Dzud Disaster Financing and Response in Mongolia

Paper prepared for World Bank study on

Structuring Dzud Disaster Preparation, Financing and Response to Increase Resilience of Herder Households to Climatic Risk in Mongolia

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May 2011

This work was commissioned and overseen by Andrew Goodland (World Bank East Asia Sustainable Development Department). It was financed by the Trust Fund for Environmentally and Socially Sustainable Development (TFESSD), a multi-donor trust fund supported by Finland and Norway that provides grant resources for World Bank activities aimed at mainstreaming the environmental, social and poverty reducing dimensions of sustainable development into Bank work.

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Acknowledgements

This paper has been prepared on behalf of the World Bank as part of an analytical study on *Structuring Dzud Disaster Preparation, Financing and Response to Increase Resilience of Herder Households to Climatic Risk in Mongolia.* It is based on the findings of a field visits to Mongolia from 26 May to 9 June 2010, feedback from a roundtable discussion held in Ulaan Baatar in May 2001 and a related literature review.

The author would like to extend her thanks for their time and support to all those interviewed during the course of the study in the State Emergency Commission, National Emergency Management Agency, Ministry of Finance, Ministry of Food, Agriculture and Light Industry, Ministry of Social Welfare and Labor, Ministry of Education, Culture and Science, Ministry of Health and the National Agency for Meteorology, Hydrology and Environment Monitoring, UNDP, UNICEF, FAO, ADB, IFAD, SDC, GTZ, IFRC, Mercy Corps, Save the Children Japan, World Vision, Ard Daatgal, MIG Insurance, Mongol Daatgal, Practical Daatgal and Khan Bank in Ulaan Bataar. The helpful insights and views of aimag and soum government and local community representatives in Uvurkhangai (including Bayangol and Hujirt soums) are gratefully acknowledged. Additional thanks is extended to Andrew Goodland, Tungalag Lailan, Robin Mearns, Erdene Badarch, Tungalag Chuluun and Abed Khalil of the World Bank for comments on earlier drafts of this paper and related discussions. Logistical arrangements were very ably and smoothly handled by Otgonbayar Yadmaa, Nomuuntugs Tuvaan and Onon Gan-Erdene.

The opinions expressed are those of the author and do not necessarily represent the views of the World Bank.

Acronyms

ADB	Asian Development Bank
ALRMP	Arid Lands Resource Management Project (Kenya)
ASAL	arid and semi-arid lands (Kenya)
BIP	Base Insurance Product
CAT DDO	catastrophe deferred drawdown option
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDF	Contingent Debt Facility
DPL	development policy loan
DRP	Disaster Response Product
ELF	Emergency Liquidity Facility
EM-DAT	Emergency Events Database
FAO	Food and Agriculture Organization of the United Nations
FONDEN	Fondo de Desastres Naturales (Mexico)
GCC	General Catastrophe Coverage
GDP	gross domestic product
GoM	Government of Mongolia
IBLIP	Index-Based Livestock Insurance Product
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IFAD	International Fund for Agricultural Development
LIIP	Livestock Insurance Indemnity Pool
LRI	Livestock Risk Insurance
MFI	microfinance institute
MoECS	Ministry of Education, Culture and Science
MoFALI	Ministry of Food, Agriculture and Light Industry
MoF	Ministry of Finance
MoFAT	Ministry of Foreign Affairs and Trade
MoH	Ministry of Health
MoSWL	Ministry of Social Welfare and Labor
NAMHEM	National Agency for Meteorology, Hydrology and Environment Monitoring
NEMA	National Emergency Management Agency
NGO	non-governmental organization
PSNP	Productive Safety Net Programme
SDC	Swiss Development Cooperation
SEC	State Emergency Commission
TCIP	Turkish Catastrophe Insurance Pool
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UN-OCHA	UN Office for the Coordination of Humanitarian Affairs
USAID	United States Agency for International Development
WVI	World Vision International
MNT	Mongolian tugrik
US$	United States dollar

Executive summary

This paper has been prepared as part of a World Bank analytical study on *Structuring Dzud Disaster Preparation, Financing and Response to Increase Resilience of Herder Households to Climatic Risk.* The paper focuses on financing and institutional arrangements for dzud. It seeks to encourage a more coordinated, predictable, timely and targeted approach to dzud on the part of both the Government of Mongolia (GoM) and its development partners, based on an analysis of the 2009-2010 dzud response efforts. The paper also explores the scope for a shift in emphasis from ex post response triggered by widescale loss of livestock to a system that has sufficient ex ante resources and capabilities to support much earlier interventions, thereby helping to avert high levels of loss.

A dzud is a Mongolian term relating to winter climatic extremes associated with snowfall and temperature which can potentially threaten human and livestock populations. Severe dzud occurred in 1944-45, 1967-68, 1978-79, 1993, 1999-2002 and, most recently, 2009-10. The most recent dzud resulted in the death of 8.8 million livestock, implying a loss of capital stock of at least MNT 264 billion (US$192 million), equivalent to 4.4 percent of 2009 GDP.

Institutional and financial arrangements for dzud The GoM makes certain annual budgetary provision for potential dzud and other disaster events. The National Emergency Management Agency (NEMA), which is responsible for 'disaster protection' and falls under the direction of the Deputy Prime Minister, receives a regular annual budgetary allocation to cover its running costs and to replenish the State Reserve Fund. The latter is held in the form of stocks of food and goods, grains, fodder, fuel and industrial and security equipment which are strategically located across the country for purposes of economic security and disaster response. Annual budget resources are also allocated to the Government Reserve. This Reserve is held by the Ministry of Finance (MoF) and is available for a wide range of unforeseen purposes including natural and technological hazards and human and livestock epidemics. All budgetary decisions relating to disaster response, including the release of State Reserves, are determined by the State Emergency Commission (SEC) and then forwarded to the Cabinet for approval. The SEC is chaired by the Deputy Prime Minister and convened in the event of an emergency.

In the event of a dzud, additional funding may be made available as part of the mid-year budgetary adjustment, in years that such adjustments occur. Individual line agencies have no specific disaster contingency budget lines of their own. Aimags and soums also have very few resources available for disaster response, relying primarily on very limited livestock protection funds

Assessment of the 2009-2010 dzud response There are two fundamental challenges in assessing the adequacy of the government's and international community's response to dzud in Mongolia, relating to difficulties in determining both the scale of contingent public liability and appropriate forms of support for recovery. Beyond averting loss of life and significant declines in nutritional and health status of the human population, the extent of public relief and recovery assistance provided in response to a dzud is ultimately a political decision, based on perceived obligations as insurer of last resort to poorer households and longer-term policies on poverty alleviation and development of the livestock sector.

Similarly, the determination of appropriate forms of support is by no means clear cut, beyond the assistance required to meet urgent human nutrition and health needs. Each action in support of the livestock sector needs to be considered in the wider context of the need to reduce poverty and to establish a sustainable livestock sector. The livestock sector provides the only significant form of subsistence employment in Mongolia and, even prior to the 2009-10 dzud, around 50 percent of the rural population (excluding those in soum centers) were living below the poverty line. As such, dzud-related assistance is well justified on grounds of poverty reduction. However, both the GoM and development partners had mixed feelings about widescale restocking in the aftermath of the 2009-2010 dzud. These concerns reflected both the fact that the livestock sector was still over-stocked even

after the dzud, in turn a consequence of poor broader livestock management in recent decades and weak husbandry skills, and poor experience with restocking in the aftermath of the 1999-2002 dzud. With very few alternative livelihood generating opportunities for herders, though, this left the question of quite how to help affected households recover unresolved.

Despite these qualifications, it is reasonable to conclude that the 2009-10 dzud response effort was almost certainly inadequate. In around February or March 2010, the GoM estimated that immediate relief funding needs alone totaled MNT 34 billion (US$25 million), with further funding required for recovery purposes. As of late May 2010 the GoM and development partners had, in fact, committed between MNT 22.6 billion (US$16.6 million) and MNT 34.6 (US$ 25.4 million) assistance for immediate relief purposes (including carcass clearance), possibly considerably lower than estimated requirements. Meanwhile, the international community's US$ 18 million Consolidated Appeal launched in mid-May 2010 to assist nearly 800,000 people through to May 2011 and covering both continuing relief and recovery raised less than a fifth of the funding requested.

Moreover, available resources were poorly targeted relative to need both at a 'macro' level, between aimags, and at a 'micro' level, between individual recipient households. Some GoM funding was simply evenly distributed across all affected aimags. Down-the-line decisions on the allocation of both GoM and some development partner assistance to individual households were sometimes, apparently, left in the hands of individual soum administrations. In the interests of 'equity', a number of these chose to spread the assistance very thinly over a large number of herder households, rather than focusing on the most severely affected ones. This principle of equity reflected a commonly-held attitude that more skilled herders who had lost fewer livestock should not be penalized because of their better capabilities.

The response efforts were insufficiently timely as well, reflecting difficulties in predicting the dzud's severity and, then, subsequent capacity and funding constraints. In consequence, certain windows of opportunity to alleviate potential impacts were missed. Moreover, there was a strong bias towards support for the livestock sector, particularly during the earlier stages of the crisis, to the detriment of human needs. There was limited loss of human life but even some of these losses could have been averted. Meanwhile, the dzud response efforts are unlikely to have prevented an increase in the incidence of poverty.

Lessons learned A number of lessons can be drawn from the 2009-2010 experience, including that:

- The GoM should develop a clear statement of its dzud-related responsibilities at each level of government, covering early response, relief and recovery. These responsibilities should be linked to transparent trigger mechanisms and clear thresholds of support to herder households, designed in such a way as to encourage enhanced risk reduction and preparedness measures on the part of individuals.
- Government and development partner financing arrangements for dzud events need to be strengthened, in particular to increase access to additional resources in a timely fashion.
- Institutional arrangements for dzud preparedness, response, recovery and longer-term risk reduction need to be reviewed with a view to strengthening coordination arrangements and providing stronger leadership.
- The role of different government agencies during the recovery phase of a dzud should be clarified.
- A more systematic disaster impact and needs assessment process needs to be introduced, facilitating the continuous monitoring of evolving situations and supporting the timely implementation of appropriate interventions.
- The system for declaring dzud should be reviewed and mechanisms introduced to ensure that the classification of individual soums is regularly reviewed over the full course of an evolving dzud situation so that affected areas are able to access appropriate response and recovery support.

- A comprehensive system for tracking GoM and development partner dzud response and recovery efforts needs to be introduced to support improved coordination and monitoring.
- The livestock sector's longer-term resilience to climatic shocks must be strengthened.

Recommendations The GoM urgently needs to develop a comprehensive dzud management strategy and related action plan for Mongolia, linked to adequate financing arrangements. This strategy should reflect the GoM's obligations as insurer of last resort to poorer households, its longer-term commitment to reduce poverty and the need to establish a sustainable livestock sector. The strategy should be carefully entwined into a broader sustainable livestock management policy and multi-year plan of action. The dzud management strategy and related plan of action should include the following:

- Measures to strengthen herder risk reduction capacity and capabilities.
- An incentives structure to encourage individual herders to reduce risk and take appropriate preparedness measures.
- Support for the development of market mechanisms to manage risk.
- Transparent criteria for the declaration of a dzud.
- Comprehensive dzud monitoring, impact and needs assessment procedures.
- Adequate mechanisms for the timely provision of targeted assistance to dzud-affected households.
- A clear schedule of types and levels of support available to affected households and communities and transparent related trigger mechanisms.
- A comprehensive system for tracking GoM and development partner dzud response resources
- Mechanisms for communicating the strategy to herders.

Related financing arrangements should be based on some combination of GoM and international aid resources, market-based transfer instruments and herder contributions. The GoM should continue to make annual provision for dzud preparedness and response under its Government Reserve and State Reserves Fund, possibly adjusting annual budgetary allocations in accordance with seasonal forecasts. Budgetary allocations under the National Mongolian Livestock Program should help support longer term risk reduction, complementing on-going development partner livestock sector initiatives to enhance dzud resilience. The latter could be organised under a common framework to maximise their impact.

External assistance for dzud response is arguably best organised under a contingency funding arrangement, ensuring a more adequate, timelier and better coordinated international response. The establishment of this type of arrangement would also draw a number of government ministries, in particular the MoF, into more in-depth discussions around dzud management and hopefully help secure more continuous inter-ministerial focus on efforts to strengthen the livestock sector's resilience to climatic shocks. Alternatively – or as one of the uses of the contingency funding - external assistance could be provided to help meet the premium payments associated with a sovereign risk transfer tool.

Further financing for dzud response could be raised via the introduction of some form of taxation of the livestock sector, a proportion of which could be used to build up dzud response reserves, or even a specific dzud contingency fee. Voluntary insurance contributions should also become a more significant element in ex ante dzud financing arrangements as the Livestock Risk Insurance (LRI) product becomes available nationwide in 2012.

Better targeting of dzud response and recovery assistance should be addressed as another important priority in the development of a comprehensive dzud management strategy. Targeting could best be improved by creating a social protection instrument to provide cash transfers to severely affected poor households, making use of the country's new social benefits system and perhaps linked to the utilisation of a donor-supported contingency fund. A second tier of support in the form of a more universal from of social insurance to all affected households could come into effect in the event of severe dzud (see the companion paper by Lailan (2010) for further discussion). Additional assistance will still need to be provided via other means, for instance to support continued provision of social and educational services to dzud-affected areas and community-wide recovery.

Possible future changes in the frequency and intensity of dzud and shifts in vulnerability also need to be taken into account in examining options for strengthening both disaster risk management and related financing requirements and arrangements in Mongolia.

1. Introduction

1.1 Characteristics of a dzud

A disaster occurs when an extreme hazard event causes substantial damage, disruption and possible casualties, leaving affected communities unable to function normally without outside assistance (Benson and Twigg, 2007). The disaster literature commonly distinguishes between rapid-onset disasters such as typhoons, floods and earthquakes, which cause immediate loss and disruption and require urgent humanitarian response; and slow-onset events, notably drought but also dzud. A dzud is a Mongolian term relating to winter climatic extremes associated with snowfall and temperature which can potentially threaten human and livestock populations. Dzud can take a number of forms, including *Tsagaan* (white), *har* (black), *tumur* (iron), *khuiten* (cold), hoof and *havsarcan* (combined) dzud (Table 1).

Table 1: Dzud forms and description

Type of dzud	Weather condition	Causes and Effects
Tsagaan (white) dzud	Average thickness of snow layer on pasture land exceeds 21 cm in high mountain and forest regions, 16 cm in steppes and 10 cm in the Gobi region; and snow density reaches 0.20 g/cm^3 or above in any region	The most common form of dzud and the most disastrous if it affects large areas and prevents animals from grazing
Har (black) dzud	No snow during winter and monthly or ten-daily average temperatures are 5.0 ^{o}C below several years' average	Causes water supply shortage and often aided by lack of winter grass
Tumur (iron) or glacier dzud	Snow cover melts and refreezes due to rapid changes in temperature creating an impenetrable ice cover that prevents livestock from reaching pasture and snow density reaches 0.30 g/cm^3 or above	Prevents access to grass
Hoof dzud	Extreme dry weather	Causes complete depletion of grass due to drought
Havsarsan (combined) dzud	Two or more of the above occurring simultaneously	

Source: (GOM, 2008)

The impacts of both sudden- and slow-onset disasters can be reduced by strengthening ex ante resilience. It is also possible to influence the outcome of slow-onset events by undertaking various interventions as an event unfolds. Many of these are time dependent, associated with windows of opportunity which, if missed, are lost. In the event of a dzud, such measures could include, for instance, stockpiling of hay and fodder and destocking in the late autumn.

In a sudden-onset disaster entailing damage to public infrastructure there is a clear role for government in the reconstruction phase, supported where necessary by the international community. There is also a humanitarian imperative for government and development partner involvement in immediate pre-disaster preparedness and post-disaster response, to issue warnings, evacuate people and provide search and rescue services, medical assistance and critical humanitarian relief. However, the role of government and the international community is less clear cut in the event of slow-onset disasters, particularly where human lives are not immediately threatened. Losses to public assets from

such events are often minimal and governments and their development partners can each choose to what extent they want to become *de facto* insurers of last resort of private losses. In practice, many still do provide assistance, in particular to poorer segments of society. However, without *a priori* financing mechanisms in place and little sense of immediate urgency, it can take some time to get assistance to those in need. Meanwhile, windows of opportunity to reduce losses may be lost.

1.2 Economic relevance of dzud

Severe dzud occurred in 1944-45, 1967-68, 1978-79, 1993, 1999-2002 and, most recently, 2009-10. The national dzud event of 1999-2002 had a significant economic impact on Mongolia, resulting in the loss of some 8.8 million livestock (GoM, 2002). In monetary terms, losses totaled an estimated MNT 91.7 billion up to mid-2000 alone (equivalent to US$83.5 million at the 2000 rate of exchange) (GoM, 2001). Estimates of the total cost of the 1999-2002 dzud range between over $200 million (World Bank, 2007) and $330 million (NEMA, 2005). It is not clear whether these figures are based on a valuation of loss of livestock alone or incorporate additional indirect losses. However, either way, they are substantial. Losses of US$330 million are equivalent to some 30 percent of 2002 GDP or, on average, around 10 percent of GDP over each of the three years of the dzud.[1] Despite these losses, national GDP continued to grow throughout the period, increasing by 1.1, 1.0 and then 3.8 percent in each of the years 2000, 2001 and 2002 respectively. However, agricultural GDP alone averaged an annual 15.6 percent decline over the same period while the national poverty rate increased slightly, rising from under 35 percent in 1998 to 36.1 percent in 2001-2002 (GG PEMP and MSRM, 2009).

In the intervening years since the 1999-2002 dzud, livestock has continued to dominate the agricultural sector, accounting for 87 percent of agricultural output in 2007 (GG PEMP and MSRM, 2009). However, the relative importance of the agricultural sector has declined significantly, falling from 35 percent of GDP and 46 percent of employment in 1998 to 19 percent of GDP and 36 percent of employment a decade later. The agricultural sector's share in GDP is expected to decline further, to under 10 percent by 2020, as a succession of mines comes on stream.

Despite the declining importance of the agricultural sector, losses arising from the 2009-2010 dzud were substantial. Assuming a relatively modest average price of MNT 30,000 per head of livestock, the 8.8 million dzud-related livestock deaths in 2010[2] represent a loss of – in effect – capital stock totaling MNT 264 billion (US$192 million), equivalent to 4.4 percent of 2009 GDP.[3] Livestock reproduction rates were also significantly reduced by the dzud, implying further indirect livestock losses[4]; and the productivity of surviving livestock (in terms of production of milk, wool and other products) will also be lower until they manage to regain body weight. The mid-2010 NSO social and economic survey reported that 10.2 million heads of livestock gave birth in the first half of 2010 of which 7.2 million of the young animals survived, 46.6 percent or 6.3 million heads less than in the first half of 2009 (NSO, 2010).

Herding also remains the primary source of livelihoods for many households in Mongolia, implying that a significant share of the country's population have been directly affected by the dzud. The dzud's widespread consequences are of particular concern in view of the facts that herding is one of the few subsistence options available to those who cannot secure formal sector employment and that many of the country's poor are therefore located in herder households. In fact, even prior to the 2009-2010 dzud, the number of rural poor was already increasing, despite a marginal decline in the national

[1] See http://www.unisdr.org/eng/sasakawa/2005/sk-2005-interviews-eng.htm

[2] This figure of 8.8 million dzud-related deaths was reported by NSO (2010) and covers the first half of 2010. Total livestock deaths from all causes reached 9.7 million for the same period.

[3] According to FAO, total figures on livestock losses only reflect mortalities from January 1st 2010 onwards. Earlier losses are included in the 2009 livestock mortality data instead. This would imply that 2009-10 dzud-related livestock losses are under-reported as some early deaths occurred in December 2009.

[4] According to UNDP (2010), 2.7 to 3.0 million female livestock miscarried during the 1999-2002 dzud.

rate of poverty. The countryside poverty index (that is, for rural areas excluding soum centers) increased from 42.7 to 49.7 between 2002/03 and 2007/08 (World Bank, 2009)[5] whilst in 2007 46.7 percent of herder households had less than 50 heads of livestock and owned only 11.5 percent of total animals (GG PEMP and MSRM, 2009). The dzud is likely to have increased the extent of poverty significantly beyond this 50 percent figure.

Early indications of the adverse economic impacts of the dzud were reflected in the rate of inflation. The World Bank's July 2010 *Mongolia Quarterly Economic Update* reported national inflation of 11.6 percent for May 2010, compared to under 2 percent in December 2009. The significant rise in inflation was in part attributed to a 36 percent year-on-year increase in average meat prices, in turn reflecting shortages of meat due to heavy dzud-related livestock losses (World Bank, 2010).

Despite the dzud, however, preliminary estimates for the year as a whole indicate that – as in 2000, 2001 and 2002 – the economy expanded in 2010. GDP is estimated to have increased by 6.1 percent year-on-year in real terms, reversing a 1.3 percent contraction in 2009 (World Bank, 2011). There was strong growth in wholesale and retail trade, construction, manufacturing, transportation and storage and mining. However, the agricultural sector contracted by 17 percent as a consequence of the dzud. Cashmere exports were also down, falling 39 percent year on year because of heavy livestock losses. Subsequent declines in volume sales more than offset a 67 percent increase in the unit price for combed cashmere and a 32 percent increase in the unit price for greasy cashmere. In contrast, total exports rose 52 percent year on year in December 2010, in particular owing to rising metal prices and large coal and copper imports by China. Cashmere accounted for 6 percent of total exports in value terms.

Any more in-depth macro-economic assessment of the 2009-2010 dzud would need to take account of a noticeable shift in prevailing economic circumstances in the run up to and over the course of the dzud. From mid-2008, the world economic crisis had a severe impact on Mongolia's foreign trade and mining sectors, which are heavily dependent on copper, gold and cashmere exports. These impacts fed through to considerable loss of tax revenues, a substantial rise in the budget deficit and a considerable tightening of expenditure, including related cutbacks in financial contingency arrangements for possible disasters in both 2008 and 2009 (see Section 3.3). A subsequent recovery in export prices enabled the Government of Mongolia (GoM) to provide additional support for the dzud response and, in all probability, considerably more than compensated for any adverse impact of the dzud on fiscal earnings. Nevertheless, it would be instructive to explore how the GoM might have responded to the dzud had export prices remained low.

In-depth analysis would also need to reflect the economic position of herder households in the run up to the dzud and its aftermath. In the run up, herder households were directly – and severely – affected by the sharp drop in the price of cashmere, their primary source of income, leading to considerable difficulties in repaying loans and a subsequent tightening of the rural credit market (see Section 6.4). The GoM's efforts to restore a balanced budget resulted in the cessation of the extremely costly universal child benefit payment, known as 'child money,' in January 2010, placing further pressure on herder households, particularly poorer ones who had relied on this transfer for the purchase of food. Despite some discussion to introduce interim targeted replacement transfer payments, including payments specifically to support dzud-affected households, no such arrangements were put in place. Fortunately, cashmere prices subsequently recovered, almost doubling between late spring 2009 and February 2010, providing a welcome boost to herders with surviving goats. High meat and dairy

[5] FAO et al (2007) report a much lower figure of around a quarter of the herder population, based on a poverty line of 20 to 30 animals. According to this source, 'it is commonly accepted that the minimum number of heads to cover food and other basic requirements in a sustainable basis is 100. A herd of 150-200 heads allows the family to engage in commercial production, including the use of private veterinarian services. A household with less than 20-30 animals is considered to be poor' (ibid: 26). UN (2010) meanwhile states that a herder with under 300 heads of livestock is operating at a subsistence level and that a profit can only be made with larger herds.

prices – themselves a result of the dzud and also an ongoing outbreak of foot and mouth disease in the eastern part of the country in 2010 – will also have benefitted those herders with remaining livestock.

