Pastoral Institutions, Organizations & Resilience to Climate Change:
State of the Science—Global Perspectives

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Overview
- Defining institution & organization
- Sustainability framework & strategies
- Pastoral institutions for property rights and land use regulation
- Role of community-based rangeland management organizations
- Results of preliminary research on CBREM in Mongolia

Institution
- Formal and informal laws, rules and norms or codes of conduct
- That govern interactions among people
- And between people and the environment

Institution—Examples
- Formal:
  - Mongolian Law on Land
- Informal:
  - Norm of reciprocal pasture access in times of disaster

Organization
- Governmental, corporate, non-governmental, or social entities
- Often involved in designing, implementing, or enforcing institutions

Framework for Understanding Ecology-Institution Relationships
1. What are the ecological dynamics and limits of the system?
2. What are the mgt. practices that enable productive use within those limits?
3. What are the institutions that permit, facilitate or enforce these practices?
Key Research Questions

• What institutions provide the necessary incentives to promote sustainable use of rangeland ecosystems?
• What organizations can best support the design and implementation of these institutions?

Key Research Questions

• What institutions and organizations can promote learning and adaptation to changing conditions?

Adaptive Strategies in Variable Environments

Pastoral Practices & Institutions
• Mobility
• Diversity
• Flexibility
• Reciprocity
• Grazing Reserves

Climate Change Adaptations
• Mobility
• Diversification
• Communal pooling
• Exchanges
• Storage

(Fernandez-Gimenez and Swift 2003, Fernandez-Gimenez and Lefebvre 2006)
(Agrawal 2007)

Adaptive Strategies in Variable Environments

• Adaptive co-management
  – Increases knowledge of and responsiveness to environmental signals (Folke et al. 2005)
  – Strengthens social networks (Adger 2003)
  – Builds trust (Adger 2003)
  – Facilitates flexible, multilevel governance (Folke et al. 2005)

Property & Land Use Institutions

• Critical to resilience in semi-arid rangelands
• What kinds of property rights, vested in what kinds of entities, will provide the right incentives for sustainable management?
  – Open access?
  – Private property?
    • Unsuccessful in China—household responsibility system
  – Community-owned grazing rights?
    • Mixed results in Kenya—group ranches

Preliminary Research Results
Methods

- Survey of 70 herding households
  - Stratified by wealth group and herder group membership
  - Case sites represent 3 different ecological zones
- Interviews
  - Local, aimag and national government officials
  - Herders (herder group members and non-members)
  - Donor project staff (national and local)

Role of Mongolian CBRM Organizations in Resilience-building

1. Working with local governments to develop grass-roots collective action institutions to
   - Regulate mobility
   - Enforce deferred grazing
   - Establish & enforce grazing reserves

2. Explicit focus on disaster preparation & education
3. Education and technical assistance for pasture management and monitoring
4. May help to strengthen relationships, build trust, and help people re-learn how to cooperate and work together

Key Survey Results

<table>
<thead>
<tr>
<th>Management Practice</th>
<th>Members of herding group (n=33)</th>
<th>Non-members (n=37)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # moves over past 18 months</td>
<td>6.5 (± 0.5)</td>
<td>5.2 (± 0.5)</td>
</tr>
<tr>
<td>Total distance moved (km) over past 18 months</td>
<td>133 (± 20)</td>
<td>73 (± 21)</td>
</tr>
<tr>
<td># different camps over past 18 months</td>
<td>4.5 (± 0.4)</td>
<td>3.5 (± 0.4)</td>
</tr>
<tr>
<td>Reserve winter pasture</td>
<td>83%</td>
<td>61%</td>
</tr>
<tr>
<td>Otor moves</td>
<td>63%</td>
<td>35%</td>
</tr>
</tbody>
</table>

Data are mean (standard error). All differed significantly at p<0.10.
Important Caveat
• These are preliminary findings only, and cannot be generalized beyond the sites where the data were collected.
• More research is needed to fully understand how CBRM organizations in Mongolian affect management practices and institutions.

Continuing Challenges
• How to devise institutions that provide security while maintaining flexibility?
• What are the appropriate spatial and social scales for community-based rangeland management?
• How to ensure broad participation, equity and good governance in community-based rangeland management organizations?