Lessons from the Dzud:
Policy Implications of Research on Herder Vulnerability to the 2009-2010 Dzud

Purpose and Methods

With global change dzud may increase in frequency and intensity, placing livestock and livelihoods at risk. We conducted in-depth case studies of dzud impacts and responses in two mountain-steppe and two Gobi desert-steppe soum. We used focus groups, key informant interviews, a household survey and photovoice to document individual and community experiences with dzud and identify the factors that make some households and communities more vulnerable to dzud and others less so.

Background

Vulnerability is defined as susceptibility to damage or harm, and consists of three components: ***exposure*** to harm, ***sensitivity*** to harm, and adaptive capacity. ***Adaptive capacity*** is the ability to respond constructively to variability and change, including natural disasters and other shocks. Learning, experimentation and innovation are characteristics of adaptive capacity. Poverty, vulnerability and climate change are closely related, because the poor often are most sensitive to harm, have less capacity to adapt, and may be exposed to greater stressors than the wealthy. In Mongolia, pastoralists will likely be significantly affected by climate change, making their exposure high. Because pastoralists depend directly on natural forage and water for their livelihoods, their sensitivity to climate change impacts is also high, especially households in poverty. These households may also have less capacity to adapt to the changes that climate change brings.

Key Findings

Factors that reduce household vulnerability Households that implemented these practices had significantly lower livestock losses as a percentage of total herd size:

- **Fall otor**. Animals that went on fall otor were likely in better condition before the hard winter.
- **Reserve spring pastures**. Herders who set aside pastures for use during spring had more forage reserves to help their herds through the tough spring.
- **Harvest and store hay**. Herders who cut and stored hay lost fewer animals.

Factors that reduce community vulnerability

- **Natural assets.** Communities with access to more diverse or productive natural assets (e.g. riparian areas, mountain pastures, hay meadows) were less vulnerable.
- **Pro-active local governments** played a key role in anticipating the hard winter, mobilizing herders to prepare, organizing fall sale of livestock to bring herd size in line with local carrying capacity, and organizing otor to other soums before winter began.
- Communities with **formal community-based herder organizations** were less vulnerable. Pastures in these communities were better managed (e.g. more winter reserves), and herders acted collectively to harvest and store hay, and to help each other during the disaster.

Factors that increase vulnerability

- **Poverty** increases vulnerability. Poor herders lost a large proportion of their livestock.
- **Lack of information, knowledge, technology and infrastructure** hinder herders' ability to prepare for and respond to dzud. Some herders lacked information on weather forecasts or knowledge of how to use supplemental feed properly. Lack of access to technology such as tractors for hay harvest and infrastructure such as hay storage barns, limits herders' ability to prepare effectively for dzud.
- **Unregulated or uncoordinated otor movements between soum** can increase the vulnerability of the host (receiving soum). In soum where formal community-based organizations had acted collectively to manage and reserve their pastures, this progress was undone by incoming livestock from other soum that created a "hoofed dzud."
- **Increasing dependence on relief aid, poorly targeted aid and lack of transparency in distribution criteria** may contribute to greater vulnerability in the long run, while helping some households in the short term. Some herders and officials expressed concern that the criteria and process of aid distribution creates "perverse incentives," encourages herder passivity and discourages proactive behavior.

Dzud as an opportunity for transformation and adaptation. Although dzud is economically and psychologically devastating for the most affected households, herders also see dzud as an opportunity to learn and make positive changes in their management. Following the 2009-2010 dzud many herders spoke of increasing the quality rather than quantity of their livestock. In our case studies, the community most severely affected by the

1999-2003 dzud had clearly learned and adapted based on its experience and was best prepared and least vulnerable in the 2009-2010 dzud. Policy makers and donors can use targeted interventions following a disaster to help create positive transformations in resource management and governance that build resilience to subsequent disasters.

Implications for Policy-makers and Donors

Our analysis of the sources of dzud vulnerability leads us to four primary policy recommendations for government and donors.

1. Promote individual responsibility for dzud preparedness and reduce reliance on government and donor aid. This will require improvements in **information distribution** (e.g. weather, forage and market forecasts and technical advice), **technology** (e.g. tractors) and **infrastructure** (e.g. hay storage barns), and **appropriate policy and economic incentives**. In addition to technical information and access to breeding stock, economic incentives in particular are critical to enabling herders to act on their intent to focus on livestock quality over quantity. Thus programs and policies that actively test and rigorously evaluate the effectiveness of different market incentive programs (e.g. cooperative marketing, value-added processing, sustainability certification, payment for ecosystem services) should be a high priority.

2. Strengthen community adaptive capacity for the long term by supporting the formation and sustained function of formal community-based herder organizations. Formal community-based herder organizations are an effective way to build community-level adaptive capacity. However, additional improvements are needed to assure equitable access to the benefits of these programs for all herders.

3. Develop clear yet flexible policies to guide and capacity to implement pastureland governance across multiple levels (bag, soum, aimag, region). Pastureland policies should include provisions for designation of dzud (otor) reserves at the local, aimag and national levels, and effective and enforceable mechanisms to coordinate and regulate otor movements between different soum and aimag. Because the spatial and temporal variability in both pasture production and dzud varies across Mongolia's territory, the specific cross-boundary arrangements may vary in different regions. However, there is a need for a broad and clear policy framework to provide an enabling legal environment and guidelines for locally negotiated arrangements and the authority to enforce them. This national-level policy framework should be developed with input from actors across the different levels, from herders to soum and aimag governments to the relevant ministries and agencies at the national level.

4. Improve coordination and cooperation for disaster management within and across levels of government and sectors of society. Cooperation among herders, and between herders, local governments, and civil society organizations and donors is critical to solving within-soum pasture management issues, coordinating dzud preparations, and developing and implementing effective disaster management plans, including appropriate and transparent targeting of emergency assistance.

For a Full Report on the Research in this Brief See:

Fernandez-Gimenez, M.E., B. Batkhishig and B. Batbuyan. 2012. Cross-boundary and cross-level dynamics increase vulnerability to severe winter storms (dzud) in Mongolia. Global Environmental Change 22: 836-851. DOI: http://dx.doi.org/10.1016/j.gloenvcha.2012.07.001.

Fernandez-Gimenez, M.E., B. Batkhishig and B. Batbuyan. 2012. Lessons from the dzud : adaptation and resilience in Mongolian pastoral social-ecological systems. Washington D.C.: The World Bank. http://documents.worldbank.org/curated/en/2012/08/16601413/lessons-dzud-adaptation-resilience-mongolian-pastoral-social-ecological-systems

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