1.3 Objectives and scope of paper

This paper has been prepared as part of a World Bank analytical study on *Structuring dzud disaster preparation, financing and response to increase resilience of herder households to climatic risk.* The overall study's objective is to support rural communities in better preparing for, coping with and recovering from dzud, including via strengthened arrangements for ex-ante financing, and coordination and targeting of post-disaster response.

There are four components of the study, focusing on:

i. Financing and institutional arrangements for dzud, related fiscal exposure and options for strengthening current arrangements;
ii. Herder livelihood resilience to climatic risk, based on detailed documentation of the impact of the 2009-2010 dzud, including the responses and coping strategies of affected herder households, and options for supporting enhanced herder resilience;
iii. Government systems for dzud preparation, support and recovery, focusing on access to feed, fodder, veterinary supplies and good quality livestock for restocking and options for strengthening the system; and
iv. Consultation with stakeholders on the initial findings of the study and dissemination of final outputs.

This paper has been prepared as part of the first component of the study, focusing on financing and institutional arrangements for dzud. It seeks to encourage a more coordinated, predictable, timely and targeted approach to dzud on the part of both the government and its development partners; and to explore the scope for a shift in emphasis from an ex post response triggered by widescale loss of livestock to a system that has sufficient ex ante resources and capabilities to support much earlier interventions, thereby helping to avert high losses.

The remainder of this paper is organized into six further sections. Section 2 outlines the institutional and financing framework for disaster risk management in Mongolia. The evolution of the GoM and international community's responses to the 2009-2010 dzud and related flows of assistance are presented in Section 3. Section 4 provides an assessment of the adequacy of the response, in terms of loss of life, the incidence of poverty, the timeliness of provision of assistance, its appropriateness and the extent to which it was targeted on the most severely affected aimags, soums and households. Issues arising and scope for improvement are discussed in Section 5. The paper then raises a number of issues relating to the role and extent of liability of government in dzud response, the performance of GoM agencies with responsibility for disaster risk management, the GoM's dzud impact and needs assessment system and application of criteria for declaring a disaster event, arrangements for tracking the flow of international aid, the allocation of responsibilities for dzud relief and recovery between different government agencies, opportunities for enhancing long-term resilience to climate risk and, finally, scope for consideration of disaster risk in the preparation of the annual budget. Options for strengthening disaster risk management via a range of innovative financing tools are explored in Section 6, covering development partner contingency funding arrangements, social protection tools, insurance-based arrangements, credit market options and public–private partnerships. Conclusions and recommendations are presented in Section 7.

2. Institutional framework and financing arrangements for disaster risk management

2.1 Institutional framework

National Emergency Management Agency Mongolia's National Emergency Management Agency (NEMA) is responsible for 'disaster protection'. NEMA was established in 2004 under the direction of the Deputy Prime Minister, merging the 45-year old State Board for Civil Defense, the 87 year-old Fire Fighting Department and the 44 year-old State Reserve Agency into one agency. The agency is organized into five departments: the Disaster Management Department, the Fire Management and Protection Department, the State Reserve Department, the Financial Department and the Administrative Department. The Disaster Management Department, in turn, is organized into three sections focusing on training and communications, emergency management and policy. There are local emergency management agencies at the aimag level, headed by their respective Aimag Governors. Soum Governors represent NEMA at the soum level.[6] NEMA has approximately 4,000 staff nationwide, including around 80 professional staff at the national level.

UNDP has provided support to the GoM in the area of disaster risk management at both the national and local level since the 1999-2002 dzud. In July 2002 it began the first phase of a project on *Disaster Mitigation and Management System in Mongolia*. This project is now in its third phase *(*Box 1).

Box 1: UNDP Project on Strengthening the Disaster Mitigation and Management System in Mongolia

At the height of the 1999-2002 dzud in Mongolia, the United Nations (UN) initiated a lesson learning process in the form of a joint UN Disaster Assessment. This exercise led to the establishment of a partnership between the GoM and UNDP in the area of disaster risk management through a project on *Strengthening the Disaster Mitigation and Management System in Mongolia***.** A summary description of the activities and achievements of this project are contained in UNDP (2010: 8) as follows:-

> " The initial project, now in its third phase, has been funded by the Government of Luxembourg and UNDP. NEMA's very existence is an outcome of this project. The project helped established NEMA's legal and policy environment, its cadre of trained personnel, its affiliated network of community based DRM [disaster risk management] organizations and its current pool of equipment: - vehicles, office equipment and basic communication tools including: telephones, satellite phones, radio stations, etc. These capacities enabled NEMA to lead and contribute directly to the efforts mounted to save lives in the current Dzud.
>
> One of the major accomplishments of the first phase of the project was the formulation of Mongolia's Law on Disaster protection, its approval, and the creation of the National Emergency Management Agency (NEMA). NEMA was formed with the merging of three existing organizations: Civil Defense, State Reserve, and State Fire Fighting department.
>
> The second phase enabled the completion of the development of the National Framework on Disaster Risk Reduction (NFA) and National Action Plan based on the Hyogo Framework of Action. The second phase also supported implementation of the "Law on Disaster Protection "through training and capacity building of NEMA and its 30 local branches. It piloted Community-based Disaster Management systems and established Disaster Risk Reduction (DRR) Partnership Councils in eight soums located in four aimags, and some 30 herder groups were established to serve as primary CBO [community-based organizations] for DRR.

[6] Administratively, Mongolia is divided into 21 provinces (aimag) and the capital city. Provinces are further divided into regions (soum), which in turn are divided into sub-districts (bag). There are 329 soum and 1,520 bag. Each aimag and soum is managed by a Governor's Office.

These CBOs participated in the preparation of the "National Program on Public Awareness for Disaster Prevention" and the improvement of the disaster communication and information system.

The main objective of the ongoing third phase of the project is to support implementation of the National Framework on Disaster Risk Reduction (NFA) - the longer-term national strategy for disaster risk management and climate change risk management. Over the past two years, the project has assisted NEMA in the formulation of major policy and planning documents. These include updating the "National Programme on Strengthening the Disaster Protection Capacity in Mongolia", which incorporated the key objectives of the MDG-based National Development Strategy approved in 2008 as well as developing the National Strategy for Climate Risk Management and its Action Plan. Phase III has also supported acquisition of material and the development of a Resource Mobilization Strategy and a National Education Programme on DRR. Over 400 NEMA personnel and local government officers were trained in basic knowledge and understanding of climate change risk management. The project also carried out a small pilot public awareness program on DRR through Education TV [television]. The program targeted young herders and rural residents with the aim of raising awareness and enhancing their capacity for coping with seasonal and climatic variability using traditional knowledge and customs which are fast getting lost in modern Mongolia. The pilot was expanded into four more soums and 2 urban khoroos, enabling the formation of over 40 Community Based herder groups with training in community disaster resilience and self-preparedness."

State Emergency Commission In the event of any emergency, the State Emergency Commission (SEC) assumes all responsibility. The SEC has 25 members. It is chaired by the Deputy Prime Minister, with the Head of NEMA as deputy. Other members include representatives of nine line ministries and various other government agencies, mostly at state secretary level, and one civil society organization, the Mongolian Red Cross. The SEC's Secretariat is located within NEMA, with three professional staff. Its work is implemented by NEMA.

The full membership of the SEC convenes at the outset of a new 'situation' and establishes a working group to examine the issue. Once the working group has completed its assessment and made its recommendation it is disbanded. Aimag Emergency Commissions are similarly convened in the event of an emerging situation, chaired by the Aimag Governor, and a working group appointed to undertake a further examination of the situation.[7]

All budgetary decisions relating to disaster response, including the release of State Reserves, are determined by the SEC and then forwarded to the Cabinet for approval. According to the SEC Secretariat, this system is very efficient, taking as little as eight days to disburse funding in response to requests for assistance. This efficiency reflects high-level senior government engagement in the SEC.

The SEC is also responsible for instigating and coordinating any international appeals for disaster assistance. Such appeals can only be launched once government funds have been exhausted (see Section 5.5).

[7] In Uvurkhangai, for instance, a working group is established every summer to develop a program of winter preparedness activities, including the establishment of reserves and the preparation of advice to herders on the use of otor (reserve pasture lands). In 2009, this working group continued on to deal with the emerging dzud situation.

2.2 Budgetary arrangements

Disaster preparedness and response The GoM makes certain annual budgetary provision for potential dzud and other disaster events.[8] NEMA receives a regular annual budgetary allocation to cover its running costs, at both national and aimag levels, and to replenish the State Reserve Fund. Under the 2010 budget, MNT 3.5 billion was allocated for central government purposes (including MNT 2.3 billion for capital items), MNT 9.4 billion for aimag emergency management agencies and MNT 8.1 billion for the state reserve.[9] Allocations to individual aimags are determined according to a range of factors, including population and disaster risk. NEMA has a very small general contingency line item for operating cost over-runs and so forth.

The State Reserve is administered by NEMA's State Reserve Department, with funding used to procure stocks of food and goods, grains, fodder, fuel and industrial and security equipment for purposes of economic security and disaster response. There are separate budget lines for each category of goods. The stocks are strategically dispersed across the country in locations referred to as reserve spots. Further reserves in kind are held by aimag and soum authorities, whilst the military has additional, separate reserves. The size of each type of stock held in reserve at the state, aimag and soum levels is set out in law. Stocks can only be released on the instruction of the SEC. The SEC also determines whether any stock releases will be sold or distributed free of charge; and whether any resulting revenue will be used for stock replenishment or will revert to the Government Treasury. Additional financial resources for the State Reserve can sometimes be secured via budgetary reallocations and mid-year adjustments of the budget. Any remaining funding at the end of the fiscal year reverts to the general government coffer and is not rolled over.

Annual budget resources are also allocated to the Government Reserve. This Reserve is held by the MoF and is available for a wide range of unforeseen purposes including natural and technological hazards and human and livestock epidemics. The Reserve can also be used, for instance, for international conferences, state anniversary celebrations, overseas medical treatment for senior government officials and other VIPs and disaster assistance to other countries (e.g., the Haiti earthquake in January 2010). A portion of the Reserve is apparently ring-fenced each year for disaster events and epidemics.

In the event of urgent emergency situations (e.g., relating to fire), aimags provide immediate support to affected communities and then seek reimbursement via the SEC from the Government Reserve and/or State Reserve. Twice or three times each year, the SEC consolidates these claims and prepares a decree sanctioning their reimbursement. Dzud-related needs are not considered urgent and a disaster situation must therefore be declared before any expenditure can occur. Aimag requests for assistance are then collated by the SEC, which in turn prepares a decree outlining proposed funding allocations. This decree is discussed with the MoF and then submitted to the Cabinet for approval. Parliamentary approval of Government Reserve drawdowns is also required if the proposed allocation is either 'substantial' or exceeds the amount of funding remaining in the Reserve. Following approval, funding is disbursed directly to the aimag level for use as outlined in the SEC decree. It cannot be reallocated for other purposes, even pertaining to disaster response. Despite requiring Cabinet approval, this process is relatively rapid.

Aimags are latterly required to submit reports to NEMA on the use of resources provided from the Government Reserve, under what is referred to as the disaster relief account. NEMA compiles these reports into a single document for submission to the State Treasury. Expenditure reports relating to the use of the State Reserves budget are also compiled by NEMA.

[8] The use of these various budgetary resources specifically in response to the 2009-2010 dzud is discussed in Section 3.3.

[9] In line with more general budgetary cuts over the past few years (see Section 1.2), the budget fell from MNT 36 billion in 2008 to MNT 30 billion (US$21 million at 2010 rate of exchange) in both 2009 and 2010.

Individual line agencies have no specific disaster contingency budget lines of their own. Some line ministries have disaster preparedness budgets which, in theory, could be used for disaster response as well. In practice, however, these budgets are very small and there is no surplus for response purposes.

Disaster risk reduction Since the 1999-2002 dzud, the GoM and a number of development partners have been engaged in various projects and programs to enhance herder resilience to dzud under regular development programs. No summary data on the total amount of support provided is available.

3. The 2009-2010 dzud

3.1 Evolution of the GoM response

During the summer of 2009, some 70 percent of Mongolia was affected by a drought, raising concerns about the possibility of a dzud. A series of regionally-focused small SEC working groups were therefore established in July 2009. These working groups, headed by NEMA, visited various parts of the country to examine the situation on the ground. Their findings reiterated concerns about a possible forthcoming dzud. In response, NEMA and the Ministry of Food, Agriculture and Light Industry (MoFALI) encouraged herders to prepare fodder and consider temporary resettlement to areas with better pasture. However, this advice was not heeded. Instead, levels of reserves for the country as a whole fell year on year because there had been surplus stocks in each of the previous two to three years, resulting in deterioration of stored items and wastage. Herders were keen not to repeat this experience. Drought conditions were also blamed for reduced stocks in some aimags although there was, in fact, scope for purchasing fodder from other areas. Meanwhile low livestock prices in the latter part of 2009 discouraged destocking. Some 30,000 tonnes of meat was taken off but herders regretted this offtake at the time because meat prices were low.

In October 2009, there was heavy snow. This snow subsequently melted and then iced over, preventing access to grazing pasture that would normally be accessible until December. In consequence, a hazard situation was identified by the SEC in November but was not, as yet, considered a disaster because there had been no direct impacts. By the end of December 2009, however, herders had run out of stored fodder, the GoM had begun distributing hay and fodder and the first livestock mortalities had been reported. Donor meetings focusing on the dzud began around this time, with meetings as regularly as every few days.

In early January, a SEC meeting was convened to respond to the crisis, resulting in the establishment a new working group which visited eight aimags to assess the situation and draw up recommendations. This working group was headed by NEMA, with members from the Transportation Agency, the Energy Authority, the Ministry of Health (MoH), MoFALI and the State Professional Inspection Agency. Based on the findings of this working group, states of disaster were declared in seven aimags (see Section 5.4) and the first government-donor coordination meeting organized by the Ministry of Foreign Affairs and Trade (MoFAT) on 18 January 2010. At this meeting, the UN was formally requested to coordinate all donor contributions (UNDP, 2010). Meanwhile, the SEC undertook a more detailed assessment covering eight aimags from 10 to 25 January. On the basis of the findings of this assessment, the GoM made its first appeal for international assistance at a second government-donor coordination meeting on 26 January 2010, requesting over US$5 million assistance largely for hay and fodder. This appeal was subsequently extended to vehicles and veterinary medicines. On 2 February, the SEC revised its statement of disaster-affected areas to 65 soums in 12 aimags, with 61 soums in 11 aimags declared to be in a dzud state (see Section 5.4).

Immediate support began to flow in, including considerable assistance in kind from China and Russia, and the UN set its humanitarian crisis response system in motion, under the leadership of the UN Resident Coordinator. Meanwhile, heavy and continuous snowfall under blizzard conditions resulted

in a sharp fall in daily temperatures in January and February 2010 and further livestock losses. Temperatures dropped to -40°C across most of Mongolia and a blanket of snow reaching depths of 20 to 40cm covered 60 percent of the country (UNDP, 2010). Snowfalls and below average temperatures continued through March and April and well into May 2010, with some snow still falling in early June.

In March 2010, the GoM again appealed to the international community for support, now declaring a state of disaster in 80 soums in 15 aimags (see Section 5.4). However the GoM chose not to declare a national emergency because of concerns about potential adverse consequences for confidence in the country's economy. These concerns reflected the fact that the declaration of a national disaster had been declared following an outbreak of pandemic influenza H1N1 virus (swine influenza) in 2009 had led detrimental impacts on the country's business sector (ADB, 2010).

By mid-May 2010, an estimated 8.5 million livestock had been lost and some 220,000 households affected by the dzud. Around 8,700 households had lost all their animals; 40,000 herders had lost 50 percent or more of their livestock; and 1,500 herder households had migrated to soum or aimag centers or to the national capitol, Ulaan Baatar. The figure on dzud-related livestock losses was subsequently revised to 8.8 million heads of animal at the end of June 2010. Experienced herders confirm that the 2009-2010 climatic conditions were particularly extreme, contributing to the high level of mortality.[10]

As of late May 2010, a SEC working group was drawing up plans for post-dzud recovery and was expected to submit its proposal to the Cabinet in June. According to MoFALI, these plans would entail the provision of some 70 heads of sheep to around 50 percent of the 8,700 herders who had lost their entire herds, at a total cost of MNT 17.4 billion. The other 50 percent would either be retrained or relocated. The GoM had prepared a detailed breakdown of the number of herders who would receive training in each of the areas of agriculture, small and medium-sized enterprises, services, mining and construction (roads etc.). The costs of this retraining were expected to be absorbed by existing budgets for vocational training within each of the relevant government agencies. In practice, little restocking actually occurred.

3.2 Evolution of the international response

The Food and Agriculture Organization of the United Nations (FAO) was the first UN agency to undertake an assessment of the emerging dzud situation, running from 27 January to 1 February 2010. This assessment was requested by MoFALI and focused on two aimags. The resulting recommendations proposed immediate urgent action to prevent further loss of livestock. FAO began a second, more detailed assessment in late February to confirm the findings of its initial exercise. Meanwhile, the United Nations Children's Fund (UNICEF) undertook its first assessment in February, with a further three or four assessments subsequently undertaken, UNDP also conducted two assessments, focusing on early recovery; and the United Nations Population Fund (UNFPA) undertook at least one assessment. FAO conducted an impact assessment of its dzud response in June.

Ahead of most of these assessments, on 8 February 2010 the UN agencies present in Mongolia made a collective decision to seek support from the UN Office for the Coordination of Humanitarian Affairs (OCHA) to access the UN Central Emergency Relief Fund (CERF)[11] and to subsequently issue a Flash Appeal (UNDP, 2010). An allocation totaling US$3.7 million funding was received from the CERF in early March 2010 for humanitarian and life-saving activities. However, OCHA subsequently advised that a Consolidated Appeal Process would be more appropriate than a Flash Appeal, in view of the slow-onset nature of the dzud and limited capacity within the UN system in Mongolia to

[10] For fuller descriptions of the impact of the dzud see, for instance, IFRC (2010) and UN (2010).
[11] A stand-by fund established by the UN to enable more timely, reliable and equitable humanitarian assistance to victims of natural disasters and other types of emergency.

facilitate a rapid disaster response.[12] This first required the establishment of a cluster system, setting back the launch of the Consolidated Appeal until 12 May 2010. In the interim, the UN established three clusters, focusing on survival, health, nutrition, water and sanitation and food (led by UNICEF), on agriculture (led by FAO) and on early recovery (led by UNDP). A fourth cluster on education was subsequently added (led by UNICEF). Relevant government agencies as well as development partners were included in each cluster. Each of the clusters conducted assessments in coordination and/or collaboration with the GoM (UNDP, 2010) and held various meetings.[13] The UN also organized a series of around four high-level government/ambassadorial level meetings between February and May 2010, the last to launch the Consolidated Appeal.

UNDP created a five-person team (including one international position) within NEMA to support coordination of the dzud response; to enhance timely communication of information on impacts, needs and aid flows; to establish a related GIS database; to prepare a lessons learned report in close collaboration with NEMA and MoFALI and develop a related three- to five-year National Recovery Plan (funded under the Consolidated Appeal); and to closely coordinate with the UN Resident Coordinator's office on dzud matters (UNDP, 2010). This unit began operation in May and was expected to continue in existence until October 2010. The lessons learned study was intended to open space for debate and to encourage the development of a more strategic approach to future dzud. The resulting study includes a review of lessons learned from previous dzud, the impact of the 2009-2010 dzud, 2009-2010 dzud preparation and response efforts and coordination, communication and information management (UNDP and NEMA, 2010).

Various NGOs and bilateral and multilateral agencies have been very active in providing dzud-related support as well. World Vision International (WVI) was one of the earliest off the mark, undertaking its first assessment in December 2009 and beginning the first of three dzud-related interventions in February 2010. WVI was already operational in 18 aimags and so well informed about deteriorating conditions across much of the country, no doubt explaining its early engagement. Moreover, it has an area development program under which it is committed to work in the same communities for periods of five to ten years, tackling any issues arising over that time. Other particularly active non-UN development partners up to June 2010 included the Asian Development Bank (ADB), the World Bank, the Swiss Agency for Development and Cooperation (SDC), the Mongolian Red Cross, the International Federation of the Red Cross (IFRC), the Adventist Development Relief Agency, and Save the Children Japan (see Section 3.4). In common with WVI, a number of them undertook their own assessments, including the IFRC/Mongolian Red Cross, Action Contre la Faim and Save the Children Japan. In June 2010 the International Organization for Migration undertook an assessment of the impact of the dzud on migration; and the United States Agency for International Development (USAID) conducted a more general assessment.

3.3 GoM budgetary provision in support of the 2009-2010 dzud

As of 24 May 2010 the GoM had allocated MNT 6.8 billion (US$5.0 million) funding in support of the 2009-2010 dzud response efforts, including the 2009 winter preparations (Table 2). It had also drawn down various reserves in kind from the State Reserve. These allocations were proposed by the SEC and approved by the Cabinet in a series of seven SEC decrees. At least MNT 2.2 billion of the total was funded from the 2009 and 2010 Government Reserves.[14] The full figure on total GoM

[12] Flash appeals are intended as an early strategic response plan, drawn up within five to seven days of an emergency's onset and covering urgent humanitarian and early recovery over a period of up to six months. The Consolidated Appeal Process is a tool for UN agencies and partner organisations to raise funds for humanitarian action and to plan, implement and monitor their activities together under a common program, potentially stretching over a number of years.

[13] The education cluster apparently had yet to meet as of June 2010.

[14] It is not possible to provide exact figures because of incomplete data to hand on the source of funding of each approved activity.

expenditure in response to the 2009-2010 dzud was somewhat higher as relevant government agencies were expected to absorb the cost of a number of additional actions that were also detailed in various SEC decrees and meeting minutes (Box 2) within their existing budgets. These, in effect, constituted a series of budgetary reallocations in favor of the dzud response. The figure also excludes an additional allocation of MNT 2.3 billion from the Government Reserve to the State Reserves to fund additional stocking of hay and fodder in mid-2010.

Box 2: Additional GoM actions in support of the 2009-2010 dzud response

In addition to the dzud-related actions reported in Table 1, there were a number of further actions indicated in SEC documents whose costs were expected to be absorbed by the relevant government agency. These include the following:-

- MoH: Finance release of vehicles for three hospitals from the State Reserve *(SEC Decree 7, 11 January 2010*).
- Ministry of Energy and Mineral Resources: Prepare coal reserves for a minimum of 20 days at the power plants and fix any leakages of heating during transmission (*SEC Decree 7, 11 January 2010*).
- MoF: Finance a government subsidy for the energy sector for 2010 (*SEC Decree 7, 11 January 2010*).
- Ministry of Energy and Mineral Resources: Take urgent measures to increase coal reserves in dzud-affected aimags and improve efficiency of the heating network (*Records of the Second Meeting of the State Emergency Commission, 2 February 2010*).
- MoSWL: Urgently distribute MNT 70,000 allocated from the Human Development Fund for elderly, children and the disabled to herders and citizens in dzud-affected aimags (*Records of the Second Meeting of the State Emergency Commission, 2 February 2010*).
- MoFALI and MoSWL: Undertake relevant measures to create more jobs and support herders who have lost all their livestock to purchase animals (*SEC Decree 34, 10 February 2010*).
- MoH: Allocate funds from the Minister of Health's reserves and funds for fleet renewal for rural hospitals to procure ambulance cars for aimags experiencing mild dzud state (*Records of the Second Meeting of the State Emergency Commission, 23 February 2010*).
- NEMA: Issue permission to Aimag Governors to use hay and fodder in their reserves (*Records of the Third Meeting of the State Emergency Commission, 23 February 2010*).

