) and country (31%) level regulations are more important than local government (16%) or community level regulations (9%);

- Level of policy, which combines up-to-date modern science and traditional knowledge, is fair.

Dryland Development Paradigm Application for Pastoral Systems in the Tuin and Baidrag river basins in Mongolia (APN: 2009-2011)
Ecological vulnerability assessment: National scale

Long-term ecological vulnerability dynamics in Mongolia

LEGEND
0.25 - 0.33
0.34 - 0.42
0.43 - 0.51
0.52 - 0.6
0.61 - 0.7

Long-term ecological vulnerability dynamics in Mongolia
Vulnerability of PSESs at national level

Ecological vulnerability + Poverty map (HDI)

LEGEND
- < 0.25
- 0.26 - 0.35
- 0.36 - 0.45
- 0.46 - 0.55
- 0.56 <
Conclusion

- Mongolia is vulnerable to climate change due to its impacts on water and forage resources, and also transitional economy;
- Development of Mongolia during the last two decades were unsustainable if consider environmental degradation and poverty increase;
- Many “big” projects were often fragmented and not comprehensive, not enhancing social and ecological resilience;
- It is important to integrate climate change adaptation with sustainable development, applying science, technology and innovation for green economy, poverty reduction and sustainable governance.
Scenarios for pastoral social-ecological systems

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“Western” models

- Farms/ranches
- Rich herders (10%)
  "Hot ails"

Win-Win

- Farmer’s association
- Community based natural resource management
- Strengthening of traditional pastoral networks

Tragedy of Commons

- Weak cooperation
- Landscape fragmentation
- Land degradation
- Poverty trap (50%)

Traditional System

- Strong cooperation
- Cultural landscape use
- Ecosystem state is good
- Subsistence

Loss of adaptive capacity to climate variability

Cooperation (CBNRM)

- Use of Cultural landscape/State of Ecosystem services

Sustainable transformation

ACCCA project
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Coupled pastoral community-cultural landscape system

Win – Win for both ecosystem services and communities!
The Mongolian Gobi – World Cultural and Natural Heritage

Technological Transformation
Sustainable transformation of pastoral communities

Can wireless communication information technology (CIT) support nomadic culture in Mongolia, increasing adaptive capacity to climate change?

We have an opportunity to conserve natural, social and cultural capitals in Mongolia, strengthening traditional pastoral community-cultural landscape systems in rangelands in the Gobi and dry steppe (in all dust and sand storm source areas) with introduction of modern technologies such as renewable energy and CIT.
Land Degradation and Desertification in Mongolia

Togtokh CHULUUN, Ph.D.
UN Human Development Index

1. Norway
2. Australia
3. Iceland
4. Canada
5. Ireland
6. Netherlands
7. Sweden
8. France
9. Switzerland
10. Japan
11. Finland
12. USA

HDI (corrected for per capita carbon emissions)

1. Switzerland
2. Sweden
3. France
4. Iceland
5. New Zealand
6. Norway
7. Portugal
8. Italy
9. Spain
10. Austria
11. Lithuania
12. Denmark

Japan 21st
Canada 36th
Australia 37th
USA 39th

2007 HDI Dataset
Integration of Climate Change Adaptation into Sustainable Development in Mongolia. APAN Consultation Meeting, 17-18 June 2010, Ulaanbaatar, Mongolia

Participation: More social scientists than natural scientists!
Governance at multiple scales

- Greater coordination between all actors and advocators, especially researchers and policy makers;
- Need for a cross-sectoral coordination;
- Strengthening of a Green Development Institute – as national hub on climate change adaptation;
- Introduce diversity institutions in diverse ecological and economic regions.
**Capacity: How to deliver these needs?**

- Specific focus on water, agriculture and livestock as priority sectors;
- Focus on the impact of climate change on water resources and riparian ecosystem services;
- Enhanced capacity for research on climate social science;
- Conduct an Ecosystem Services Assessment;
- Improved capacity on Ecosystems Based Adaptation;
- Specific training programme on Climate Change Adaptation.
Knowledge: Climate Change Adaptation

Knowledge at the national level

- Establishment of a national knowledge hub on adaptation;
- Highlight the Mongolian nomadic culture and traditional knowledge;
- Integrate environmental factor into the Human Development Index;
- Identify technology and policy options, based on the integrated knowledge;
- Promote a new “commons” approach, through the utilization of less resources, leading to a change in society.
Climate Change Adaptation and Sustainable Development of Mongolia.

2nd International Conference: *Climate, Sustainability and Development in Semi-arid Regions*, August 16 - 20, 2010, Fortaleza - Ceará, Brazil
Bayarlalaa!

Thank you!