Table 2: SEC Resolutions on GoM allocations in support of the 2009-2010 dzud response

SEC Resolution Number	Date	Broad scope	Activities	Budget allocation		Source of funding
				MNT (millions)	U$	
221	22.07.2009	2009-2010 winter preparations	Prepare 1,005 tonnes of hay and 176.9 tonnes of fodder			
296		2009-2010 livestock winter preparedness	Transport 1,440 tonnes of hay and 890 tonnes of fodder to state emergency fund branches and points in drought-affected aimags	394	287	
			Provide health and social services for droving herders in 7 aimags	208	152	Government reserve
			Build 10 new wells and repair 3 wells in inter-soum droving pastures	149	109	
367	11.12.2009	Support to aimags experiencing winter hardship	Distribute 5 types of livestock medicine and bio preparations in 12 aimags	21	15	Government reserve
			Transport 900 tonnes of hay and 2,900 tonnes of fodder in the state emergency fund	548	399	Government reserve
			Provide health and social services for droving herders in 21 aimags	315	230	Government reserve
			Provide cars to the interprovincial droving zones	36	26	
			Provide cars for hospitals in 7 soums of 3 aimags	119	87	
			Provide diesel stations for 2 soums	28	20	Government reserve

Table 1: SEC Resolution Allocations in support of the 2009-2010 dzud response (contd)

SEC Resolution Number	Date	Broad scope	Activities	Budget allocation		Source of funding
				MNT (millions)	U$ ('000s)	
7	11.01.2010	Support to aimags experiencing winter hardship	Cover 50% discount on sale of 4,000 tonnes of hay and 5,000 tonnes of fodder	871	635	Government reserve
			Clear snow from local roads	97	71	Government reserve
			Transport hay and fodder to soums and bags	60	44	Government reserve
			Provide health and social welfare services to herders and purchase cars	60	44	Government reserve
34	10.02.2010	Support to 12 aimags experiencing winter hardship	Disburse MNT 230 million to each of 12 aimags for the purchase of fodder, bio-feed, food, durable commodities and other items	2,760	2,011	MoFALI/mid-year fiscal adjustment
52	03.03.2010	Carcass clearance	Remove carcasses and sterilize and disinfect related areas and cover costs of related working group expenses	290	211	
			Labor costs in removing livestock carcasses	241	176	MoSWL Employment Generation Fund
57	10.03.2010	Distribution of in-kind donations	Transport, load and unload and store donated wheat from Russian Federation	305	222	Cash donations
			Transport wheat by rail and road, load and unload and undertake laboratory tests.	311	227	MoFALI portfolio
			Total	6,813	4,964	

By May 2010, the GoM's attention had turned to the recovery phase. Despite mixed opinion within government on the relative merits of restocking (see Section 4.1), the GoM appeared at that point in time to be moving towards a decision to support partial restocking at an estimated total cost of MNT 17.4 billion (see Section 3.1). According to its provisional recovery plan, the national government would cover MNT 3.5 billion of this cost through the 2010 mid-year budget adjustment, meet a further MNT 3.5 billion from elsewhere in the state budget and seek funding for the remaining amount from development partners and local government. It would also provide some retraining, the costs of which were expected to be absorbed within existing budgets for vocational training in each of the relevant government agencies. This would imply further unrecorded reallocations of budgetary resources in addition to those noted in Box 2. In practice, as already noted, little restocking actually occurred.

Allocations from individual budgetary resources in favor of the dzud response are discussed in further detail below.

Government Reserve The Government Reserve was set at MNT 10 billion (US$7.3 million) in the 2010 budget, slightly higher than its 2009 level of MNT 9 billion but considerably less than its 2008 allocation of almost MNT 19 billion. Reduced allocations reflected broader fiscal austerity (see Section 1.2) and related concerns on the part of some Members of Parliament about the wisdom in tying up considerable resources, at high opportunity cost, for contingency purposes. Allocations were subsequently topped up in both 2009 and 2010, as part of the mid-year budget adjustment (see below).

In 2008, a MNT 9.1 billion share of the Government Reserve was spent on disasters, equivalent to 32 percent of the total budget. In 2009, disaster-related expenditure fell to MNT 5.9 billion, including MNT 1.1 billon for dzud-related purposes. However, disaster-related expenditure maintained its 32 percent share in total Government Reserve spending (calculated as a percentage of the topped up budget).

The initial 2010 Government Reserve allocation was fully utilized in the first four months of the year. Around half was disbursed in response to the dzud (MNT 1.1 billion) and other natural hazards (forest fire and flood) and the remainder to tackle animal disease and support the GoM's H1N1 response. A further MNT 3.5 billion was intended for dzud response (in the form of livestock restocking) under the MNT 20 billion mid-year top up of the Government Reserve (see below).

State Reserves (reserves in kind) The total annual budget for State Reserves fell from a colossal MNT 87.6 billion in 2008 to MNT 8.1 billion (US$5.9 million) in 2010, primarily due to significant cutbacks in the sub-heads for (food) grains and fuel. In consequence, the State Reserves had below-requirement stocks of some items (not including hay and fodder) in 2009 and 2010.

The much more modest allocation for hay and fodder was cut from MNT 1.6 billion in 2008 to MNT 1.3 billion in 2009 and MNT 0.8 billion (around US$600,000) in 2010. However each June the State Reserves Department establishes a working group to determine the appropriate size of fodder reserves for the forthcoming year. If necessary, it then submits a proposal via NEMA for additional financing from the Government Reserve to increase stocks. In 2009, it received an allocation of MNT 2.3 billion for this purpose, permitting the State Reserves to establish an extra three reserve spots.

The subsequent dzud resulted in the depletion of the State Reserves of fodder, initially via subsidized sales to affected aimags and then via free distribution to the worst affected herders. Reserves were replenished to some degree via purchases from the private sector and this fodder was then distributed

free of charge. Other supplies, including livestock feed supplements, medical supplies, food, warm clothes, vehicles, veterinary equipment and fuel, were released from the State Reserves in support of the dzud response as well, mostly free of charge.

Levels of hay and fodder reserves in many aimags and soums were also below statutory requirements at the start of the 2009-2010 dzud. This was partly blamed on the 2009 drought, as already noted. Local reserves were subsequently run down considerably, although aimags were given some funding from the Government Reserve to import additional fodder from overseas. Uvurkhangai, for instance, had a budget of MNT 60 million for aimag reserve stock purchases in 2009. It typically sells the hay and fodder, using the sales proceeds to replenish its stocks. In the first part of 2010, however, it released much of its stocks on credit terms due to payment difficulties on the part of herders. Much of this credit had yet to be repaid as of mid-2010 but the aimag had managed to secure MNT 90 million for its 2010 purchasing operations, including MNT 40 million from the state government and MNT 50 million from local resources.

Budgetary reallocations In theory, reallocations of budgetary resources in support of disaster response are possible in Mongolia. However, this process is very strictly managed and any movement of funding between budget lines, even within a line agency's own appropriation, requires MoF approval.

There appears to have been only one clearly labeled reallocation of funding in support of the 2009/10 dzud response. This relates to a MNT 2.7 billion transfer from the Mongolian Livestock Program, which had received funding under the 2010 budget but had yet to be approved by Parliament. The reallocated funding was used to purchase hay and fodder, clear roads and remove carcasses. The Mongolian Livestock Program was subsequently reimbursed as part of the 2010 mid-year budget adjustment (see below).

There were a number of additional dzud-related actions indicated in SEC documents whose costs were expected to be absorbed by relevant government agencies and which, in effect, constituted further budgetary reallocations in support of the dzud response. These included the provision of vehicles for hospitals in dzud-affected areas by MoH, the financing of an energy subsidy by MoF, the preparation of coal reserves by the Ministry of Energy and Mineral Resources, the provision of support to the elderly, children and disabled in dzud affected areas by MoSWL and job creation actions on the part of MoFALI and MoSWL for herders who had lost all their livestock (see Box 2).

Further information on reallocations may be slightly clouded by mid-year adjustments of the budget, which can result in both 'winners' and 'losers'.

Mid-year adjustment Annual GoM budgetary allocations are sometimes subject to a mid-year adjustment to reflect discrepancies between forecast and actual revenue. Such an adjustment occurred, for instance, in mid-2010 to take account of additional revenue arising from higher-than-forecast world copper and gold prices. A mid-year adjustment was also made in 2009. In both years, the Government Reserve was topped up as part of these adjustments. In 2009, a further MNT 8 billion was allocated to the Government Reserve, mainly to fund the GoM's H1N1 response). In 2010, an additional MNT 20 billion was provided. It was intended at the time of approval that this MNT 20 billion would be used to support livestock restocking (MNT 3.5 billion), an earthquake prevention program (MNT 7 billion) (see Box 18) and further unforeseen events during the remainder of the year (MNT 10 billion). The MoECS also received some additional funding for school and kindergarten heating, following over-spending of its fuel budget during the first part of the year because of the

extreme cold weather; and MoFALI was reimbursed for earlier reallocations from the Mongolian Livestock Program in favor of dzud-related activities (see above). The State Reserve Fund did not receive any additional resources but, in contrast to recent previous years, did not lose any funding in the 2010 mid-year fiscal adjustment either.

Local government resources Aimags and soums have very few resources available for disaster response. The livestock protection fund appears to be the main source of funding for such purposes. In Uvurkhangai, for example, 50 percent of the aimag livestock protection fund is used every year for the preparation of hay and fodder reserves and 50 percent to address needs arising over the course of the winter (such as road clearance). In 2010, this latter 50 percent was used for dzud response purposes, in particular to relocate some herders that had been severely affected by heavy snow. However, this budget line is relatively limited, in the case of Uvurkhangai standing at only MNT 40 million (around US$29,000) in 2010. Soums are also meant to have livestock protection funds but, in practice, not all do.

Aimags receive a reserve fund allocation under the annual budget which can be used for dzud response purposes as well. In 2010, this budget line stood at MNT 7.3 billion for the country as a whole, considerably higher than in 2008 (MNT 1.3 billion) and 2009 (MNT 4.3 billion). However, as with the Government Reserve, this budget line is intended for a wide range of purposes and may not be sufficient to address dzud-related needs too. In Uvurkhangai, for instance, the funding was used to address a number of issues in 2009 and 2010, including livestock disease and the H1N1 virus and none was therefore available to address the consequences of the dzud.

Local government budgetary reallocations in support of dzud response are extremely unlikely because local governments have very limited discretionary resources. The use of their budgetary allocations from central government is pre-determined in accordance with central government policies, with resources allocated to implement related tasks and deliver related services at the local level. Meanwhile local revenue raising capabilities are very small, again offering little leeway to reallocate resources. Uvurkhangai, for instance, raises only around MNT 100 million (US$73,000) annually in local taxes, primarily from livestock product sales. It is required by law to use this revenue for a number of purposes including sanitation, garbage collection, environmental protection, pest eradication, local road maintenance, sewage, flood and fire protection and investment in local public infrastructure.

3.4 International assistance flows

Comprehensive data on international aid in support of the dzud response efforts are difficult to obtain. According to the UN (2010), flows totaled in the region of US$7.7 million (MNT 10.5 billion) as of 10 May 2010. The majority of this assistance was in the form of fresh funding specifically for the dzud response. Notable exceptions include limited reallocations by the International Fund for Agricultural Development (IFAD) (see Section 6.1) and the World Bank.[15] However, the UN data are incomplete. For instance, they do not include a US$2.5 million ADB grant (approved on 6 April 2010). It is not clear what other aid flows are missing but it would seem reasonable to assume, at least

[15] The World Bank was approached in February/March 2010 to provide dzud relief under its Sustainable Livelihood Project. In response, the Bank opened an emergency window under the Pastoral Risk Management component of the project, disbursing US$830,000 directly through the Sustainable Livelihood Project's administrative structure to individual soums for use in meeting locally identified needs, such as the purchase of fodder and road clearance. This funding was fully disbursed by April 2010.

by accounting for the ADB grant, that actual aid flows were at least in the region of at least US$11 million as of mid-May 2010 (MNT 15.0 billion).

The SEC/NEMA reported an even higher figure of MNT 28.0 billion (US$20.4 million) as of 24 May 2010. However, a closer examination indicates some discrepancy in the data. The May 24 2010 SEC data include 56.8 tonnes of fodder quality wheat from Russia that the SEC/NEMA valued at MNT 23.4 billion (US$17.1 million). As wheat prices on the US market were under US$200 per tonne in the first quarter of 2010,[16] the 56.8 tonnes of wheat was probably worth US$17,040 (MNT 41.0 million) at most, based on a generous estimate of US$300 per tonne CIF Ulaan Baatar. If data are adjusted to reflect this lower value estimate, international aid receipts reported by the SEC/NEMA only total MNT 4.6 billion (US$3.3 million). Alternatively, the tonnage figure could be wrong as the SEC Decree 57 of 10 March 2010 indicates that 31,200 tonnes of wheat was received from Russia.[17] This volume of wheat would be worth US$9.4 million at most, again using a generous estimate of US$300 per tonne CIF Ulaan Baatar. This would then imply international aid receipts of $12.7 million according to aid flows reported by the SEC/NEMA and adjusted to reflect a probably more realistic valuation of the wheat assistance.

The subsequent May 2010 Consolidated Appeal sought to raise over US $18 million additional support to assist nearly 800,000 people through to May 2011. Some US$7.8 million was sought for the agricultural sector alone, focusing largely on the provision of critical livestock inputs and disaster risk management technical know-how transfer; provision of fencing, fodder seed and related technical assistance; animal health interventions; support to enhance household food security via cultivation of crops and so forth; and coordination. Much of this assistance was intended to reduce the risk of further dzud both over the next year and in the longer term. The appeal also included US$3.1 million for the survival, water, sanitation and hygiene, health and nutrition sector, focusing on health and nutritional needs of herder families, including new migrants; US$4.4 million for early recovery, focusing on carcass removal, provision of alternate income generation opportunities and support to NEMA (via a UNDP unit – see Section 3.1); and US$2.8 million for the education sector, focusing on sustaining school enrolment and attendance rates of herders' children, protecting them from hazardous child labor and strengthening emergency preparedness and response in the education sector. It should be noted the appeal did not cover restocking.

Had the full amount requested under the Consolidated Appeal been raised, the international community would have provided at least US$29 million dzud relief and recovery assistance in total. Actual flows would have been even higher as a number of development partners were continuing to provide assistance outside the umbrella of the Consolidated Appeal. However, only $3.4 million, or 19 percent, of the requested funding under the Consolidated Appeal was actually secured (see Section 4.2).[18]

[16] No.1 Hard Red Winter wheat, ordinary protein, FOB Gulf of Mexico averaged around US$200/tonne in January 2010. The price subsequently dropped.

[17] SDC (2010a) mentioned 1,000 wagons of wheat, which would imply a considerable volume of wheat as well. In contrast, the UN tables only detailed US$320,000 of assistance from the Russian Federation in the form of 25 wagons of fodder, lubricant, warm cloths and medicines.

[18] See http://fts.unocha.org/pageloader.aspx?page=emerg-emergencyDetails&appealID=896 for detailed information.

4. Assessment of adequacy of response

4.1 Defining 'adequacy'

There are two fundamental challenges in assessing the adequacy of the GoM's and international community's response to dzud in Mongolia, relating to difficulties in determining both the scale of contingent public liability and appropriate forms of support for recovery.

Scale of liability Beyond averting loss of life and significant declines in nutritional and health status of the human population, the extent of public relief and recovery support required in response to a dzud is ultimately a political decision, based on perceived obligations as insurer of last resort to poorer households and longer-term policies on poverty alleviation and development of the livestock sector.

Appropriate forms of support Similarly, the determination of appropriate forms of support is by no means clear cut, beyond the assistance required to meet urgent human nutrition and health needs. Support to the livestock sector could take a number of forms including pre-emptive public actions over the course of the previous summer, autumn and into the winter (e.g., to stockpile reserves, support movement of livestock to *otor*, vaccinate livestock and offer incentives for offtake), provision of hay and fodder over the winter, carcass clearance and restocking. However, each action needs to be considered in the wider context of the need to reduce poverty and to establish a sustainable livestock sector, including via the introduction of an incentives framework for the management of risk. As one interviewee commented, the livestock sector is currently, in effect, a social protection system, providing the only significant form of subsistence employment in Mongolia. Even before the dzud, a significant share of herders was living in poverty (see Section 1.2), many of them equipped with limited rangeland management or husbandry skills. Meanwhile, the sector had been far from sustainably managed over the past couple of decades.

Support for restocking is particularly controversial and there are mixed feelings on re-stocking within both the GoM and its development partners. This controversy reflects poor experience with restocking in the aftermath of the 1999-2002 dzud and concerns about over-stocking, in turn both symptoms of poor broader management of the livestock sector in recent decades and related limited skill sets. A number of development partners were involved in restocking in response to the 1999-2002 dzud, including FAO, IFAD, Save the Children and the World Bank. The World Bank, for instance, reallocated remaining unspent funding totaling US$1.3 million from its Poverty Alleviation for Vulnerable Groups Project to provide restocking loans to poor herders, reaching 4 percent (1,728) of total dzud-affected households in five severely-affected aimags (World Bank, 2001). By 2002, over 6,000 households in ten aimags had been restocked by various development partners (Swift, 2007). Some additional restocking was supported under SDC's 'Cash for Herders' Project, under which a one-off cash transfer of US$180 was provided to each of 7,600 households to spend as they so chose. The GoM also supported considerable restocking, in part with one eye towards the forthcoming parliamentary election.

The initial development partner restocking initiatives in response to the 1999-2002 dzud typically entailed careful targeting of recipients (including proof of herd management experience and commitment as one of the selection criteria), obligatory insurance of restocked animals in the first year and repayment in cash or kind over several years at varying rates of interest (Swift, 2007). However, restocking practices apparently slipped over time (ibid), undermining earlier targeting. The World Bank support, for instance, was carefully targeted but the benefits of these efforts were undone by the GoM's politically motivated restocking activities. The extended dzud created additional problems as some of the replacement livestock died, with potential implications for loan recovery. In

the case of the World Bank, for instance, by April 2001, 12.5 percent of the replacement livestock had already been lost in one soum (World Bank, 2001).

Based on a review of the 1999-2002 restocking efforts, Swift (2007: 22) subsequently concluded that 'the evidence is that restocking can be an effective measure, on quite a small scale, provided stringent household selection criteria are applied… but as a large-scale response to disaster, where small numbers of animals are given to large numbers of households, with little selectivity or monitoring, it is doomed to failure'. Swift (ibid) recommended that restocking should be undertaken as just one part of a wider package of measures for improving livestock productivity, including improved pasture and risk management.

More recent attitudes to restocking have also been influenced by significant increases in the livestock population since 2002. Despite the 2009-2010 dzud, there is still considerable overstocking (see Section 5.7). From a strictly carrying capacity perspective some development organizations and even counterparts in government therefore view the 2009-2010 losses in a positive light, although there is also enormous underlying frustration that the situation arose at all. Indeed, some development partners apparently refused to support the 2009-2010 dzud response efforts on the grounds that the dzud was entirely predictable, the consequence of a failure to address the rapid increase in livestock numbers or introduce appropriate risk management measures.

Herders' perspectives have also apparently shifted over time. They still, inevitably, attach a high priority to restocking but have also, apparently, become more aware of the importance of quality as well as quantity of livestock (Box 3). However, any decision away from re-stocking still leaves the thorny issue of appropriate support to poor dzud-affected herder households, many of whom have been forced into further depths of poverty as a consequence of the 2009-2010 dzud, unresolved as there are few alternative livelihood opportunities for herders in Mongolia (Box 4).

Box 3: Recovery plans in Bayangol Soum, Uvurkhangai

Bayangol Soum has around 1,600 households, mostly herder families. Two-fifths of the soum received good rainfall in the summer of 2009 but the remainder experienced drought conditions. In early October 2009, the soum was visited by a SEC working group which was examining the possibility of an emerging dzud situation (see Section 3.1). This visit resulted in the organization of an *otor* and the drawing up of agreements with other aimags permitting herders to migrate elsewhere.

The succeeding winter proved harsh, with temperatures 11° C lower than any experienced over the previous 70 years. Some 63 percent of the soum's total 288,000 animals perished, leaving around 100,000 animals. Livestock losses were valued at MNT 11 billion, equivalent to 13 times the soum's annual budget. An estimated 153 households lost all their animals and 700 households lost half of them. Some 500 households were left struggling to repay outstanding loans, in total valued at over MNT 500 million; and around half of them had overdue loans as of early June 2010. It is noteworthy, though, that only 40 percent of the livestock that had been moved to *otor* died as a consequence of the dzud.

As of early June 2010, the soum was exploring alternative livelihood opportunities, including the potential returns to a slaughterhouse providing around 150 jobs. In the meantime, many of the more severely affected herders had turned to the production of pressed coal bricks. An NGO was also supporting production of fodder and vegetables. Over the forthcoming months, some herder households were expected to take up mining (see Box 4) or road construction and some to migrate to

Ulaan Baatar. Members of some 200 households had so far migrated in search of alternative livelihoods.

Herders were also keen to restock, drawing on lessons learned during the dzud to better protect their herds and improve pasture management practices (e.g., via the creation of herder groups, fencing and the installation of wells).[19] However, they indicated that they did not want to re-build their herds to 2009 levels, which reached around three times carrying capacity according to soum authority estimates. Instead, herders wanted to place greater weight on the quality of livestock. As of mid-June 2009, the soum planned to provide herders who received new stock with range management training.

Box 4: Alternative livelihood opportunities for herders

There are very few alternative livelihood opportunities for herders in Mongolia, in either rural or urban areas. Some development partners are planning to provide vocational and skills training in the wake of the 2009-2010 dzud, but trainees will face relatively limited likelihood of a job at the end of their courses. Types of training mentioned include courses on improved animal husbandry techniques, vegetable production, livestock processing, handicrafts and road construction. Adult literacy and live-skill training are also being considered. Other development partners intend to assess the local job market and local demand for products before deciding what training to provide but, in reality, this process is unlikely to identify many new opportunities.

Artisanal mining is probably the only rural option that can absorb relatively large numbers. Artisanal mining was only legalized in July 2010 (SDC, 2010b) but, prior to the passage of the new law, an estimated 40,000 to 1000,000 people were already engaged in this activity. The new law could bring many more jobs to the rural economy.

Migration to urban areas also looks set to rise in the wake of the 2009-2010 dzud, although herders are well aware that they may not find work. An IFRC/Mongolian Red Cross dzud assessment found that 80 percent of respondents, all of whom were severely affected by the dzud, did not want to migrate because of lack of employment opportunities as well as the higher cost of urban living and reduced access to traditional medicine. Yet despite these disincentives, as of April 2010 the Ulaan Baatar City Council forecast that 18,500 people would arrive in the city over the coming year as a consequence of the dzud (UNDP, 2010). After the 1999-2002 dzud, the capital's population rose by 10 percent, with the majority of in-migrants arriving two to three years after the dzud (ibid). This increase in part reflects a strong network of social inter-dependencies between the rural and urban poor.

4.2 Parameters for assessing the success of the relief operation

Flows of aid relative to identified needs In response to donor requests, the GoM prepared an estimate of total immediate relief funding needs in around February or March 2010. The resulting figure of MNT 34 billion (US$25 million) was based on detailed estimations of each affected aimag's needs (including quantities of fodder, hay, vehicles, candles, matches and so on) and the findings of SEC working group assessments.

[19] Discussions in Ergen-Denj Bag, also in Uvurkhangai, revealed similar priorities and thoughts for the future.

By comparison, as of 24 May 2010 the GoM had allocated somewhere in the region of MNT 6.8 billion (US$5.0 million) in support of the dzud response effort. These figures exclude the cost of certain activities that relevant government agencies were expected to absorb from their existing budgets and drawdowns of reserves in kind from the State Reserve in support of the dzud response efforts (see Section 3.3). International assistance up to this point in time totaled probably somewhere between an estimated MNT 15.0 billion (US$11 million) and MNT 27.0 billion (US$20 million), based on the UN estimate and also including assistance received from both ADB and Russia (the latter valued at the seemingly generous figure of US$9.4 million) (see Section 3.4) According to NEMA/SEC, MNT 818 million in local donations had also been received. This implied a grand total of between MNT 22.6 billion (US$16.6 million) and MNT 34.6 (US$ 25.4 million) assistance for immediate relief purposes (including carcass clearance) as of late May 2010, equivalent to between 66 and 102 percent of total estimated immediate relief funding needs. In per capita terms, it ranged between around MNT 29,400 (US$21.60) and MNT 45,000 (US$33.00) for each affected person.[20]

There were certain inadequacies in the assessment process (see Section 5.3), as well as information gaps relating both to the assistance needed and provided and data errors. Nevertheless, the above data would suggest that the relief response was possibly inadequate. Moreover, the GoM's contribution was extremely low, indicating a need to assess current government financing arrangements for dzud events and ways of strengthening its access to additional resources.

Meanwhile, international recovery assistance fell far short of estimated needs as identified in the Consolidated Appeal. Only $3.4 million, or 19 percent, of the requested funding under the Consolidated Appeal was actually secured, as already noted. Ironically, this was partly because the scale of resources required was extremely limited by international standards, reflecting both Mongolia's small population and the fact that dzud do not damage physical infrastructure. It also reflected poor documentation and articulation of the human consequences of the dzud, in particular by the GoM. Factors underlying the appeal's broad failure should be carefully examined in further detail and potential mechanisms explored to ensure that future appeals are more successful.

It is unclear how much funding the GoM itself put into dzud recovery but, as with its relief assistance, it would appear that the GoM ultimately provided very little support. The GoM's provisional dzud recovery plan of mid-2010 focused on a MNT 17.4 billion restocking programme and some retraining, the costs of which were apparently expected to be absorbed by the various line ministries. According to the plan, the national government would meet 40 percent of restocking costs, seek funding for a further 40 percent from the international community and request local governments to cover the remaining 20 percent. In practice, it is highly unlikely that envisaged contributions from the GoM's development partners and local governments were realized. Local governments have very little discretionary resources at their disposal, as already noted. Meanwhile the development community's own plans for recovery, at least as laid out in the UN Consolidated Appeal of May 2010, focused on the survival of the remaining livestock and the development of some limited alternative livelihood opportunities, rather than restocking (see Section 3.4). As of late May 2010, at least one development partner had separately agreed to support restocking directly but would provide very limited funding for this purpose and would only support the local purchase of animals, within the recipient herders' own aimags. Several other development partners provided cash support to severely affected herder households which they recognized could potentially be used for restocking. However, there were widespread reservations about the merits of restocking on the part of Mongolia's development partners for various reasons, as already noted (see Section 4.1). Reflecting these assumptions about likely considerable funding shortfalls for the GoM's restocking plan, little

[20] Based on a UN figure of 10 May 2010 which indicated that 769,106 people had been affected by the dzud and were in need of urgent humanitarian assistance.

government-supported restocking actually occurred. Nor is there much evidence to suggest that the GoM undertook alternative actions in support of the recovery of affected herder households.

In assessing flows of aid relative to need, it is also useful to compare support received in response to the 1999-2002 and 2009-2010 dzud events. Total international assistance, including the US$3.4 million provided under the auspices of the Consolidated Appeal, totaled somewhere between an estimated US$14.4 million and US$23.4 million. The higher figure is more likely based on separate data reported in the NEMA/UNDP November 2010 report, which indicated total international aid flows in support of the dzud relief and recovery efforts of US$31.9 million, including a valuation of US$17.5 million for the 31,200 tonnes of Russian fodder. If the latter is revalued at a more realistic estimate of US$9.4 million, this implies total aid flows in the region of $24 million, very close to the upper bound of US$23.4 million indicated above. Even then, though, these aid flows are substantially lower in nominal terms than the US$30 million dzud-related assistance received from the international community and private sector in 2000 (GoM, 2002), the only year for which data is available for the earlier dzuds. Moreover, there were much lower levels of livestock mortality in 2000, reaching only 3.5 million heads of livestock. In the absence of a breakdown in use of the assistance from 2000, is difficult to know whether the seemingly more generous support in 2000 was largely due to the fact that this assistance also covered restocking, reaching over 6,000 households. Differences in support relative to need could also partly reflect the fact that the scope of the 2009-2010 appeal was constrained to some extent by limited UN operational capacity on the ground.

Loss of life Mongolia has suffered very limited loss of human live as a consequence of natural hazards. According to the global Emergency Events Database (EM-DAT), between 1990 and 2009 the country only experienced 260 deaths from all types of natural hazard (including storms, floods, wildfire, droughts and extreme temperature).[21] The 1999-2002 dzud events resulted in just 34 reported deaths.[22]

In contrast, the 2009-2010 dzud may have had a relatively larger human toll. NEMA/UNDP (2010) reported that 24 people lost their lives by freezing. In addition, from January 2010 there were reports of increased infant and child mortality rates, as well as a number of stress-related suicides and an increase in adult illnesses such as cardiac diseases, strokes, gastric diseases, urinary tract diseases and hypertension (UN, 2010). By March 2010, infant mortality rates had risen to 31.2 per 1,000 births in dzud-affected aimags, significantly higher than the national average of 22.7. Under-five mortality rates had risen to 39.7 per 1,000 births, as compared with a national average of 28.7, and to as high as 70.7 in the worst case (Uvs) (UN, 2010). These figures reflect the consequences of shortages of fuel for heating and transportation purposes (the latter restricting access to medical facilities), inadequate drug supplies and reduced access to clean drinking water.

Total deaths resulting as a consequence of the 2009-2010 dzud are still likely to have been low relative to major disaster events in many other developing countries. Nevertheless, more could have been done to avert loss of live in Mongolia in 2010, particularly in aimags such as Uvs.

Incidence of poverty The 2009-2010 dzud response efforts are likely to have been unsuccessful in preventing an increase in the incidence of poverty. Rates of poverty were already high amongst herder households, with many more living near the poverty line – the so-called 'near poor' (see Section 1.2). Available evidence suggests that poorer households typically fared worst as a consequence of the

[21] EM-DAT is an OFDA/CRED International Disaster Database managed by the Université Catholique de Louvain, Brussels. The reported data was downloaded on 10 May 2009 from www.emdat.be
[22] http://www.unisdr.org/eng/sasakawa/2005/sk-2005-interviews-eng.htm

dzud (see, for example, Box 5 - Uvurkhangai) but that the losses incurred by many other herder households would have brought them below the poverty line as well. As such, the dzud almost certainly increased countryside levels of poverty well above 50 percent of the rural population.

Box 5: Dealing with the consequences of dzud in Uvurkhangai

Uvurkhangai was one of the aimags most severely affected by the 2009-2010 dzud. The aimag is heavily dependent on the livestock sector, which generates 70 percent of business and provides livelihoods for 46,000 of the aimag's total workforce of 66,000. Following drought conditions in some parts of the aimag during the summer of 2009, some 370,000 animals were moved to *otor* in other aimags and food and fodder reserves were prepared. However, relatively few livestock were slaughtered because of low meat prices. The subsequent winter proved very harsh, with extremely low temperatures of -30-40° C and 38 snowfalls between October 2009 and April 2010. Fodder reserves were exhausted but many animals died because of the extreme cold, rather than shortages of food. Most herders had livestock shelters but the shelters provided insufficient protection in the face of extreme snowfalls in December and January.

The aimag lost 1.5 million animals, equivalent to 42 percent of its total livestock population, over the course of the winter, with the last losses occurring in May. Losses exceeded 60 percent of the herd in two soums; and over 50 percent in four or five soums. Around 2,000 of the aimag's 19,700 herder households lost all their animals and 7,600 households lost over 50 percent. The aimag estimated that, in consequence, some 9,000 herders had, in effect, lost their jobs, based on the assumption that herder families need at least 80 animals to cover living costs. Those with smaller herds typically lost a higher proportion of animals: as a general rule of thumb, herders with under 100 livestock lost all their animals; those with 100-500 livestock had around 100 animals remaining; and those with herds in excess of 500 livestock kept around 30-50 percent of their herds. The goat population was the most severely affected, followed by sheep and then cattle.

Uvurkhangai submitted a request for dzud-related support to the SEC, itemizing its assistance needs. The state government met its hay and fodder requests in full, from its three state spot reserves within the aimag. However, only around 50 to 60 percent of the other requests were satisfied.[23] Instead, NEMA supported the aimag in securing support from the international community to meet the remainder of its needs. The aimag authority also approached several development partners with existing projects in Uvurkhangai directly for support. As of early June 2010, the aimag had received a total of MNT 1,045 million (US$760,000) assistance from the state government, development partners (including ADB, FAO, UNDP, the World Bank (under the Sustainable Livelihood Project), the Mongolian Red Cross and WVI) and the private sector. Some 80 percent of this assistance had been provided in kind and the remainder in cash. All of the aimag's identified assistance needs had reportedly been met in full and the Aimag Governor's Office considered that the assistance had generally been delivered in a timely fashion, although it was noted that procedures relating to the disbursement of some international assistance had proved cumbersome and slow.

Uvurkhangai submitted a MNT 359 million (US$260,000) recovery plan to MoFALI on 20 April. Under the plan, around 5,000 herders with less than 100 heads of surviving livestock would be restocked (to the extent possible from within the aimag) and the remaining 4,000 severely affected herders, including those who lost all their livestock, would be retrained in areas such as agriculture and SME light industry development. The aimag authority had concerns about restocking because of

[23] The aimag authority noted that in less severe years a greater proportion of requested assistance would probably have been satisfied.

existing issues of pasture degradation but also recognized that most herders have no other skills. As of mid-2010, the livestock population had fallen to 2 million, 0.3 million below the aimag's total estimated carrying capacity according to the aimag authority. To contain livestock prices, the aimag authority had established fixed prices for each species and gender of animal.

In the long term, the aimag authority's highest priority in strengthening the livestock sector's resilience to dzud is to encourage a change in herder lifestyle, in particular with regard to improved pasture management. In the shorter term, the aimag is aiming to improve pasture by supporting the development of a private fodder preparation industry, via the provision of discounted or interest-free loans; to improve fencing of pasturelands (with the support of the World Bank's Sustainable Livelihoods Project and others); and to increase pastureland water supply. Some 20-30 percent of pastureland cannot be used currently because of water deficits. The aimag is also developing a meat processing factory which it hopes to have on stream by June 2010, encouraging more offtake of livestock. It plans to sell this meat both to neighboring aimags and overseas. In addition, it has established a new *otor*.

Timeliness The response to the 2009-2010 dzud was insufficiently timely, reflecting difficulties in predicting its severity and subsequent capacity and funding constraints. As such, certain windows of opportunity to alleviate its impact were missed. In March 2010, for instance, an opportunity to slaughter some livestock and increase meat supplies (assuming adequate storage facilities were available– see Section 6.5) was missed. By this point in time, many herders believed that their livestock would not survive and so would have accepted offers of purchase by the GoM or international community, in turn reducing the scale of the subsequent carcass clearance program and providing an injection of cash to herder households.

The timeliness and appropriateness (see below) of assistance also needs to be considered in the context of the distribution of herder income inflows over the course of a year. Herders generate most of their cash income at two points in the year: in the spring, when cashmere is collected and sold, and in October and November, when animals are slaughtered. The cashmere income is used, in particular, to pay off loans whilst the proceeds from the sale of meat are used to meet student tuition and accommodation costs. Over the winter months, households live off stores of dried meat and dairy products. As such, the impacts of the 2009-2010 dzud will have been felt well beyond the winter months, depriving affected herders of significant inflows of income in both the spring and latter part of the year. Reflecting this, several of the projects in the Consolidated Appeal sought to provide continued nutritional and health support to affected households until mid-2011.

Appropriateness It is difficult to assess the appropriateness of the assistance provided in the absence of complete data on either relief needs or the nature of aid inflows. However, it is widely felt that there was a strong bias towards support for the livestock sector, particularly during the earlier stages of the crisis, to the detriment of human needs.

Questions should also be raised about the amount of support provided in kind from overseas. Relief items (e.g., food, clothing, fodder, fuel) were available for purchase locally and development partners that so chose were able to purchase supplies within the country – and in some cases even within the relevant aimag – thereby supporting the local economy. Greater use of direct cash transfers may also have been more appropriate, allowing herders to determine their own priorities. SDC, for instance, provided assistance in this form to accommodate rapidly changing, time-dependent and location-specific needs. This cash was spent on a very diverse range of items.

Targeting Available evidence on the distribution of both government and development partner assistance over the course of the 2009-10 dzud suggests scope for improvement, both at the 'macro' level in determining the relative balance of resources between aimags and at the 'micro' level in determining individual recipient households. A number of development partners, logically enough, chose to focus their support on aimags in which they were already working and thus where they had existing operational capacity. However, overall coordination was probably insufficient to ensure a reasonable distribution of resources across affected aimags according to need. Meanwhile, on the part of government, there is evidence that some assistance was simply evenly distributed across all affected aimags. For instance, a MNT 230 billion allocation in February 2010 (see Section 3.3) was evenly divided across 12 aimags, each receiving a standard MNT 100 for fodder, MNT 50 million for bio-feed, MNT 45 million for food and durable commodities and MNT 35 million for other items (subsequently amended to be used in part for clearance of carcasses and related disinfection).

Down-the-line decisions on the allocation of both GoM and some development partner assistance to individual households were apparently often left in the hands of individual soum administrations. In the interests of 'equity', a number of soums chose to spread this assistance very thinly over a large number of herder households, rather than focusing on the most severely affected ones.[24] This principle of equity reflects a commonly-held attitude that more skilled herders who lost fewer livestock should not be penalized because of their better capabilities. For instance, by late May 2010 Bayangol Soum in Uvurkhangai had received some MNT 110 million in dzud-related assistance from at least five development partners as well as the state and aimag governments. In distributing this assistance, the soum authorities took 'deliberate care' to ensure that no household received support from more than one source and, in consequence, virtually every household in the soum received some assistance, equivalent to an average US$50 per household. One bag in another aimag reported that even carefully targeted relief efforts can be amended at the local level to increase the number of recipient households in the interests of 'fairness'.

Consequences of poor targeting combined with inadequate funding were clearly apparent in a rapid assessment undertaken by the Early Recovery Cluster (led by UNDP) in March 2010. This assessment found that 17 percent of small subsistence-level herders (defined as having less than 250 animals prior to the dzud) in the worst-affected soums that were surveyed were experiencing a shortage of food for daily consumption (hunger) due to a lack of cash to buy food; 83 percent reported a lack of cash to engage in any new business for income generation; and 61 percent reported having a bank loan requiring repayment in the near future (UNDP, 2010). These households had become nearly totally dependent on government support (pensions and state allowances) but only 30 percent of the survey respondents had received any assistance from the government since the onset of the dzud. A total of 32,500 people in the 14 worst-affected aimags were estimated to be living in small subsistence-level herder households and facing similar such difficulties (ibid).

[24] FAO assistance was notably somewhat better targeted on fewer households, in accordance with the global Livestock Emergency Guidelines and Standards (LEGS) which FAO upholds. The 2,600 herder household recipients of the first US$470,000 tranche of FAO assistance (in the form of animal feed, milk powder, medicine etc., to an average value of $181 per household) were also required to have some minimal husbandry capabilities.

5. Issues arising and scope for improvement

5.1 Government dzud-related responsibilities

The GoM should develop a clear statement of its dzud-related responsibilities, covering risk reduction, early response, relief and recovery. These responsibilities should be linked to transparent trigger mechanisms and clear thresholds of support to herder households, designed in such a way as to encourage enhanced disaster risk reduction and preparedness measures on the part of individuals. This statement would provide a firm basis for developing related financial risk management mechanisms.

The GoM needs to take a particularly clear stance on restocking and, ideally, to reach a common agreement with development partners on this issue. This stance needs to accommodate a range of potentially conflicting issues, including the need to ensure the long–term sustainability of the livestock sector, highly limited alternative livelihood opportunities for herder households and the livestock sector's role as a subsistence safety net for the country's poor.

The GoM should draw on experience in countries such as India (see Box 6) and Vietnam which have moved beyond politics alone and developed pre-defined statutory levels of personal compensation in the event of a disaster, relating to loss of human life or injury and loss of homes and productive assets. Related compensation is typically set at very low levels, providing a safety net to the poor but ensuring that related costs are not unduly prohibitive. The establishment of similar norms for Mongolia would help clarify the role of government, provide clearer information on the scale of resources required to respond to a particular situation and strengthen accountability. Obviously any such norms would need to be tailored to the Mongolian situation and to reflect needs arising from all potential types of natural hazard. In particular, they would need to be devised in such a way as to encourage risk reduction and sustainable livestock management practices on the part of individuals. For instance, they could include norms for public offtake of livestock during the early stages of a potential dzud.[25][26] Sources of funding would also need to be carefully established if the norms were established as legal entitlements.

Box 6: The Indian Calamity Relief Fund

The Indian Government operates a Calamity Relief Fund (CRF) to cover immediate relief and emergency recovery expenditure arising as a consequence of natural hazards. Individual state allocations are set for periods of five years, of which 75 percent is provided by the Federal Government in the form of a non-plan grant and 25 percent by the respective State Governments. Central government resources are remitted to the State Governments biannually, in June and December each year. Unspent balances at the end of each financial year are rolled over. Costs associated with the longer-term rehabilitation of damaged infrastructure and capital assets are met from plan funds under normal budgetary heads, allowing time for re-design to new standards to increase resilience to future hazard events.

The Federal Government maintains an approved list of items and norms for assistance from the CRF. All related expenditure must comply with this list. The norms cover the following:-

[25] A simulation model could be run to determine levels of offtake at different support prices and also to determine whether a price subsidy to encourage offtake would be more cost-effective than the subsequent provision of relief and recovery assistance to dzud-affected herders.
[26] Under the Soviet era, there was substantial offtake each autumn to feed the urban population.

- Compensation for loss of life and injury.
- Humanitarian relief assistance.
- Evacuation operations.
- Provision of temporary accommodation, food, clothing, medical care and so on for affected populations.
- Hiring of boats for the transport of immediate relief supplies and rescue purposes.
- Air dropping of essential supplies.
- Repair or restoration of damaged houses.
- Provision of emergency drinking water supplies.
- Provision of medicines, disinfectants and insecticides to prevent the outbreak of post-disaster epidemics in human populations, cattle and poultry.
- Assistance to eligible farmers and agricultural laborers, in the form of the rehabilitation of land, provision of subsidized inputs, the replacement of livestock and poultry and provision of feed, water, medicines and vaccines.
- Assistance to eligible fishermen.
- Assistance to eligible handicraft and handloom sector artisans.
- Employment generation.
- Repair and limited restoration over a pre-specified period of time (30- 60 days, depending on the magnitude of the disaster and area affected) of damaged infrastructure, covering roads and bridges, drinking water supply, irrigation, power (immediate restoration of power only), primary education, primary health centers and community assets.
- Replacement of damaged medical equipment and lost medical supplies in government hospitals and health centers.
- Operational cost of ambulance services, mobile medical teams and temporary dispensaries.
- Debris clearance
- Draining of flood water.
- Search and rescue operations.
- Disposal of dead bodies and carcasses.
- Training of specialist multi-disciplinary groups or teams of state personnel in disaster management.
- Procurement of essential search, rescue and evacuation equipment.

Sources: GoI (2005) and GoI (2007)

5.2 Allocation of responsibilities between government agencies

The preparation of a clear statement on the GoM's dzud-related responsibilities should be accompanied by a document laying out the precise role and obligations of various government agencies, both at national and local levels.

The current breakdown of responsibilities is inadequately defined. For instance, the respective roles and responsibilities of the SEC and line ministries with regard to dzud recovery are blurred. According to the *Law on Disaster Protection* of 2003 (GoM, 2003) the SEC's role extends to prevention and recovery as well as response. Resources in the form of the Government Reserve and State Reserve can be used for all three purposes. As of late May 2010, a SEC working group was therefore drawing up plans for post-dzud support and was expected to submit its proposal in June. Yet MoFALI had already sought MNT 3.5 billion through the mid-year budget adjustments for restocking. As such, there would be benefit in providing greater clarity on the role of different government

agencies during the recovery phase. There could, for example, be a particular case for increasing MoFALI responsibility for disaster recovery and response to help encourage its greater engagement in ex ante disaster risk reduction.

5.3 NEMA/SEC performance

The 1999-2002 dzud provided the direct impetus both for the passage of the *Law on Disaster Protection* in July 2003 and the creation of NEMA in 2004. As such, the 2009-2010 dzud was the first major disaster event under the new disaster risk management architecture; and has highlighted a number of areas requiring strengthening. These include NEMA/SEC capacity to undertake its mandated coordination (see Section 5.5) and leadership roles in the event of a disaster and related human resource, analytical and reporting capabilities in support of this mandate. Some of the issues stem back to the fact that much of NEMA's day-to-day work is left in the hands of relatively junior personnel who are required to liaise with far more senior counterparts in other government agencies. NEMA also has a high rate of turnover of staff and finds it difficult to retain highly qualified professionals.

The 2009-2010 dzud underlined NEMA's considerable equipment constraints as well. NEMA was unable to communicate with, locate or reach many of the herders located in more isolated areas covered in deep snow because it did not have the appropriate equipment, leaving the herders unable to access basic food supplies, health services or search and rescue services (UNDP, 2010). In fact, an assessment undertaken by UNDP in July 2009, prior to the dzud, had already noted NEMA's inadequate equipment and material resources, finding some 80 percent of NEMA' s technology obsolete and reiterating findings of an earlier UN-OCHA Assessment in July 2004 (ibid). However, little had been done to address the problem.[27]

Looking forward, UNDP already has an on-going project to support NEMA in strengthening its capacity and capabilities (Box 1). The findings of the NEMA/UNDP 2010 lessons-learned review following the 2009-2010 dzud should be used to help guide the direction of UNDP's work in supporting NEMA.

As regards coordination, between mid-2010 and mid-2011 the UN aims to introduce its standard full 12 clusters in Mongolia, focusing on disaster preparedness as well as response. Relevant government agencies will be involved in each cluster and a government agency appointed as co-chair in each of them. If implemented successfully, this cluster system should play a significant part in improving coordination during the next dzud. However, NEMA, SEC and the GoM more broadly also need to review internal systems with a view to strengthening current coordination arrangements and providing stronger leadership, both with regard to government and development partner dzud risk reduction and response efforts.

5.4 Government-led dzud impact and needs assessments

The SEC was relatively quick off the mark in assessing the emerging 2009-2010 dzud situation and its impacts (see Section 3.1). However, the assessments were primarily concerned with the livestock sector and paid relatively limited attention to human impacts. This focus is entirely logical from a

[27] According to a long-term procurement plan for 2010-2020 under preparation under a UNDP/NEMA project in 2010, NEMA requires equipment valued at a minimum of MNT 200.0 billion. In contrast, the state budget only allocated NEMA MNT 0.4 billion in 2009 and MNT 0.9 billion in 2010 for the purchase of basic equipment (ibid).

GoM perspective because Mongolians understand the implicit implications of dzud for herder households. However, these implications need to be spelled out for the international community if the GoM wishes to encourage flows of external assistance (see Section 4.2).

Livestock loss estimates are based on figures reported by individual herders to their bag governors as and when mortalities occur. These figures are successively consolidated and reported up to the soum, aimag and, finally, national levels. MoFALI is responsible for the collection of data on livestock losses, using its network of soum and aimag agricultural officers. Reports are submitted to NEMA as well. Figures on livestock mortalities can be checked against the subsequent semi-annual census of livestock in June and December each year. Loss data distinguish between types of animal.

Bags also prepare more general reports on the impact of any 'situation' that they are not able to address themselves, focusing largely on related requests for food, fuel, clothing, medical supplies and so forth. The information is submitted to the soum, aimag and, finally, state authorities (and consolidated along the way) unless lower levels of government are unable to meet requests from their own resources. At the state level, the information is reviewed by relevant line agencies. However, there are no standard formats or guidelines for the preparation of these requests. No field checks are made either but the General Professional Inspection Agency would be called in to examine any potentially suspect request.

There are no procedures in place for detailed sectoral impact assessments, other than livestock (as already noted). In consequence, MoECS and MoSWL, for instance, undertook no assessments of their own in response to the 2009-10 dzud, although they both participated in the SEC assessments and MoECS in a UNICEF assessment. MoH undertook a one-off assessment of the health, nutritional, water and sanitation impacts of the dzud in late February, but only after prompting from UNICEF which presented MoH with data on rising child mortality rates in dzud-affected areas.[28]

Mongolia would benefit from the introduction of more systematic disaster impact and needs assessment procedures, including standard reporting formats and guidelines and related training, based on a bottom-up reporting system designed to facilitate the continuous monitoring of evolving situations. These revisions would help generate more accurate and comprehensive information and support the timelier implementation of appropriate interventions. UNICEF indicated during an interview for this study that it intended to support this process over the coming months. Save the Children Japan also intended to develop a monitoring system specifically for the education sector, drawing on MoECS's existing network of people at the grassroots level to monitor emergency needs and report on them to aimag authorities and national government.

5.5 Criteria for declaring a dzud event

A dzud situation must be declared in order to access related support from the Government Reserve Fund and State Reserves. The emergency commission at either the state or local level is responsible for making this declaration, depending on the scale of area affected and according to criteria laid out in the 2008 Government Decree on *Procedure on Assessment of Condition of Drought, Dzud, and Other Weather-Caused Disasters*. This procedure identifies four major assessment criteria on which the declaration of a dzud is based, namely: snow layer thickness on pasture as of the end of either a

[28] This assessment focused on the 12 aimags at that point identified by NEMA as dzud affected, using a rapid assessment tool provided for this purpose by UNICEF. It resulted in the development of a plan of action for the health sector, covering a range of activities including the distribution of emergency equipment, drugs and other medical supplies, the provision of training on emergency management and the management of malnutrition and psychosocial support to affected households.

ten-day period or a month, its density, the number of days over the duration of which livestock have been unable to go out to pasture due to extreme cold weather and wind speed. However, threshold values for each of these criteria are not indicated. Two further supplementary assessment criteria are also specified, namely that: the temperature must drop to -50^0 C in Uvs Lake, Darhad Valley, Ider, Tes and Zavhan river basins, to -35^0 C in the Gobi region and to -40^0 C in other regions; and that a number of livestock must be unable to go out to pasture for three over a period of ten days or for more than ten days over the period of a month. Fulfillment of all major criteria and one supplementary criterion are required for the declaration of a dzud disaster and fulfillment of one major and one supplementary criterion for declaration of a mild dzud (GoM, 2008). In practice, at least in 2010, conclusions of SEC working group reports and submissions from aimag governors were also taken into account, in particular as pertaining to the number of livestock mortalities, the availability of summer vegetation, levels of stored fodder, the number of blocked roads, the relative ease of access in delivering social services (including health care), the condition of heating systems, consumer prices at point of delivery and fuel availability. Interviews with soums for the purposes of this study suggest that the level of livestock losses was a particularly important indicator.

The SEC undertook three assessments of the impact of the 2009-2010 dzud between January and March 2010, resulting in three declarations on disaster and dzud affected areas. Soums in seven aimags were originally declared either disaster or dzud affected in January 2010. On 2 February , 65 soums in 12 aimags were declared as disaster soums (i.e., severely affected) and 61 soums in 11 aimags as dzud soums (affected). A further 70 soums and two villages in ten aimags were considered potentially at risk from severe winter weather. On 29 March 2010, a final declaration was released, identifying 80 disaster soums and 85 dzud soums in 15 aimags, with a further 95 possibly affected soums.

These classifications and underlying assessment criteria are important because they determine levels of assistance available from the state government, as already noted. In 2010, disaster soums received hay and fodder, food, medical supplies and animal bio-supplements. Dzud soums only received hay and fodder, in some cases made available at discounted prices rather than for free distribution.

In view of their significance, it is essential in the future that the classification of individual soums is regularly reviewed over the full course of an evolving dzud situation to ensure that more severely affected soums are correctly recognized as such. In the case of the 2009-2010 dzud, the assessments should have continued until late May, when the last livestock losses occurred. Instead, because they finished in March, some severely affected soums received little support. One soum interviewed for the purposes of this study, for instance, indicated that it experienced a disproportionate share of its livestock losses after the final SEC assessment in March 2010 and, as such, although ultimately losing 51 percent of livestock, only received support in the form of subsidized fodder from the government (see Box 7).

The criteria on which the declaration of a dzud is based should also be adjusted to capture the extent of socio-economic consequences, as well as the severity, of extreme weather events. The former were informally taken into account during 2010 assessments, as noted above, but should be further developed into formal criteria and linked into an agreed assessment methodology (see Section 5.3).

As of mid-2010, the IFRC was already trying to promote a disaster response law, both in Mongolia and globally, which would introduce formal procedures for declaring disasters and related triggers. MoFAT had been receptive to this proposed legislation but it needed to gain traction with other ministries, including NEMA. The IFRC's initiative in this area should be taken into account in revising criteria for declaration of a disaster event in Mongolia.

Box 7: Classification of affected soums – experience in Hujirt Soum, Uvurkhangai

Hujirt has a relatively large population of 6,000 people. Prior to the dzud, the soum's livestock population had exceeded its carrying capacity by some three to four fold. The soum experienced drought conditions during the summer of 2009 and, in consequence, only prepared around half of its normal fodder reserves for the winter. During the subsequent winter it experienced 26 snowfalls and extreme cold, with temperatures falling to around -30 to -35° C for two months. The first livestock losses occurred on December 10th, much earlier than in previous years, with further losses continuing through to mid-May. As conditions worsened, livestock were moved to *otor* reserves in other soums and aimags and fodder was requested from the aimag reserve. Despite these measures, the soum lost 51 percent of its 221,660 livestock. Some 135 households lost all their livestock and 82 percent lost at least half of their herd. Around 70 percent of cows and yaks and 62 percent of goats perished.

These losses were on a par with those in a number of other soums that were classified as disaster-affected. However, the distribution of losses in Hujirt was bunched towards the end of the winter, with a significant proportion occurring after the final GoM declaration on disaster-affected and dzud-affected soums. In consequence, Hujirt was only classified as a dzud-affected soum and, thus, was only eligible for subsidized fodder purchases from government sources.

As of late May 2010, Hujirt had received total assistance of only MNT 56 million (US$41,000), including support from the GoM, at least eight development partners and local sources. This assistance was largely in the form of fodder, food, medical supplies and clothing. The limited cash donations were largely used to transport the assistance in kind. Only 20 households were expected to be eligible for restocking according to GoM restocking plans as of late May 2010, although it was anticipated that the 135 households who had lost all their livestock would receive support under an ADB grant (see Section 5.5).

5.6 Targeting of support

There is a strong case for setting standards on targeting of aid resources in Mongolia and for ensuring that those most in need receive adequate support. This would require a de-politicization of the allocation system, however, and an acceptance that destitute households require particular support on humanitarian grounds, whether or not they managed the dzud risk well. Greater use of social protection channels offers one possible way forward in this direction, an issue taken up and discussed in the context of good practice examples from other countries below (see Section 6.2).

5.7 Tracking aid flows

According to GoM procedures, during an emergency event the SEC/NEMA takes over MoF's role in the day-to-day coordination and disbursement of related official development assistance (ODA) flows in both cash and kind. There are a few exceptions, as in the case of a US$2.5 million ADB grant provided in response to the 2009-2010 dzud which was disbursed through MoF in line with all ADB assistance to Mongolia.[29] Nevertheless, most emergency-related ODA is simply reported to MoF and

[29] This grant was provided from ADB's Asia Pacific Disaster Response Fund. This fund was established in March 2009 and provides up to US$3 million quick-disbursing grant resources in the event of a disaster to meet immediate expenses to restore life-saving services to affected populations and to augment aid provided by other

flows through the SEC/NEMA. This arrangement is intended to strengthen the coordination of government and development partner disaster response efforts and the rapid processing and disbursement of aid. It also takes into account the fact that MoF has insufficient capacity to handle sudden periodic inflows of aid from a potentially large number of sources.

In keeping with this arrangement, NEMA's Financial Department maintains related records on ODA flows and prepares ex post reports on the use of this aid; and SEC, rather than MoF, is tasked with maintaining a database on emergency-related flows. This database is intended to capture NGO and private sector support as well as ODA.

In practice, however, several difficulties were encountered with this reporting system over the course of the 2009-2010 dzud:-

- Some development partners chose to channel their emergency assistance directly through line agencies or local government rather than via the SEC/NEMA. Some of these flows may not have been reflected in the SEC database both because development partners are not obliged to report their assistance to the SEC and because the SEC itself appeared reluctant to record any flows that were not channeled through the SEC/NEMA structure. UNICEF, for instance, noted initial problems in securing NEMA acknowledgement of its support to the education and health sectors because its assistance was channeled through the MoH and MoECS. In fact, initially UNDP's assistance (for carcass clearance) was the only UN support reported in the SEC database because it was the only UN funding that was channeled through NEMA.
- There were some issues relating to information sharing. For instance, a UN request for data from SEC on the geographical distribution of considerable in-kind support from China was not met.

Several other initiatives to track aid flows were also undertaken. UNICEF maintained a running matrix on development partner dzud-related support, based on information gleaned at donor coordination meetings. However, this data (at least as indicated in UN (2010)) excluded, for instance, the US$2.5 million grant from ADB, as already noted. The UN Financial Tracking System also recorded data on dzud-related flows but, as normal, was compiled remotely by a global team and so was less complete than the UNICEF information. Finally, NGOs maintained a joint table on their activities but this data was apparently based on information shared at general quarterly meetings, rather than on a more frequent basis.

The bottom line is that there was no single comprehensive running record of international aid flows in support of the dzud response anywhere, either within government or the development community. This presented a considerable challenge in effectively coordinating the response efforts and identifying any critical gaps in funding.

Dzud-related flows of multilateral and bilateral assistance should ultimately appear in the MoF's records on year-end aid flows. However, this data is simply recorded by sector. As such, it is not possible to acquire information on total annual dzud or other disaster-related ODA even some time after an event for ex-post evaluation purposes.

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donors in times of national crisis (e.g., purchase of water purification and sanitation systems, transitional shelter, personal hygiene kits, emergency communication equipment, and aviation fuel as well as debris sifting, site clearance, and safe disposal of useless rubble) (ADB, 2009).

5.8 Enhancing long-term resilience to climate risk

The high level of livestock mortalities experienced during the 2009-10 dzud occurred as a direct consequence of the GoM's inadequate livestock policy framework, including insufficient government incentives to promote better rangeland management or reduce risk. In consequence, herders emphasized quantity over quality, leading to a rapid increase in herd size over several decades.

The livestock population had been relatively constant from the 1960s to late 1980s. However, the subsequent privatization of the livestock herd and recession-induced human urban to rural migration resulted in a sharp rise in the number both of animals and of households engaged in pastoralism during the 1990s. Herder households almost doubled between the late 1980s and 1990s to just under 190,000 households by 1999 (Badarch et al, 2007). By the late 1990s, herders accounted for over a third of the total population and half of the active labor force (Mearns, 2004). Meanwhile, livestock numbers increased by 75 percent between 1993 and 1999 (ibid), reaching a new record high of 33.5 million by the end of the 1990s. The animal population subsequently declined by almost 9 million as a consequence of the 1999-2002 dzud but had risen again to even greater heights of around 37 million heads of livestock by 2008 (Sheehy et al, 2010). Estimates of resulting overstocking varied across the country but were typically in the region of two- to three-fold.[30] The rapid expansion in herder households also meant that around half the herders lacked any husbandry experience, having previously worked as salaried employees in state-owned enterprises. Many of these new herders failed to build viable herds, instead joining the ranks of small herders who were classified by the government as one of several vulnerable groups (Mearns, 2004). Although more experienced herders were able to read the signs of an impending dzud in 2009 and moved their livestock to *otor* and other aimags, in some cases suffering no losses at all, these other less skilled ones lost large numbers of animals as a consequence of the dzud.

There is strong consensus within both the GoM and its development partners on the steps required to strengthen the livestock sector's resilience to climatic shocks, both now and in the future, and, simultaneously, to increase productivity. Moreover, it is widely agreed that these steps should be urgently acted upon. The steps are laid out, for instance, in the GoM's *Initial National Communication of 2001* to the United Nations Framework Convention on Climate Change (UNFCCC). This document highlighted a number of 'high priority' adaptation measures for the livestock sector: enhancement of public awareness and education of herdsman; development of rangeland and livestock management systems based on pastoral practice and modern technology; improvement of forage production systems; use of modern pasture water supply systems; establishment of an appropriate risk management system (including reserves in cash and kind to reduce the impact of harsh winters); strengthening of the early warning system; development of a disaster insurance system; improvement of the marketing system, in coordination with long-term weather forecasts and market signals; changes in the tax system to regulate the number of livestock;

[30] Blench (2005) cites various research (e.g., Behnke & Scoones 1993; Fernandez-Gimenez, & Allen-Diaz 1999) which indicates that the concept of a fixed carrying capacity is based on out-dated science and that Mongolian rangelands are unlikely to have a 'natural' state which can be restored simply by reducing grazing pressure. Instead, the rangelands are dynamic equilibrium systems, shifting to new states of equilibrium in accordance with changes in the floral and faunal ecology. These changes , in turn, are caused by factors such as climatic events (impacting on herd size and composition), grazing pressures (resulting in a gradual change in grass species from nutritious to less digestible species), plagues of grasshoppers and rodents and unpredictable water resources. Once the changes become established, the ecological balance of the rangelands develops according to a new dynamic. Blench states that if this body of work is correct, 'a fixed cartography of carrying capacity cannot easily be used for planning and herding contracts based on such assumptions are doomed to fail' (ibid: 18). In other words carrying capacity is still relevant but the level of carrying capacity may change over time.

livelihood diversification; improvement of the health care system both for people and animals; and implementation of measures to combat desertification (GoM, 2001).

A number of development partner are already engaged in various projects and programs that have contributed to enhanced dzud resilience. The World Bank, for example, is providing analytical and operational support in this area through its Livestock Sector Study and the Sustainable Livelihoods Project. Meanwhile SDC's whole program in Mongolia is essentially centered on dzud risk reduction, having evolved from its initial engagement in the country in response to the 1999-2002 dzud. Meanwhile, immediately prior to the 2009-2010 dzud there were 22 ongoing pasture management projects in the country.

However, despite these efforts and broad government and donor consensus on resilience strengthening measures, widespread country-wide progress in this area been extremely limited. The GoM's *Initial National Communication of 2001*, for instance, is now almost a decade old but the basic steps outlined in the report to strengthen resilience have largely yet to be acted upon, particularly on a nationwide basis.

The GoM's new National Livestock Program is again seeking to move the agenda forward. This program has five priority areas of action, one of which seeks to develop a livestock sector that is adaptable to climatic and ecological changes and has greater risk management capacity. Although couched in terms of climate change, the associated activities outlined in the program should strengthen disaster resilience in the immediate term too. These activities seek to improve pasture management, increase hay and fodder production, improve livestock water supply and create livestock risk management capacity. They include measures to establish a unified pasture management system; to establish a database with defined maximum number of livestock in respective areas; to declare at least 10 percent of the total pasture area as state, aimag or soum level pasture land reserves; to create a legal framework on pasture use fees; to combat pasture rodents using advanced technology; to build small scale facilities to produce fodder using locally available resources; to produce high quality fodder to store both in national and aimag-level facilities; to create hay and fodder storage facilities in every soum; to conduct hydrological assessments and establish new wells using state funds; to support and introduce economic incentives for activities such as the construction of reservoirs to catching overland runoff and the digging of shallow wells; to improve animal husbandry practices; and to further develop the livestock insurance structure (MoFALI, 2009).

In the aftermath of the 2009-2010 dzud there is a window of opportunity to make some real progress with this and other initiatives to strengthen risk management in the livestock sector, whilst minds are still focused on the need to restrict numbers of livestock and enhance productivity. This opportunity must be acted upon, before it dissipates.

There have also been various discussions around livestock taxation, both as a disincentive to holding larger herds of livestock and to build up reserves of funding for compensation to herders in the event of dzud (Box 8). As GG PEMP and MSRM (2009) argues, however, it is imperative that these ideas are considered in the context of the extremely high levels of poverty prevalent in rural areas. Even prior to the global financial crisis and then the 2009-2010 dzud, just under 50 percent of the countryside population was below the poverty line and the extent of rural poverty is likely to be considerably higher now, implying that any form of livestock taxation should be progressive. At the same time, potential political tensions in using the proceeds from livestock taxation to build up dzud response reserves also need to be considered, relating to the fact that wealthier herders could make relatively larger contributions into the fund more whilst poorer herders, who generally fare worse during dzud, could benefit more. This contravenes widespread sentiment in Mongolia both that better herders should not be effectively penalized for their greater skills and that targeted support to the poor

can create dependency (see Section 6.3). These factors need to be taken into account in designing any new dzud response mechanisms for individual households.

Box 8: Livestock taxation

Local livestock taxation was abolished in Mongolia some years ago, eliminating any fiscal earnings from the livestock sector. Related revenue had previously accounted for between a quarter and a third of soum budgets. Central government has compensated soums for this loss under a new intergovernmental fiscal arrangement, implying little impact on local government resources (GG PEMP and MSRM, 2009). However, the abolition of the tax has also removed a possible disincentive to larger herd size and debate around livestock taxation options has therefore continued. Discussions have focused on issues and options such as 'livestock taxation versus pasture use taxation; equity aspects between rural and urban areas and poorer and richer herders; taxation as a fiscal steering mechanism to foster sustainable management of pasture land; reinvestment of tax money into rural development and pasture improvement; higher tax rate(s) for absentee herders; higher tax rate(s) for castrated male animals; higher tax rate(s) for … animals exceeding carrying capacity of pasture land; abolition of taxation on herders…; (and the scope for) … fiscal incentives rather than taxation to reverse desertification trend' (GG PEMP and MSRM, 2009: 24).

Along these lines, the National Livestock Program includes the creation of 'a legal framework on pasture use fees collected from herders and people with livestock, based on regional characteristics and type of herd' and proposes that some portion of this revenue should be used to improve pasture conditions (MoFALI, 2009: 13). However it is not clear how this instrument would be applied in the absence of a land tenure system. Moreover, there has been no analysis of its potential impact on herder behavior.

Meanwhile, GG PEMP and MSRM (2009) advocate caution in the introduction of livestock taxation in view of the extremely high levels of poverty in rural areas. They suggest a system of progressive taxation, based on herd numbers (as occurred under the previous livestock tax), herd size in excess of carrying capacity or pasture use in excess of a certain area, if analysis indicates both that such a system would be enforceable and would encourage herders to reduce livestock numbers.

5.9 Consideration of disaster risk in the preparation of the annual budget

Line ministries prepare their initial annual proposals for the forthcoming calendar year in March, are notified of their budgetary envelopes in early July and submit their proposed budgets in mid-August. Following MoF review and revision, the full proposed budget is submitted to the Cabinet by mid-September and then to Parliament by 1 October, with final Parliamentary approval given by 1 December. The winter seasonal weather forecasts produced by the National Agency for Meteorology, Hydrology and Environment Monitoring (NAMHEM) (Box 9) are currently not available until October each year, at rather a late stage in the preparation of the annual budget. However, there could be some scope for last minute adjustments.

To date the MoF has not considered weather forecasts or disaster risk in its own budget deliberations. However, a MoF official interviewed for the purposes of this study indicated that it planned to review the frequency of various types of hazard in Mongolia and to try to link this information into the 2011 budget planning process. There may also be scope for fine-tuning annual budgetary allocations for

disaster preparedness and response in accordance with seasonal forecasts for the forthcoming winter. Indeed, according to MoFALI, seasonal weather forecasts are taken into account in preparing MoFALI's annual budgetary submission.

Box 9: Weather forecasting in Mongolia

NAMHEM produces daily, monthly and seasonal weather forecasts for Mongolia, using a global model. Seasonal forecasts are issued in April, providing a month-by-month forecast for the period May to September, and again in October, covering each of the months from October to April. The country is split into four regions for forecasting purposes: western, central, southern and eastern. The forecasts involve probabilistic information on expected temperature and precipitation (including snow fall). According to NAMHEM, its short-term forecasts have an accuracy rate of around 80-85 percent and its long-term forecasts of 50-60 percent. Meteorological stations at the soum and aimag levels also provide local weather information and inform local authorities about expected weather events of concern.

Daily forecasts are disseminated by radio, television and newspaper. Seasonal forecasts are disseminated by radio and television and forwarded to state government agencies and aimag governors. Herders apparently rely on radio bulletins, in particular, for long-term forecasts. However, there are logistical difficulties in disseminating timely information to herders in more remote locations.

The seasonal forecasts include forage maps produced by Mercy Corps (see Box 11) but do not contain any advisory information. Instead, MoFALI prepares advice to herders separately whilst NEMA also prepares recommendations on levels of hay and fodder reserves. However, there is relatively little coordination between MoFALI and NAMHEM. The two organizations only meet twice a year, when the seasonal forecasts are released.

NAMHEM believes its forecasting capacity could be significantly improved by investing in a regional forecasting model and strengthening related technical and computer capacity. Indeed, there may be considerable scope both for enhancing forecasting and warning capabilities and for utilizing the information generated to improve related advisories, to improve budgetary planning for potential dzud and to provide a trigger for the release of additional financing in support of early dzud-related interventions to minimize potential losses.

6. Future options: strengthening disaster risk management via innovative financing instruments

This section reviews development partner supported tools and arrangements to enhance *a priori* arrangements for disaster risk financing and promote risk reduction in disaster-prone developing countries and assesses their suitability for application in Mongolia. It covers a range of tools – many of them relatively new – that seek to ensure the more timely and assured provision of assistance (via the provision of contingency funding facilities and market-based risk transfer mechanisms); to improve targeting of support (via the use of social safety nets); to smooth public and private income and losses (again via the use of sovereign and household market-based risk transfer instruments and also microfinance); and to directly contribute to strengthened dzud resilience (via microfinance and

the establishment of public-private partnerships in the processing, storage and marketing of livestock products).

6.1 Development partner contingency funding arrangements

Over the past decade, there has been growing development partner interest in contingency funding arrangements for disasters in developing countries, in particular on the part of the World Bank. This interest reflects a number of factors, including that:-

- Traditional disaster response instruments approved in the aftermath of a disaster, such as the World Bank's Emergency Recovery Loans, have proved too slow in channeling resources to affected communities (World Bank, 2006b).
- Contingency arrangements are much better suited to supporting timely early interventions in response to slow-onset events, particularly where linked to well-functioning, reliable early warning systems.
- The establishment of contingency arrangements opens the door for policy dialogue on broader disaster risk management issues, in particular with Ministries of Finance.

Contingency funding as a component of a broader disaster risk management project The World Bank has included post-disaster contingency funding components, both for slow-onset and sudden-onset disasters, as part of a number of broader disaster risk management projects in recent years. Examples include projects in Colombia (under the Natural Disaster Vulnerability Reduction Project, approved in April 2005),[31] Vietnam (under the Natural Disaster Risk Management Project, approved in August 2005), Ethiopia (under the World Bank Pastoral Community Development Project II, approved in 2008 – see below) and Kenya (under the Arid Lands Resource Management Project, approved in 2003). In the case of Vietnam, for instance, the contingency funding took the form of a US$20 million component of a larger US$86 million loan. The contingency component was intended to address a regular annual funding gap for the post-disaster reconstruction of small-scale rural public infrastructure; and was set at a relatively modest level to ensure that it was fully drawn down by the end of loan effectiveness. In the event, the contingency element was fully disbursed ahead of the other three components of the loan and additional financing of US$75 million was approved in June 2010 for the contingency component alone.

The Ethiopian Pastoral Community Development Project II included a US$6.9 million component to address slow-onset disasters, supporting both a pastoral early warning system and early response grants. The latter were intended to fund activities during the 'early mitigation' (e.g., livestock destocking and water tankering) and the 'recovery warning' stages (for livelihood rehabilitation activities such as the provision of tools and seeds and livestock restocking) of a disaster (World Bank, 2008).

Development policy loan with a catastrophe deferred drawdown option In March 2008 the World Bank approved a development policy loan (DPL) with a catastrophe deferred drawdown option (CAT DDO). This new facility provides bridge financing in the event of a disaster, offering immediate liquidity of up to USD$500 million or 0.25 percent of GDP (whichever is less) to address emergency needs. The financing is on-budget and its release is triggered by the declaration of a state of emergency. Eligible borrowers must have an adequate macroeconomic framework in place at

[31] This contingent line of credit was subsequently replaced with a development policy loan with a catastrophe deferred drawdown option (DDO) (see below).

inception and renewal. They must also have a disaster risk management program. The Bank's requirements concerning the scope and contents of the latter are relatively stringent, for instance including that disaster risk reduction concerns are integrated into national development and sectoral policies and programs, that there are appropriate institutional and legislative frameworks, that there are transparent financial mechanisms for post-disaster response, that long-term disaster risk reduction measures are being implemented and that the country has developed a Strategic National Action Plan for the implementation of the Hyogo Framework of Action.[32] [33] The Bank monitors implementation of this program over the life of a CAT DDO.

The pricing of a DPL with a CAT DDO reflects the IBRD's broader loan pricing structure. As of April 2010, the front-end-fee, payable upon effectiveness, was 0.5 percent. There is a three-year draw down period, renewable up to four times (with a renewal fee of 0.25 percent), and no commitment fee.[34] Repayment terms may be determined either upon commitment or upon drawdown within prevailing maturity policy limits. The repayment schedule commences from the date of drawdown (World Bank, 2010c) and amounts repaid prior to the closing date are available for drawdown again, giving the facility a revolving aspect. The World Bank considers it 'one of the most flexible and cost efficient risk retention instruments currently available ... incur(ing) much smaller up-front costs than a risk transfer instrument would typically entail' (GFDRR, no date: 1).

DPLs with CAT DDO were negotiated for Costa Rica (US$65m, equivalent to 0.25 percent of 2007 GDP) and Colombia (US$150m) in 2008 and for Guatemala (US$85m, equivalent to 0.25 percent of GDP) in 2009. Further loans are under negotiation for Albania, Croatia El Salvador and Peru. The Costa Rican Government has drawn down approximately US$15 million of its loan following a 6.2 magnitude earthquake in January 2009. To date, the facility is only available for IBRD countries but its use in IDA countries is under discussion. Mongolia itself may transition to IBRD status in 2012, making it eligible for use of the CAT DDO facility.

Multi-donor trust fund contingency arrangements A further variation entails the creation of a multi-donor trust fund for disaster response, ideally linked both to a coherent recovery strategy and a comprehensive disaster risk management program. Such arrangements have considerable advantages, including that they can strengthen the coordination and timeliness of international aid resources; reduce government transaction costs in their dealings with development partners; ensure that overall aid resources are appropriately balanced across various needs; and, if on budget, ensure that the international response is aligned with the beneficiary government's own policies, priorities and allocation decisions. However, disaster response is a difficult area for the pooling of resources as many development agencies have detailed – and differing – policies and regulations on the use of funding in an emergency context, relating to issues such as procurement and financial management arrangements. Moreover, there are high opportunity costs in tying up funding for events in a single country that may not happen for a number of years. As such, there is little experience with such

[32] See http://treasury.worldbank.org/bdm/htm/faq_financial_products.html for further information.

[33] In February 2009, the Inter-American Development Bank launched a similar product in the form of a Contingent Credit Facility for Natural Disaster Emergencies, providing contingent credit of up to $100 million or 1% of GDP, whichever is less, for use in the aftermath of a disaster. As with the CAT DDO, borrower countries are required to have an adequate integrated disaster risk management program in place, including measures on risk analysis, prevention, mitigation, emergency preparedness and disaster response, and provisions for adequate and sustainable financing of the remaining risks. See http://www.iadb.org/news/detail.cfm?Language=English&id=5125 and http://www2.reliefweb.int/rw/rwb.nsf/db900sid/LSGZ-7XQE9Y?OpenDocument for further information.

[34] In the Guatemalan case, for instance, this translates into a loan with a maturity of 23.5 years, including a grace period of 8.5 years.

arrangements anywhere in the world. Instead, development partners prefer to maintain their own agency-specific contingency arrangements in the form of annual global humanitarian budget lines for use as and where situations arise, set at levels which are likely to ensure that funds are exhausted by the end of the year and typically linked to fast-track disbursement procedures.

Kenya is, however, in the process of establishing such a fund. This example is particularly pertinent to the Mongolian situation as it was designed specifically to provide more timely support to pastoralists in the event of a slow-onset disaster in the form of drought (Box 10). A drought contingency fund was originally established in Kenya as a component of the World Bank's Arid Lands Resource Management Project (ALRMP), approved in 2003. Additional financing was approved for this component of the ALRMP, together with several other components, in 2006. The additional financing under the drought contingency fund was intended to fund actions such as the purchase of livestock during the early stages of a drought, investments in strategic drought preparedness water supplies for humans and animals, repair of critical access roads and strategic human and animal health interventions (World Bank, 2006a). It was also intended that this component would lead to the institutionalization of a contingency funding mechanism to which other donors and the government could contribute. Release of related funding would be triggered by clear signals given by the quite robust drought early warning system already functioning in the country's 27 most vulnerable districts. The European Commission became involved in 2007, granting 8.5 million Euros to the Drought Contingency Fund through the existing ALRMP arrangements. The ALRMP closed in 2010 and efforts are currently underway to establish the legal, institutional and operational frameworks under which a National Disaster Contingency Fund can operate as a separate entity within the Government of Kenya structure.[35] A related Cabinet Memo has been prepared which is awaiting presentation to the Cabinet and Parliament and a Presidential Decree is being sought. This fund would pool government and donor contributions for use in the event of a drought.

Box 10: Origins of the Kenya Drought Contingency Fund

The arid and semi-arid lands (ASALs) account for more than 80 percent of Kenya's land mass and are home to over 30 percent of its total human population and nearly half of its livestock population. The livestock sector is the most important source of livelihoods in the area, accounting for 90 per cent of employment and 95 per cent of household income. In total, the ASALs generate around 50 percent of the country's livestock earnings, equivalent to around 5 percent of national GDP in 2002. However, the livestock sector is under increasing threat from drought. It is believed that drought conditions are becoming the norm, and non-drought years the exception, particularly in the ASALs, leaving inadequate time for recovery between events.

The Kenyan Government has a general National Contingency Fund, standing at around 2bn Kenyan shillings ($25m) in the mid-2000s, which in theory could be used for drought response purposes. However this is a general contingency fund for all unmet public expenditure needs and, at least as of the mid-2000s, faced annual demands of up to 300 percent its capacity. Meanwhile the international community has limited capacity to provide quick funding in response to rapidly emerging crises.

In consequence, although Kenya has 'arguably one of the strongest' early warning systems in place in sub-Saharan Africa, without a corresponding early response mechanism to address emerging situations this system 'is like a smoke alarm without fire extinguishers' (Oxfam, 2006b: 4). This state of affairs was clearly demonstrated in 2005-06. The early warning system indicated a deterioration of

[35] See http://www.dmikenya.or.ke/inside.php?articleid=4 for further information.

an already critical situation in northern Kenya in October 2005 but the Government did not declare a state of national emergency until December while a UN appeal was not launched until the following February. It was latterly 'widely recognised that earlier intervention could have limited the damage to the livelihoods of those affected' (Oxfam, 2006b: 4).

Calls for the creation of a national drought contingency fund followed, to support implementation of timely interventions during the early stages of a crisis. The development of a disaster management policy and parliamentary adoption of a proposed National Policy for the Sustainable Development of the Arid and Semi-Arid Lands of Kenya were also identified as critical requirements in addressing drought risk (Oxfam, 200b6).

Source: Oxfam 2006a and 2006b

Relevance to Mongolia Contingency funding arrangements may have particular merit in Mongolia in view of the difficulties experienced by the UN in raising emergency funding for the 2009-2010 dzud. These difficulties partly – ironically – reflected the extremely limited scale of funding required, relative to other emergency situations around the globe as well as universal challenges in securing funding for slow-onset disasters (see Section 4.2). There are no development partner disaster contingency arrangements currently in place for Mongolia, with the notable exception of a $600,000 emergency fund held largely in the form of fodder under an IFAD project which is managed by the local government in each of the four participating aimags. IFAD was approached in December 2009 to release part of this fund for sale to dzud-affected households. The sale proceeds have been used to replenish the fund.

There is certainly scope for using such funding to support early interventions. Drought-conditions in the summer months, when decisions on levels of hay and fodder reserves need to be made, do not necessarily imply an impending dzud. Similarly, levels of livestock losses in a particular soum by the end of, say, February are a poor predictor of total winter losses and thus, do not necessarily provide a sound basis on which to make decisions on further offtake. Nevertheless, there is considerable anecdotal evidence from the 2009-2010 dzud that more experienced herders were able to recognize the signs of an approaching dzud and to take various actions which reduced their losses, including destocking in the autumn and migration of remaining herds. This indigenous knowledge needs to be carefully documented, tested and applied more widely. Capacity to identify appropriate early intervention options and related trigger mechanisms for the release of contingency funding could also increase as the quality and availability of climatic forecast information improves (see Section 5.8) and as real time pasture monitoring data improves under the livestock early warning system (Box 11).

Box 11: Mercy Corps' Livestock Early Warning System for Mongolia

Mercy Corps has developed a forage monitoring system to help improve herder risk management in Mongolia. The initiative was begun under a USAID-funded Gobi Forage Project in 2004 and is now being supported by the World Bank under its Sustainable Livelihoods Project. The original system focused on just one aimag but has gradually been expanded and should provide national cover by 2012.

The system is based on satellite 'greenness' imagery, providing a vegetation index; and field sampling to identify and weigh individual plant species, providing a biodiversity index. This data is combined

with knowledge on animal feeding preferences for particular plants, their nutritional value, livestock population by species and meteorological forecasts to produce maps on forage availability. These maps are produced bi-weekly, showing current and 60-day forecast forage and current and 60-day deviation from long-term average forage for 10 km^2 units of land. The 60-day forecasts have a 95 percent rate of accuracy and the system predicted a very hard winter for 2009-2010. Mercy Corps also generates 80-day forecasts but these forecasts currently only have an 80 percent rate of accuracy so are not released.

The maps are e-mailed and posted on a website.[36] Related radio bulletins are also issued. Some soum authorities have used the forecasts to support decision making around prepositioning of stocks. Some herders have also used them for this purpose and a few to support decision making on the culling of livestock. Once national coverage is achieved, the tool could also be used to inform national decision-making on the size of hay and fodder reserves and to generate advice to herders on autumn offtake.

By attaching conditionalities relating to progress in improved risk management, the introduction of a donor-supported contingency funding arrangement could also provide a mechanism for opening up channels of dialogue around disaster risk management with the GoM. Such dialogue is already ongoing between development partners and MOFALI in the context of sustainable pasture and livestock management. However, the establishment of a contingency fund could draw other ministries, in particular the MoF, into this discussion and secure more continuous inter-ministerial focus on efforts to strengthen the livestock sector's resilience to climatic shocks.

The required size of the contingency fund would need to reflect the nature and cost of activities supported but is likely to be relatively small. Moreover, it could include some replenishment features (e.g., from the on-sale of slaughtered livestock and via subsidized sale, rather than free distribution, of fodder) helping to reduce funding needs. Other issues to consider in designing such a fund would include:-

- The nature and cost of activities supported
- Contributors (including a possible government contribution)
- The trigger mechanism for release of funds
- The expected frequency and scale of drawdowns
- Allocation and disbursement procedures, including implementing agencies
- Procurement, fiduciary, safeguard and monitoring arrangements

6.2 Social safety nets

Social safety nets such as food-for-work, cash-for-work and direct cash and in-kind handouts (e.g., in the form of food, clothing, housing, agricultural tools, seeds) are commonly used to support the poor in a post-disaster context, both by governments and development partners. This support can be important in minimizing potential increases in poverty and inequality and in maintaining social equilibrium; in protecting assets of the poor by reducing the need for sales; and in rebuilding assets by directly or indirectly supporting resumption of livelihood generating activities (del Ninno, 2008). Social safety net instruments can play an additional role in strengthening disaster resilience, both via conditional transfers in a pre-disaster context and, both ex ante and post, by directly supporting public

[36] http://glews.tamu.edu/mongolia/

works that reduce disaster risk (e.g., in areas of agroforestry, soil and water conservation, river embankments).

Social safety nets targeting the poorest, most vulnerable households impacted by a disaster are often devised as an individual situation evolves, however, and in some cases – particularly those involving public works – can take three to four months to get under way. Meanwhile, pre-existing, regular safety net programs, such as welfare, unemployment benefit, healthcare and food security programs, are rarely used to provide post-disaster support, despite certain advantages in using pre-existing programs. Even fewer programs have been explicitly designed with a potential post-disaster use, at some point in the future, in mind.

There are a few notable exceptions, the earliest dating back to food-for-work programs enshrined in the Indian Famine Code of the 1880s developed under British colonial rule. The Government of Bangladesh also maintains a variety of social safety net programs designed to address mainly transient food insecurity issues stemming from shocks, including natural hazards. These include Vulnerable Group Feeding, Open Market Sales, Cash for Work, Food for Work, Vulnerable Group Development and Gratuitous Relief programs.[37] Meanwhile, the Chilean Government extended lump-sum payments from the country's social assistance programmes, Chile Solidario and Programa Puente, to all households affected by the February 2010 earthquake (UN, 2011). In several other countries, safety nets originally established to support disaster-affected households have become effectively institutionalized into longer-term programs - notably in the cases of Ethiopia (Box 12).

Box 12: Social protection and drought in Ethiopia

The Ethiopian Productive Safety Net Programme (PSNP) was designed specifically to address a situation of near continuous rainfall deficit, rather than periodic hazard events, in a country where the majority of the population are either agriculturists dependent on rain-fed crops or pastoralists. It is intended to replace ad hoc emergency appeals on a near annual basis for food aid and other forms of emergency assistance with a more permanent program targeted on the chronically poor, providing a first step towards food security. Targeted families receive cash or food on a regular, predictable basis for a period of five years. Participants are eventually expected to graduate out of the PSNP and move onto other food security programs.[38] The program is geographically targeted, with eligibility also based on three years continuous dependence on relief. Beneficiaries are supported via either payment for public works, mainly focusing on soil and water conservation activities, or, in the case of labor-poor families, direct transfers. The PSNP was launched in 2005 and, at least as of 2008, was the largest social protection program in Sub-Saharan Africa outside South Africa (Gilligan et al, 2008).

[37] http://www.wfp.org/content/emergency-safety-net-vulnerable-groups-affected-high-food-prices-and-natural-disasters-bangladesh.

[38] Based on a survey undertaken 18 months after the PSNP was begun, Gilligan et al (2008; vi) found that, in practice, the program had had:

> ' little impact on participants on average, due in part to transfer levels that fell far below program targets. Beneficiary households that received at least half of the intended transfers experienced a significant improvement in food security by some measures. However, households with access to both the PSNP and packages of agricultural support were more likely to be food secure, to borrow for productive purposes, use improved agricultural technologies, and operate their own nonfarm business activities. For these households, there is no evidence of disincentive effects in terms of labor supply or private transfers. However, estimates show that beneficiaries did not experience faster asset growth as a result of the programs.'

In 2006, WFP and the Ethiopian Government launched a pilot drought index insurance scheme, targeting 5 million transiently food-insecure people to provide extra capital for the PSNP in the event of extreme drought. The index was based on historical rainfall data and a crop water-balance model. The scheme was internationally reinsured to recover up to $7.1 million in the event of a severe drought and the first year's premium of $930,000 was paid by the United States Agency for International Development (USAID) on behalf of the Ethiopian Government. In the event, rainfall for the year was above normal so no payout was made. The policy was not renewed in 2007 due to lack of donor support for insurance. Nevertheless, the pilot was deemed to demonstrate the feasibility of index insurance.

The model and lessons learned were fed, instead, into the design of a more comprehensive risk financing framework under a collaborative effort involving the World Bank, WFP, DFID and the Ethiopian Government. An improved sub-national drought indices known as Livelihoods, Early Assessment, and Protection (LEAP) was incorporated into this wider risk management framework. This indices is linked to donor contingency funding, providing timely delivery of cash to additional distressed household through the PSNP in the event of a drought. The contingency funding is intended to support transient food insecure households that are not covered by the PSNP, thereby contributing to the sustainability of the overall PSNP by preventing asset depletion and increased levels of destitution amongst additional households as a consequence of drought.

In 2008 the World Bank approved a US$60 million drought index contingent grant in support of this framework. In 2010 the Bank provided another contingent grant of US$50 million, and DFID and USAID together added US$110 million.

Sources: World Bank (2006b), Hazell and Hess (2010), and WFP and IFAD (2010).

There are certainly some advantages in institutionalizing disaster-related social protection transfer arrangements, whether through dedicated facilities or the periodic scaling up of regular benefit schemes. For instance, such arrangements can provide:-

- A pre-existing avenue through which donor disaster-related support can be rapidly channeled, potentially facilitating more timely support particularly if linked to well-conceived triggers and a pre-existing contingency fund (implying pre-agreed fiduciary, procurement, reporting and other procedures).
- An avenue, if so designed, for targeting the most vulnerable households, thereby separating decisions on targeting from political considerations.
- An appropriate disbursement mechanism for contingency funds, arguably making it easier to raise such funding in the first place.

Relevance to Mongolia As it stands, Mongolia's social protection system has no specific provision for supporting households affected by dzud. Moreover, MoSWL had little involvement in the 2009-2010 dzud response efforts beyond representation in some of the SEC working groups and related field assessments and provision of a limited part of the unemployment support fund to finance some carcass clearance cash-for-work activities.[39] The latter were intended to discourage migration by providing some local employment opportunities but, in reality, were very limited in scale.

[39] In urban areas, people have to be registered as unemployed in order to participate in unemployment support fund cash-for-work activities but a more flexible approach is applied in rural areas.

However, under a draft Social Welfare Law which is expected to be approved by Parliament in 2011, a new one-off payment will be introduced for citizens and households who have become 'homeless or whose home became unsuitable for living or who lost their livelihood/income source due to an unforeseen disaster or accident' (GoM, 2010, para 13.4.1). No budgetary provision is likely to be made for this payment, at least in the immediate future, and certainly no substantial budgetary provision.[40] Moreover, criteria triggering the release of this payment and determining individual or household eligibility have not been developed. Nevertheless, its creation in law provides a potential avenue for channeling international assistance – perhaps even linked to a contingency fund – to dzud-affected households.

The new Social Welfare Law will also introduce a means-tested poverty benefit. In the absence of accurate data on household income, the means test will be based on a formula for assessing household livelihoods (NSO and MoSWL, 2010). This formula is likely to involve some combination of level of education, employment status, type, size and nature of dwelling, source of heating, access to electricity and water, sewage system, access to telephone services and schools, engagement in livestock husbandry, number of livestock and durable goods ownership. Based on recent (pre-dzud) estimates of the number of rural households below the poverty line, the benefit could reach as much as half of herder households. This group own a very small proportion of the total herd, possibly under 10 percent following the recent dzud.[41] The means test will only be run every three years and the identity of recipients then fixed for a three year duration, implying that the poverty benefit will not be sufficiently flexible to provide a mechanism for targeting shorter-term support to all dzud-affected households nor even to the new poor, who are forced below the poverty line as a direct consequence of the dzud. However, the poverty benefit could still be used as an alternative or, perhaps, additional instrument to provide support to the poorest dzud-affected herder households, who would typically be expected to be amongst the most vulnerable to dzud events. Recipient rural households in dzud-affected areas could receive an additional cash payout via the poverty benefit mechanism in the event of a dzud. The poverty benefit would also provide a means of longer-term support for more severely affected households, regardless of pre-dzud wealth, for whom recovery proves slow and who are therefore eligible for support when the next round of means testing is conducted.

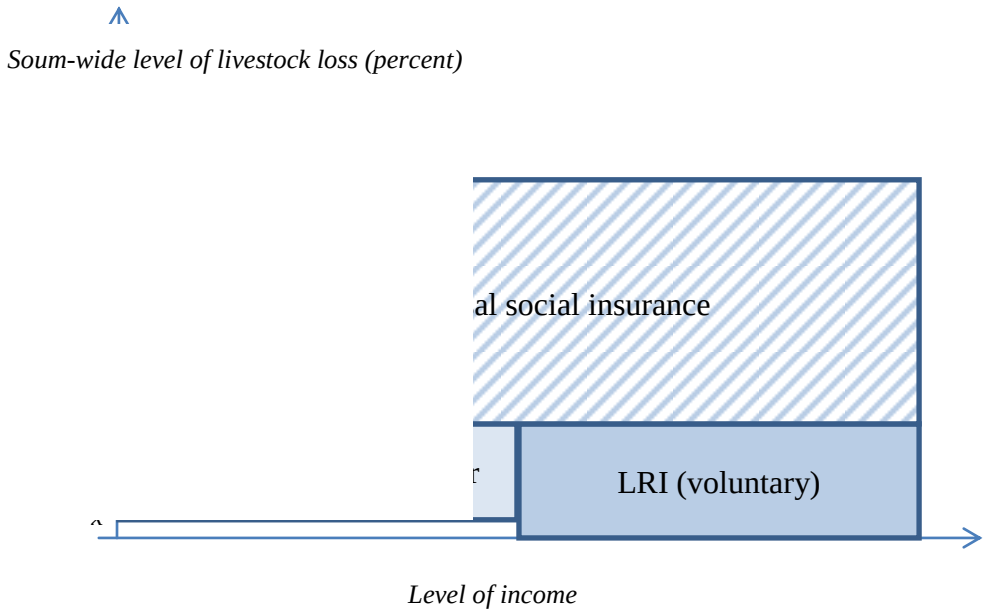
The one-off dzud-related payment could be triggered by an early indication of dzud, either relating to climatic factors and pasture conditions or to livestock deaths. For instance, payments could be triggered when reported livestock mortalities in a particular soum reach x percent of the total herd - , say, 10 percent (Figure 1). This relatively low level is suggested on the assumption that smaller herds tend to suffer earlier loss of livestock and lose a disproportionately higher percentage of their herds. Thus, by the time soum-wide mortalities reach 10 percent, smaller herders may have already lost 50 percent or even more of their animals.[42] As such, payments could be made well ahead of the mid-year census, helping to ensure that poorer households received timely support (assuming a well-functioning system for disbursing payments). Meanwhile, a mechanism could be devised to discourage false reporting of losses (e.g., via recourse to legal proceedings).

[40] As of mid-2010, the Human Development Fund being established to manage Mongolia's mining revenues in a fiscally sustainable manner was expected to distribute the wealth evenly across the whole population in the form of health and retirement insurance payments, housing purchase payments, cash and medical and education service payments. It was not expected to include any mechanisms specifically targeting the poor and other disadvantaged groups.

[41] As noted above, in 2007 46.7 percent of herder households had less than 50 heads of livestock and owned only 11.5 percent of total animals (GG PEMP and MSRM, 2009).

[42] Analysis of patterns of loss over time and according to original herd size would need to be undertaken to determine the exact threshold.

Figure 1: Proposed structure within which to provide of dzud-related social protection transfers



Analysis of patterns of loss over time and according to original herd size would need to be undertaken to determine the exact threshold. Analysis would also be required to determine the appropriate level of payment. This analysis should consider dzud-related humanitarian needs (for heating, clothing, food, access to medical and other facilities etc.) as well as required support to maintain remaining herds and provide compensation for livestock losses. It would obviously need to reflect the source and scale of potential funding sources as well.

A second tier of dzud support could then be triggered once soum-wide mortalities reach a certain percent (y percent) of the original herd, perhaps in line with the cut off for payouts under the Livestock Risk Insurance (see Section 6.3). This second tier of support could be in the form of a universal social protection mechanism currently being explored as part of this same study (see Lailan, 2010). Households that graduate out of the means-tested poverty benefit and thus are no longer eligible for a dzud social protection transfer payment would need to decide whether to opt into the LRI instead to cover lower levels of losses. The system could even be devised to let them opt into the LRI whilst still eligible for the dzud social transfer payment.

The social welfare reforms may open up a window of opportunity to strengthen ex ante dzud resilience as well. This opportunity relates to the fact that, as part of the reform process, the GoM is exploring mechanisms that incentivize self-enhancement and improvement rather than promoting a hand-out mentality.[43] In the case of poverty benefits, for instance, individuals will be required to

[43] This same viewpoint was observed by Mearns (2004) who reported that it was frequently felt that the poor were poor as a result of their own inability or unwillingness to work and that public support for the poor reinforced an attitude of dependency. Mearns also commented that there was 'also a widespread perception that a focus on "poverty" was donor-driven and that aid-supported, government programmes designed to improve living standards ended up rewarding the poor simply for being poor, rather than rewarding those who strive to improve their own means of living' (ibid: 121).

register at their local employment agency and some Members of Parliament are pursuing further conditionalities (e.g., via cash-for-work programs). In this vein, it could be constructive to require herder household recipients, to attend training sessions on husbandry techniques and perhaps to join pasture user groups to reduce their vulnerability to dzud and increase their likelihood of graduating out of social welfare benefits. Such conditionalities would meet Siegel and de la Fuente (2010)'s advocacy for a 'no-regrets' approach to disaster risk management and social protection policies, strengthening assets and livelihoods whether or not the risk of dzud is realized.

Finally, it should be noted that the MoSWL is also developing a new Employment Support Law which would include provision for the creation of jobs for disaster-affected herders, for instance via the creation of temporary public works and the provision of conditional business start-up loans. Although, again, unlikely to be allocated much budgetary provision, this mechanism could offer another potential avenue for channeling international assistance in the aftermath of a dzud.

6.3 Insurance-based arrangements

In the face of rising global disaster losses, there has been increasing interest over the past decade or so in the use of sovereign and household market-based risk transfer mechanisms to smooth public and private losses and ensure some immediate availability of funding in the aftermath of a disaster, overcoming short-term liquidity constraints. Development partners, in particular the World Bank, have been highly instrumental in driving this interest, helping to overcome traditional challenges faced by developing countries in accessing international insurance markets by developing, of a range of innovative instruments in conjunction with the private sector. Resulting initiatives have included schemes to support governments in transferring sovereign risk. They have also included schemes to address risk at a homeowner and farmer level, further reducing potential demands on the public purse, in its role as 'insurer of last resort', in the aftermath of a disaster.

The focus of interest in micro-based insurance schemes has centered on overcoming problems in the provision of traditional agricultural insurance. These problems are linked to issues of asymmetric information, in turn leading to adverse selection and moral hazard, and extremely high administrative costs, particularly in dealings with small farmers in remote areas. Resulting crop- and peril-specific products have been piloted in over 14 countries (Cummins and Mahul, 2008). One livestock product has also been developed specifically for Mongolia (see below). Cummins and Mahul (2008:3) caution that, despite these efforts, 'only a few developing countries have developed affordable, effective and sustainable catastrophe insurance programs without heavy public subsidies ... (that) many of the insurance pilots, particularly in agriculture, face technical, operational and institutional challenges when they are scaled up ... (and that) index-based agricultural insurance still needs to demonstrate sustainability and scalability, particularly in low-income countries'. Nevertheless, both insurers and donors remain relatively positive.

A number of sovereign risk tools have also been developed, including the Caribbean Catastrophe Risk Insurance Facility, the world's first world's first regional insurance pool (Box 13), and the Malawi Weather Derivative Contract, the first market-based hedging tool offered by the World Bank to an IDA client (World Bank, 2009a) (Box 14). These tools collectively rely on a mixture of risk retention, reinsurance and capital market transactions. They are advocated as one of a range of tools that a government can employ for catastrophe risk layering, covering medium frequency, higher-cost events and providing immediate liquidity post disaster. Annual budgetary appropriations, reserve mechanisms and reallocations are considered more appropriate to meet lower layers of risk associated with high frequency, lower-cost events.

Box 13: Caribbean Catastrophe Risk Insurance Facility

The world's first regional insurance pool, the Caribbean Catastrophe Risk Insurance Facility (CCRIF),[44] [45] became operational in mid-2007. The facility pools the 16 participating governments' country-specific hurricane and earthquake sovereign risk into a diversified portfolio (Lopez-Larroy 2008). Payouts are determined according to a parametric insurance mechanism, with a maximum US$8 million payout. The facility has a total claims paying capacity of US$132.5 million, based on a combination of partial risk retention, reinsurance and a catastrophe swap transaction arranged through the World Bank, which in turn transfers a portion of the catastrophe risk to the capital markets. The World Bank contributed to the capital of the facility and several donors help finance the annual premiums (Perry, 2009).

The World Bank provided technical assistance for the establishment of the CCRIF and estimates that the facility has reduced premiums by around 68 percent, as compared with individual country solutions, due to a combination of the reduced cost of capital, risk pooling and partial risk retention (Perry, 2009). The CCRIF has already paid out against a number of hurricanes and the January 2010 Haiti earthquake (just 14 days after the earthquake). The CCRIF is the first insurance instrument in the world to successfully develop a parametric policy backed by both traditional and capital markets.[46] The World Bank is supporting the preparation of a similar pool for the Pacific.

Box 14: Government of Malawi weather derivative contract

Malawi is a small, land-locked country with per capita income of around US$280 in 2009 and a predominantly rural population. The economy is highly vulnerable to a range of shocks and hazards, including periodic drought. This vulnerability reflects the country's heavy dependence on rainfed agriculture, which accounts for over 99 percent of agricultural cultivatable land and employs around 85 percent of the labour force. Periodic droughts result in domestic shortages of maize, the country's cereal staple, leading to significant pressure on government budgetary resources to support affected households and to price increases, affecting poor households disproportionately.

In October 2008 an innovative pilot transaction was launched for Malawi, transferring the financial risk of severe, catastrophic national drought to international risk markets. The transaction involved the purchase of a weather derivative contract from the World Bank Treasury which simultaneously entered into a mirroring back-to-back transaction with a leading reinsurance company. Under the initial contract, payouts of up to a maximum of US$ 5 million would be made if the rainfall index fell to 10 percent below the historical average. The Government of Malawi renewed the weather derivative contract for a third term in 2010, with maximum payouts increased to US$5.25 million. The Government is eventually expected to establish its own annual budget line for premium payments but, so far, has relied on the UK Department for International Development (DFID) to meet them. To date there have been no payouts under the contract.

[44] For further information see http://www.ccrif.org/.
[45] The InterAmerican Development Bank has since supported the development of a second insurance pool in the Caribbean.
[46] See http://treasury.worldbank.org/cmd/htm/CCRIF.html

This weather risk management transaction has been designed as part of a wider comprehensive agricultural risk management framework developed by the Government of Malawi with World Bank assistance. In the event of poor rainfall, the transaction provides predictable and early financing in April, rather than after harvest assessments in June. This financing can then be used to support more efficient drought preparedness and contingency planning efforts. For instance, it could be linked to a contingent call option to cap the import price of maize early. This type of maize price/supply hedge was used successfully by the Government following the 2005-06 drought and saved the Government approximately US$50-$90 per metric tonnes on 60,000 tonnes of maize. Purchase of a contingent call option the previous year would have resulted in a four-fold saving for the Government on maize import costs and reduced the need for external assistance.

Sources: Hess and Syroka (2005), World Bank (2009a, 2009b); personal communication with Julie Dana, Treasury, World Bank.

The World Bank unveiled its newest soverign risk instrument, a catastrophe bond issuance platform known as the MultiCat Program, in October 2009. This programme is flexible and supports a wide variety of structures, including the pooling of multiple risks, to take advantage of diversification benefits. Mexico was the first country to use this program, issuing a three-year $ 290 million series of notes in October 2009 under Fondo de Desastres Naturales (FONDEN) to cover a layer of earthquake and hurricane risk (Box 15).

Box 15: Fondo de Desastres Naturales, Mexico

Mexico is located along the world's 'fire belt' or 'ring of fire', where 80 percent of the world's seismic and volcanic activity takes place, and is also one of the most severely storm-affected countries in the world (World Bank, 2010). In 1994, legislation was passed requiring federal, state and municipal assets to be privately insured. In 1996 the Mexican Government established a fund known as Fondo de Desastres Naturales (FONDEN) to meet federal government disaster response obligations relating to the reconstruction of uninsured public infrastructure, the restoration of protected areas, disaster relief to low-income households and the purchase of emergency response equipment (including some pre-acquisition of emergency supplies and equipment). In the aftermath of a disaster, FONDEN would provide reconstruction funds directly to federal agencies and to state and municipal governments.

FONDEN is partly financed through an annual allocation from the state budget (which reverts to the state treasury if unutlised at the end of the year). It also utilises market-based financial instruments, such as reinsurance and, from 2006 and with World Bank technical support, catastrophe bonds, making it the first sovereign country to issue a catastrophe bond. These instruments help FONDEN increase its financial independence and overcome delays in budget reallocations when financial needs exceed available resources (World Bank, 2010). In non-disaster years and in years of lower fiscal resources, the annual budget allocation tends to be reduced or even cancelled by the Federal Government.

Sovereign risk transfer tools can also create opportunities to develop targeting procedures and even to draw up lists of potentially eligible recipients before a disaster occurs, as in the Mexican Government weather-index product which aims to increase the efficiency, timeliness and distribution of federal funds to poor farmers following climate-related crop failure (Box 16).

Box 16: Disaster cash for farmers in Mexico

In 2002, the Mexican Federal Government piloted a weather-index insurance program which was intended to reduce risk of crop failure resulting from unpredictable rainfall. In 2003, the pilot was expanded and incorporated into the Ministry of Agriculture's Programa de Atención a Contingencias Climatológicas (PACC) (Climate Contingencies Program), a subsidiary of the National Disaster Fund. Over the following six years the product was scaled up and by 2010 provided protection to 8 million ha of crops insured to a total value of US$628 million, with overall premiums reaching US$81 million. By 2010 the program potentially benefitted approximately 3.2 million low-income farmers in 30 out of 33 Mexican states in the event of a drought (Hazell and Hess, 2010).

The government-owned AGROASEMEX designed and manages the product, including the transfer of risk to the international reinsurance market. The insurance is sold exclusively to the federal and state governments. The Federal Government purchases the product through its PACC program and determines which states will be covered, targeting the product towards low-income rural producers, primarily with non-irrigated crops. The Federal Government subsidizes 90 percent of the premiums for those municipalities with high marginalization and 70 percent for municipalities with low-to medium marginalization. The remaining share of the premiums is paid by the relevant state government. By 2008, the purchase of risk transfer instruments represented 61 percent of the PACC budget. On average over six years and across states, the premium has been 13 percent of the total sum insured.

There are two triggers: drought and excess rainfall. Trigger levels differ according to the crop, region and state of crop growth (i.e., sowing, flowering and harvesting). Most of those benefiting have an income of less than US$74 per month, with none earning more than US$222 per month. They can receive support for post-disaster recovery for up to 5 hectares of land per farmer. Farmers growing annual and perennial crops can receive a maximum payout of US$410 whilst those cultivating high-value crops can receive a maximum payout of US$2,275. The state governments maintain a list of eligible low-income farmers. Farmers themselves do not participate in the decision to purchase coverage as the insurance is procured by the government. On average, farmers reinvest 70 percent of the payout to restart or improve their production.

Operational costs of the program averaged 1.3 percent of the sum insured between 2003 to 2008, making it cheaper than direct payment of disaster assistance funds to farmers. However, the program only covers 17 percent of the sowed surface in the spring/summer cycle, largely because there are insufficient weather stations that can guarantee efficient data flow and an optimum risk valuation process. Agroasemex is investigating a possible expansion of the program by marketing insurance to individual farmers, although delivery channels are likely to be a challenge

Source: WFP and IFAD (2010)

Relevance to Mongolia The insurance industry is relatively immature in Mongolia, despite rapid growth in recent years. Much of the current business involves third party motor insurance (which to date is non-compulsory and only covers around 20 percent of vehicles); travel insurance; and insurance of the mining sector. A state-run traditional livestock insurance scheme was set up during the *negdel* era (when Mongolia was under the political influence of the Soviet Union) by the (then) state-owned insurance company, Mongol Daatgal. At its peak, this livestock insurance scheme accounted for around 20 percent of Mongol Daatgal's total business. However, the scheme was halted in 2000, following heavy livestock losses in 1999 and the subsequent non-renewal of international reinsurance cover.

In 2005, the World Bank sought to address the gap in livestock insurance by setting up an index-based scheme in partnership with the GoM and domestic insurance companies, with payouts based on a soum-level index of livestock mortality (Box 17). This product provides a mechanism to smooth herder income and keep the near-poor above the poverty line. Around 2,400 policies were sold during the 2006 sales year, over 3,700 policies in 2007, 4,047 in 2008 and 5,654 policies for a premium of US$136,000 in 2009 (World Bank, 2010b).[47] Over the first five years of operation, participating insurance companies have made no overall profit. Record payouts, totaling USD $1.36 million (MNT 1.86 billion), were made in mid-2010 against the 2009 sales year policies to 4,706 herders from 57 soums in Khentii, Sukhbaatar, Bayankhongor and Uvs aimags. Of this, USD $202,400 (MNT 275.7 million) came from the Livestock Insurance Indemnity Pool account (see Box 15) and the remaining USD $1.16 million (MNT 1.58 billion) from the World Bank Contingent Debt Facility (SDC, 2010b).

Despite lack of profits to date, as of mid-2010 participating companies were keen to remain in the scheme, and new ones to join, for strategic reasons relating to the operational presence and high profile that the scheme accords them in rural areas, thereby improving their likelihood of selling other insurance services. They also hoped, of course, that the livestock insurance product will prove profitable over the longer term.

Box 17: The Mongolian Index-Based Livestock Insurance Product

In 2005, a joint World Bank and private sector insurance company partnership launched the Index-Based Livestock Insurance Product (IBLIP), a pilot project to test the viability of commercial, affordable index-based livestock insurance in Mongolia and to build up the institutional capacity and legal and institutional framework for the prospective replication and scaling up of the program nationwide. The project began in three aimags, with a fourth added in 2009 and a further five in 2010. By 2012, it is intended that the initiative should have nationwide coverage. Policies are available for purchase up to 10 July each year and insurance payouts are based on a soum-level index of livestock mortality, determined in early August the following year.

The original project entailed two products: the Base Insurance Product (BIP) and the Disaster Response Product (DRP). The BIP was a commercial risk product under which herders paid a fully loaded premium rate and which paid out when local mortality rates exceeded specified "trigger" percentages up to a maximum exhaustion point. The DRP was a social safety net product which

[47] A Mongolian Member of Parliament has proposed a new draft law to promote herder engagement in the processing and export of higher quality meat and other livestock products by providing an incentive in the form of a premium payment to herders who adopt specified improved practices. These practices would include vaccination of livestock, use of quality packaging materials and so forth. They would also require purchase of livestock dzud insurance, potentially resulting in a considerable increase in insurance uptake. However, it is not clear how much support this proposal has, particularly as it requires public resources.

kicked in for losses beyond the BIP's maximum exhaustion point and was financed and provided by the GoM. Herders who purchased the BIP were automatically registered for the same species of livestock under the DRP at no additional cost. Others could purchase the DRP for a small fee to cover administrative costs.

A Livestock Insurance Indemnity Pool (LIIP) was also created under IBLIP to function both as a reserve fund and as a risk pool for participating insurance companies. Under the original arrangement, the GoM offered reinsurance at an actuarially fair price on the exposure beyond a stop loss for the LIIP of 105 percent of herder premium deposited. A Contingent Debt Facility (CDF), financed by the IDA Credit, was established to fund indemnity payments under the BIP if there was a cumulative shortfall in the Government's stop-loss provision and to make payments under the DRP in the event of a disaster.

Under revisions to IBLIP introduced in 2010, project support to the DRP was stopped due to limited uptake of the product and concerns about GoM's very high financial exposure in both providing reinsurance for the LIIP and full payment for the DRP losses. This step was intended to ensure that the GoM would have sufficient financing to uphold its reinsurance contract with private insurers offering the BIP, now renamed the Livestock Risk Insurance (LRI). It was also felt that the DRP needed to be viewed in the context of Mongolia's disaster management system, rather than commercial insurance. In its place, a non-commercial Government Catastrophe Coverage (GCC) was introduced for herders with an LRI policy, covering losses beyond the LRI exhaustion point up to the total value of livestock insured. Any payments under the GCC will be made directly from the CDF. International reinsurance of the scheme was also secured in 2010, a critical step forward as the CDF would not have sufficient funds to fully protect the government's fiscal exposure under a nationwide LRI scheme.

Source: World Bank (2010a).

In terms of broader disaster risk management, IBLIP is a potentially important tool in promoting reduced herd size as some herders may otherwise deliberately maintain larger herds in order to ensure that they have some remaining animals in the event of a severe winter. With IBLIP, they receive a cash payout to purchase new animals instead. However, IBLIP's actual impact on decisions around herd size needs to be carefully explored to determine whether, indeed, it has resulted in smaller herds (Hartell, 2010). Insurance could, in fact, work in the opposite direction, encouraging herders to hold larger herds to maximize income in 'good' years, in the knowledge that the implied increase in risk of livestock losses in the event of a dzud will be obviated by insurance payouts. Related to this, there are potentially mixed messages in financing some form of universal social insurance through pasture fee proceeds if, again, the existence of that insurance cover encourages larger herd size. However, potentially adverse consequences could be avoided by negatively linking pasture user fees to the quality of pasture, charging higher fees charged where pasture quality is poorer. Under this structure, herders would be implicitly encouraged to reduce herd size, helping to offset any tendency to increase herd size because of the availability of insurance.

The Malawi weather derivative contract (Box 14) and Mexican PACC examples (Box 16) illustrate other interesting approaches for consideration in developing some form of universal social insurance cover that could perhaps be combined with some form of mandatory herder contribution. As already noted, the the IBLIP secured international reinsurance in 2010, potentially paving the way for further internationally-backed index-based risk transfer mechanisms in the future. However, again, impacts on herder behaviour would need to be monitored to help ensure that any necessary steps are taken to

avoid the effective creation of incentives to increase herd size. The catastrophe risk financing structure, and particularly the catastrophe bond element, of FONDEN (Box 15) may be too premature for Mongolia.

There are two further opportunities for market-based disaster risk transfer mechanisms in Mongolia, relating to the creation a reinsurance company and earthquake insurance. Mongolia currently has no domestic reinsurance companies. However, there have also been some preliminary discussions about the creation of a private Mongolian Agricultural Reinsurance Company (MARC), with financial backing from the World Bank and other development partners, the GoM and the private sector, to ultimately replace the project implementing unit set up under IBLIP and also to provide additional services (World Bank, 2010b). This company would provide the first layer of reinsurance for livestock insurance and would arrange further cover on the international market. It would also select participating insurance companies in the livestock insurance scheme, design contracts, provide various technical expertise and undertake outreach work on basic product awareness.

Meanwhile, there have been some recent enquiries about earthquake insurance following the GoM's exposé on seismic risk in Ulanbataar and its surrounds (Box 18) and there could be some related need for public-private innovative financing products to provide sovereign and/or individual private sector/household seismic risk cover. The Turkish Catastrophe Insurance Pool (TCIP) provides a potential model in developing homeowner insurance (Box 19).

Box 18: Mongolian earthquake risk

During the 20th century, Mongolia experienced three earthquakes with a magnitude of 7 or over on the Richter scale: the 1905 Bulnay earthquake in northwest Mongolia, with a magnitude of 7.4; the 1931 Fu Yun earthquake in the far south west, with a magnitude of 7.9; and the 1957 Gobi-Altay event in the northern Gobi desert, with a magnitude of 8.0.[48] Until recently, the earthquake risk in the Mongolian capital, Ulaan Baatar, was believed to be low because of its considerable distance from any major fault lines. However, the GoM's Chief Scientist reported the discovery of two new fault lines running close to Ulaan Baatar in April 2010 (one of them running under the airport). According to GoM projections, a major earthquake could result in 200,000 deaths in Ulaan Baatar and affect some 800,000 people.

These predictions and related risk should be carefully examined and appropriate steps taken to reduce vulnerability (e.g., via retrofitting (particularly of school buildings and hospitals) and enforcement of appropriate building codes), to prepare for potential events and to develop a reconstruction financing strategy.[49] The GoM has already amended building codes to require the introduction of designs sufficient to withstand earthquakes of up to Richter Scale 8, rather than 7 as previously. As of mid-2010, it was also planning to undertake various earthquake preparedness measures and to provide support to seismic monitoring stations with funding from the 2010 mid-year budget adjustment (see Section 3.3) and the 2011 annual budget.

[48] http://earthquake.usgs.gov/research/geology/mongolia98/.

[49] The IFRC plans to increase its emergency household kits from 700 to 5,000, to be located at four separate sites across Ulaan Baatar.

Box 19: The Turkish Catastrophe Insurance Pool

In the aftermath of the 2000 Marmara earthquake, the World Bank supported the establishment of the Turkish Catastrophe Insurance Pool (TCIP), a public sector insurance company providing earthquake insurance to home owners (Cummins and Mahul, 2008). The TCIP was intended to overcome problems of market failure, in the form of a lack of local market earthquake insurance capacity despite high earthquake exposure, and thus to reduce the government's contingent liability. The World Bank provided technical and financial assistance to model and rate the earthquake exposure during the design stage of the initiative and a contingency loan to cover claims during the start-up implementation phase (World Bank, 2010c).

The resulting TCIP purchases commercial reinsurance and the Government of Turkey acts as a catastrophe reinsurer of last resort for claims arising as a consequence of earthquakes with return periods in excess of 300 years. The policy is distributed by around 30 pre-existing Turkish insurance companies (Cummins and Mahul, 2008). On average, the TCIP has achieved about 20 percent penetration each year since its establishment. Given the very low voluntary demand for insurance, a decision was taken to make cover compulsory for registered houses in urban centers. Cover is voluntary for homeowners in rural areas. The policy was deliberately designed to be affordable.

The CCRIF provides a potentially relevant model for earthquake insurance in Mongolia – that is, participation in some form of regional or even global catastrophe risk pool, possibly combined with some donor assistance to meet premium payments. Pool arrangements can reduce premiums significantly. Gurenko and Zelenko (2007) (cited in Perry, 2009) estimate that, on average, premiums for a single country may be around four times the expected loss but that they can be reduced to 3.3 times the expected loss by regional pools and to 2.3 by global pools.[50] As yet, there are no global catastrophe risk pools in existence, although preliminary analysis by the World Bank suggests that such a facility could be financially viable (Perry, 2009). There are no regional catastrophe pools in Asia either. Given its low population, though, it is perhaps not inconceivable that Mongolia could explore membership of either the CCRIF or the Pacific equivalent currently under development. The CCRIF, at least, covers earthquake risk.

6.4 Credit market options

Microfinance is another form of social protection instrument that reduces poor household's vulnerability to shocks. There is a potential role for the development of innovative credit programs that deliberately target vulnerable groups, seeking to strengthen their resilience via the provision of credit and related technical assistance in support of enhanced risk management practices, including livelihood diversification, and that also incorporate measures ensuring better protection of credit providers against disaster events.

Disasters can create considerable financial difficulties for borrowers, limiting their capacity to repay existing loans and thereby hindering their access to fresh credit yet simultaneously increasing the need for new lending to smooth consumption and support recovery, potentially including the reconstruction of homes and businesses. From a creditor's perspective, rescheduling of loans and possible defaults in

[50] From an insurance industry perspective, regional catastrophe pools are also attractive because they lower transaction costs and, by the very nature of a pool, reduce fluctuations in demand linked to shifting national budgetary positions and political regimes (Cummins and Mahul, 2008).

the aftermath of a disaster can place considerable pressure on cash flows and potentially even threaten the viability of lending institutions, leaving little flexibility to support the recovery process via new lending without external support.

In practice, there has been relatively little public intervention around the globe to support financial institutions either in encouraging and promoting enhanced disaster resilience or in protecting them against disaster shocks. A notable exception is the Emergency Liquidity Facility (ELF) for Latin America and the Caribbean, a facility established by various bilateral and multilateral institutions together with private investors in late 2004. The ELF's purpose is to serve as a lender of last resort to microfinance institutions (MFIs) affected by natural, technological, political or financial crises (including conflict).[51] The facility has over US$10 million available for the provision of timely emergency loans to crisis-affected MFIs, allowing them to continue new lending whilst overcoming liquidity difficulties relating to the rescheduling of existing loans to affected households and businesses. This facility can thereby support MFIs in meeting demand for new lending for early recovery and reconstruction purposes whilst also alleviating pressures arising from the restructuring of existing loans.

It should be noted that it is widely agreed that the settlement of outstanding loans by third parties in the aftermath of a disaster should be approached with extreme caution as such actions can potentially alter longer-term borrower attitudes towards loan repayment, creating a culture of poor repayment.

Relevance to Mongolia There are limited opportunities for the use of credit to promote enhanced ex ante resilience to dzud in Mongolia, yet again reflecting extremely limited alternative livelihood opportunities for herders (see Box 4). However, available evidence indicated that there was some tightening of rural credit markets as a direct consequence of the 2009-2010 dzud, suggesting possible scope for innovative mechanisms to ease dzud-related pressures.

This possible scope needs to be considered in the context of the rural credit market in Mongolia. In contrast to many other developing countries, the Mongolian rural credit sector is served almost entirely by commercial banks rather than by NGOs or non-bank financial institutions (Badarch et al, 2007). Foremost amongst these is Khan Bank, which has a branch in every soum. Xac Bank is the other key lender. Herder loans are disbursed for three purposes: household consumption smoothing (e.g., student tuition, Mongolian new year gifts, household items, health care), leasing (e.g, of vehicles) and purchase of assests (livestock, homes, fences, wells, animal shelters etc). In practice, however, loans are largely actually used for seasonal household expenditures (Badarch, 2007; GG PEMP and MSRM, 2009).

In the case of Khan Bank, loans are typically taken out in around August or September each year for periods of 6 to 12 months, to a maximum value of MNT 5 million per herder. Repayments are scheduled every six months, in line with herders' inflows of cash income at two major points in the year (see Section 4.2). Loans are only available to pastoralists with herds in excess of 100 heads of sheep equivalent, in effect implying that around 30 percent of herders are excluded from access to formal sector lending, both from Khan Bank and other banks, who also apply the same lending criteria. Collateral is required in the form of assets such as livestock, winter shelters, *gers*, cars and motorcycles. Lower rates of interest are available for herders with IBLIP policies and, once IBLIP is available nationwide, Khan Bank may consider making loans contitional on insurance cover. Herders

[51] For further information see http://www.emergencyliquidityfacility.com/.

are not allowed to take out fresh loans, at least from Khan Bank, if they have outstanding restructured lending.[52]

In 2007, Khan Bank's herder lending reached an all-time high, accounting for 22 percent of its total loan portfolio. However, the cashmere price dropped by over 50 percent the following year, leaving herders struggling to repay loans and substantially increasing the banking sector's exposure. By April 2009, Khan Bank had restructured 7,000, or nearly 11 percent, of its outstanding herder loans, extending the period for repayment by a further 12 months (Fairclough, 2009). By June 2009 it had restructured 12,000 loans, equivalent to 23 percent of its herder loans (Lim 2009). Meanwhile, new lending to herders tightened considerably. Reflecting this, Khan Bank's year-end outstanding herder loan portfolio declined from around MNT 70-80 billion at the end of both 2006 and 2007 to MNT 60 billion in December 2009.

The 2009-2010 dzud placed additional pressure on herders, leading to further restructuring. As of April 2010, around 10 percent of Khan Bank's total outstanding rural loan portfolio and 16 percent of its herder loan portfolio had been restructured.

At the end of 2009, Khan Bank estimated that around MNT 13 billion of its MNT 60 billion total outstanding herder loans were at risk. However, by March it had reduced this estimate to only MNT 4.6 billion of its still outstanding herder portfolio of MNT 50 billion. This more optimistic assessment reflected an improvement in meat and cashmere prices and good repayment records over the interim three months. Khan Bank acknowledged that there could still be some foreclosures but these were likely to occur on a very limited scale, if at all.

Khan Bank has no specific mechanisms for managing dzud-related risk. Indeed, reflecting Mongolia's small insurance sector (see Section 6.3), even its wider liability insurance cover is very limited and the bank has never insured its portfolio risk. Instead, following repayment issues linked to the economic downturn and then the dzud, it tightened its screening of potential herder borrowers, increased collateral requirements and took a deliberate decision not to attempt to increase its herder portfolio again. At the end of May 2010, herder lending stood at MNT 41 billion, accounting for just 6 percent of Khan Bank's total loan portfolio and 13 percent of its total rural lending, considerably lower than levels of rural lending just three years previously. Xac Bank deliberately cut herder loans as well and, as of mid-2010, only had around 5,000 loans remaining.

Herders themselves were more more reluctant to take on new loans in the wake of the 2009-2010 dzud too, despite historically relatively low interest rates of around 2.0 to 2.9 percent per month. In the meantime, many struggled to repay existing debts. During interviews for this study, one bagh reported that around 80 percent of its herders were already in default even prior to the dzud. There is some evidence that herders resorted to informal borrowing from family and friends to repay their formal sector debts. As herder credit demand returned, however, it was likely that they would find it much harder to access new formal sector credit.

This situation suggests the need for some sort of mechanism to support credit providers in managing dzud without resorting to long term rationing, thereby leaving lines of credit open to herders. Rather than developing second-tier innovative mechanisms to support the capacity of existing herder credit providers to smooth the impacts of dzud, however, an entirely different approach may be more appropriate. It has been proposed that an alternative market structure, involving credit unions, self-help groups and rural finance companies, should be developed to address the 'systemic risk for both

[52] Proceeds from a cash-for-work carcass clearance programme for participants in at least one bagh were channelled through participants' bank accounts but some of this payment was diverted by the bank for the repayment of outstanding loans.

the rural and national economy implicit in the concentration of rural finance in only one or two institutions' (Cater, 2009: 4). Its establishment would require changes in the legal and regulatory framework. Ideally, it would also embrace a culture of greater social responsibility and mechanisms for opening up access to credit to poorer herders via non-collateralized lending, for instance using a similar instrument to that established under Mercy Corps' Rural Agribusiness Support Program to guarantee loans to clients with low collateral. Measures for managing dzud and other disater-related risk (including earthquakes) could be built into this structure via a risk pooling instrument. A domestic pool is highly unlikely to be sustainable in view of the relatively high frequency of dzud across large segments of the country (i.e., correlated risk). Instead, access to an ELF-type international arrangement would be required, whilst simultaneously providing training to borrowers on improved husbandry. Development of this structure, including a related ELF-type arrangement, would probably require development partner support.

Finally, it is important to ensure that any new arranagements do not encourage larger herd size. Past loans have generally been used for consumption smoothing rather than production purposes. However, as GG PEMP and MSRM (2009) note, the money is ultimately fungible and could indirectly support increased livestock numbers. There has apparently been little research on the impact of credit availability on herd size to date. This gap in knowledge needs to be addressed.

6.5 Public–private partnerships

The emphasis in use of innovative financing tools for disaster risk management in developing countries to date has been largely on risk transfer – that is, on financing post-disaster response and recovery – rather than ex ante risk reduction. In the context of Mongolia, however, there may also be some opportunities for public-private partnerships in the processing, storage and marketing of livestock products that would directly contribute to strengthened dzud resilience.

Most obviously, the 2009-2010 dzud underlined problems relating to highly limited cold storage capacity for meat. As herders started to offtake livestock in the autumn of 2009, some of them specifically because of an anticipated dzud, the market was rapidly saturated because of limited storage options. This resulted in a sharp fall in price, in turn discouraging further offtake. Conversely, by May 2010 meat prices had rocketed because of shortages (see Section 1.2), resulting in the removal of value-added-tax from meat sales to reduce pressure on consumers (with consequences for government revenue). As such, improved cold storage facilities could have a direct, positive impact on the management of emerging dzud, directly supporting greater offtake during the autumn. One development partner is already exploring a possible public-private partnership in this area in conjunction with a multinational company. There is potential scope for support of more locally orientated facilities too, for instance via the provision of start-up loans. Donor engagement in this area could be particularly important in view of the recent drying up of rural credit markets (see Section 6.4).

Currently livestock products are exported to China with little or no processing, also implying possible public-private partnership opportunities to expand the domestic processing industry. Increased capacity in this area could indirectly help contain the livestock population by creating additional alternative livelihood opportunities, in turn strengthening resilience to future dzud. However, as widely acknowledged, there are considerable challenges associated with such investments, reflecting considerable logistical difficulties presented by Mongolia's sparsely scattered population over a large, landlocked area and the low existing quality of livestock outputs (GG PEMP and MSRM, 2009). The latter reflects a lack of price differentiation for varying quality of product. Cashmere sales, for instance, are currently valued by bulk rather than according to quality (GG PEMP and MSRM, 2009).

Furthermore, export markets would have to be created for the new processed products as domestic demand would be easily saturated (ibid). This, in turn, would require a substantial increase in phytosanitary standards (currently a major hindrance to exports) and, thus, improvements in the quality and use of veterinary services. There is also a danger that the development of livestock processing industries could encourage increased animal numbers, rather than reducing the livestock population by creating livelihood alternatives. For the time being the 2009-2010 dzud has created considerable interest in improving productivity (e.g., via better breeding, healthier livestock and grading of products) rather than increasing livestock numbers again but this interest could be shortlived, soon replaced by a desire on the part of individuals to increase both livestock productivity *and* numbers. As such, opportunities for potential private-public partnerships in livestock processing industries require careful in-depth study before any initiatives are entered into. Such initiatives may still merit support but, in all likelihood, would need to be accompanied by considerable technical assistance. GG PEMP and MSRM (2009) stress the importance of aggressively supporting the establishment of a pasture user group system to overcome the possibility of stimulating a rise in livestock numbers by developing the agro-processing industry.

7. Conclusions

Development of a comprehensive dzud management strategy The GoM urgently needs to develop a comprehensive dzud management strategy for Mongolia, linked to adequate financing arrangements and disbursement mechanisms. This strategy should be based on a clear statement of the GoM's dzud-related responsibilities at each level of government, covering ex ante risk reduction, preparedness, early response, relief and recovery. It should reflect the GoM's obligations as insurer of last resort to poorer households, its longer-term commitment to reduce poverty and the need to establish a sustainable livestock sector, both in terms of herd size and resilience to climatic shocks.

The 2009-10 dzud has focused GoM and development partner attention on inadequacies in the current arrangements, thereby creating a window of opportunity to develop a comprehensive dzud management strategy of this nature and a related plan of action. This window of opportunity is limited and concerted effort is required to ensure that action is taken before attention dissipates.

The resulting dzud management strategy should not be regarded as a document that is pulled off the shelf and dusted down every decade or so, as and when a dzud occurs. Instead, it needs to be carefully entwined into a broader sustainable livestock management policy and multi-year plan of action, as it currently stands in the form of the National Livestock Program. Without this broader vision, it is nigh on impossible to balance shorter-term efforts to alleviate impacts of dzud on the poor whilst also working towards the achievement of a sustainable livestock sector. Instead, it forces both the GoM and the donor community into impossible decisions as they attempt to support the poor without sustaining inappropriately large numbers of livestock and, thereby, contributing to yet further dzud in future years.

The GoM's dzud management strategy and related plan of action should include the following:

- Measures to strengthen herder risk reduction capacity and capabilities (e.g., via husbandry training, the creation of herder groups, fencing, *otor* development and the installation of wells).
- An incentives structure to encourage individual herders to reduce risk and take appropriate preparedness measures.
- Support for the development of market mechanisms to manage risk (including the production, storage and distribution of fodder and feed, the development of adequate meat processing and

storage facilities and, possibly, the development of mechanisms to support credit providers in managing dzud).

- Transparent criteria for the declaration of a dzud.
- Comprehensive dzud monitoring, impact and needs assessment procedures, facilitating the continuous monitoring and reporting of evolving situations.
- Adequate mechanisms for the timely provision of targeted assistance to dzud-affected households (covering health, nutritional, housing, educational and psychological, as well as livestock, needs).
- A clear schedule of types and levels of support available to affected households and communities and transparent related trigger mechanisms (based on a mixture of climatic conditions and dzud impacts, as appropriate).
- A comprehensive system for tracking GoM and development partner dzud response resources to support improved coordination and monitoring of the response efforts.
- Mechanisms for communicating the strategy to herders.

A number of these features would also contribute towards the development of a sustainable livestock sector, in effect constituting 'no regrets' steps and measures that would generate benefits even in non-dzud years.

In developing its dzud management strategy the GoM should also seek to:-

- Align the strategy with Mongolia's National Climate Change Adaptation Strategy and Action Plan, currently under development (Box 18).
- Reflect the findings of the UNDP/NEMA lessons learning exercise and any other evaluations of the 2009-2010 and 1999-2002 dzud response efforts.
- Secure cross-party support for the strategy, allowing dzud management and response efforts to move firmly beyond political considerations and the potential temptation to influence voting patterns.

Box 20: Overlaps with the climate change adaptation agenda

Mongolia has a National Action Programme on Climate Change dating back to 2000. The GoM is currently in the process of updating this and developing a National Climate Change Adaptation Strategy and Action Plan with support from Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ). It was hoped that this process, including related stakeholder consultations, will be completed by the end of 2010. The adaptation plans are expected to cover four areas: livestock and crop production, environment and forestry, health and water resource management. As of mid-2010, no concrete climate change adaptation measures or activities had been agreed and there were no on-going actions that were specifically labeled as such. However, once these are determined and the wider strategy and action plan finalized, funding will be sought. The existence of considerable international funding in this area has helped secure strong GoM interest in this topic.

There are clearly significant overlaps in the climate change adaptation and disaster risk reduction agendas with regard to the livestock sector, both ultimately seeking to reduce livestock numbers to sustainable levels and to improve pasture management and forage production and reserve

management (see Section 5.7). It is essential that the two communities therefore work closely together, in partnership with MoFALI, to achieve their common goal.[53] It may even be appropriate to pursue both agendas under a common trust fund arrangement. Activities supported under this trust fund arrangement could even extend to further strengthening of products and related institutional and legislative support for livestock insurance and mechanisms for supporting early intervention in the event of an emerging situation that could potentially lead to a dzud.

Financing arrangements The dzud management strategy should be accompanied by the establishment of sufficient *a priori* financing arrangements to ensure that the GoM can meet its agreed obligations and commitments as laid out in the strategy. Current financing arrangements are inadequate and ad hoc, providing insufficient resources to households most in need in less than a timely or appropriate fashion during the 2009-2010 dzud. A comprehensive dzud management strategy would increase the role of government even further, creating substantial fiscal exposure that the GoM would need to ensure was adequately covered.

Viable dzud financing options rest on some combination of GoM and international aid resources, market-based risk transfer instruments and herder contributions. The latter could be either mandatory (in some form of taxation or fee) or voluntary (in the form of insurance premiums).

The GoM should continue to make annual provision for dzud preparedness and response under its Government Reserve and State Reserves Fund, possibly adjusting annual budgetary allocations for disaster preparedness and response in accordance with seasonal climate and vegetation forecasts. Better needs assessments and targeting would ensure that available funding has maximum effect in alleviating the impacts of dzud on the most seriously affected areas and individual households and that it supports humanitarian needs as well as herders' livelihoods.

Budgetary allocations under the National Livestock Program should help support longer term risk reduction, particularly if the dzud management policy is closely linked into this program. The program is entitled by law to receive up to 3 percent of the GoM's annual budget. The program is also going to be supported via a 'Mongol Livestock' Development Investment Fund to be created from the proceeds of mining production income and national and international assistance (Lailan, 2010). On-

[53] Towards this end, UNDP has supported the preparation of a National Climate Risk Management Strategy and Action Plan (NCRMSAP) under Phase III of its project on *Strengthening the Disaster Mitigation and Management System in Mongolia* (see Box 1) (UNDP, 2009). This plan 'seeks to address climate and disaster risks with a sustainable programme of goals and activities that can be developed over the short, medium and long term' (ibid: 5) and is arranged around five key areas:

- 'Establishment of a strong institutional framework for action;
- Building climate resilience through risk reduction and facilitating adaptation in priority sectors such as animal husbandry and crop farming;
- Establishment of region-specific early warning systems;
- Improved hydro-meteorological forecasting capacity, monitoring, warning and dissemination response, and downscaling of this information to the local level; and
- Provision of climate-related education and knowledge to enhance capacity building and response to weather related hazards' (ibid: 17-18).

However it is not clear how this strategy sits alongside the National Climate Change Adaptation Strategy and Action Plan currently under preparation by the GoM.

going development partner livestock sector initiatives are also contributing to enhanced dzud resilience and could be organised under a common framework to maximise their impact.

External assistance for dzud response is arguably best organised under a contingency funding arrangement, ensuring a more timely and adequate international response. As witnessed over the course of the 2009-2010 dzud, the international community finds it notoriously difficult to raise immediate assistance for slow-onset disasters, thereby missing opportunities to reduce the subsequent impacts of an event. In the case of the Mongolia, the international community has also struggled to raise funding because of difficulties in defining its own role in meeting the needs of destitute people, on the one hand, whilst encouraging more sustainable livestock management practices on the other. The establishment of a long-term comprehensive dzud management strategy, preferably drawn up in consultation with development partners, would help balance out these objectives, providing the international community with both a steer through this quagmire and the necessary basis for establishing a contingency fund.

There is certainly scope for using contingency funding to support early interventions in view of considerable anecdotal evidence that more experienced herders were able to recognize the signs of an approaching dzud in 2009 and to take various actions to reduce its impacts. The establishment of a development partner contingency fund would also have an important fringe benefit: it would draw a number of government ministries, in particular the MoF, into the discussions around dzud management and secure more continuous inter-ministerial focus on efforts to strengthen the livestock sector's resilience to climatic shocks.

Alternatively – or as one of the uses of the contingency funding - external assistance could be provided to help meet the premium payments associated with a sovereign risk transfer tool. There are various tried and tested sovereign risk transfer instruments around the globe that could potentially be applied in Mongolia to enhance the GoM's capacity to manage dzud.

Part of the financing for dzud response could also be raised via the introduction of some form of taxation of the livestock sector (e.g., pasture user fees), a proportion of which could be used to build up dzud response reserves, or a specific dzud contingency fee (e.g. in the form of a mandatory insurance premium – see the companion paper to this report by Lailan (2010)). However, the acceptability of any form of livestock taxation or fee for dzud response purposes needs to be considered in the context of the need for more careful targeting of dzud support. Both the GoM and herder communities would need to accept the fact that wealthier herders could pay higher contributions while more whilst poorer herders, who generally fare worse during dzud, could benefit more, bucking highly ingrained cultural attitudes against effectively penalising better herders for lower rates of loss.

Voluntary insurance contributions should also play an increasing role in ex ante financing arrangements for dzud as the Livestock Risk Insurance (LRI) becomes available nationwide in 2012. However, it is anticipated that only around 25 percent of herders will ever take up the LRI.

Targeting of support Better targeting of dzud response and recovery assistance should be addressed as an important priority in the development of a comprehensive dzud management strategy. Targeting could best be improved by creating a social protection instrument to provide cash transfers to severely affected poor households, perhaps linked to the utilisation of a donor-supported contingency fund. The scheduled reform of Mongolia's social welfare system, including the introduction of various targeted benefits, has created an important opportunity to establish some form of dzud response mechanism along these lines. Ideally, this mechanism should be designed to strengthen and encourage

enhanced risk reduction practices as well as to provide cash payments to dzud-affected households. A second tier of support in the form of a more universal from of social insurance to all affected households could come into effect in the event of severe dzud (see Lailan (2010) for further discussion). Additional assistance will still need to be provided via other means, for instance to support continued provision of social and educational services to dzud-affected areas and community-wide recovery.

Future impacts and relevance of dzud Possible future changes in the frequency and intensity of dzud and shifts in vulnerability also need to be taken into account in examining options for strengthening both disaster risk management and related financing requirements and arrangements in Mongolia. Historically, dzud have occurred approximately once every 10-12 years. However, there is growing concern that the combined impacts of climate change and environmental degradation could increase their frequency. Climate change is expected to result in milder winters, shortened cold wave duration and, at least according to some models, less snow, all at first glance in benefit of herders (Batima et al, 2005). However increased short rapid warming in winter could result in subsequent ice sheets, limiting access to grazing, whilst lower snowfall would reduce water availability over the winter. Possible earlier melting of snow cover and decreased spring precipitation could also reduce pasture. Meanwhile, some 80 percent of pasture land has experienced environmental degradation due to poor management and also to a considerable increase in the goat population. Since 2002, goats have replaced sheep as the dominant species. Cattle and horse numbers have also increased but sheep and camel numbers have declined (ibid).

As the mining-led boom sets in, future dzud events are likely to be less and less significant economically, as measured in terms of year-on-year GDP fluctuations. However, the livestock sector will continue to be an important source of livelihoods for a considerable share of the population, including a large share of the country's poor. As such, sound dzud risk management will remain important for many years to come.

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