

**Document of  
The World Bank**

Report No: ICR00002949

**IMPLEMENTATION COMPLETION AND RESULTS REPORT  
(IDA-40690 IDA-46870 TF-13074 TF-54740 TF-94002 TF-94827)**

**ON A**

**IDA CREDIT (40690) IN THE AMOUNT OF XDR 5.14 MILLION (US\$ 7.75  
MILLION EQUIVALENT)  
( May 26, 2005)**

**SDC GRANT (TF94002) IN THE AMOUNT OF US\$ 0.680 MILLION  
( April 6, 2009)**

**KOREA GRANT (TF94827) IN THE AMOUNT OF US\$ 0.700 MILLION  
( April 28, 2010)**

**IDA CREDIT (46870) IN THE AMOUNT OF XDR 6.3 MILLION (US\$ 10 MILLION  
EQUIVALENT)  
( February 23, 2010)**

**SDC GRANT (TF13074) IN THE AMOUNT OF US\$ 1.525 MILLION  
( September 5, 2012)**

**TO**

**MONGOLIA**

**FOR A**

**INDEX-BASED LIVESTOCK INSURANCE PROJECT**

**September 21, 2016**

Finance and Markets Global Practice  
Mongolia Country Unit  
East Asia and Pacific Region

CURRENCY EQUIVALENTS  
(Exchange Rate Effective May 2016)  
Currency Unit = Mongolian Tugrik  
MNT 1.00 = US\$ 0.0005  
US\$ 1.00 = MNT 2,004  
FISCAL YEAR  
July 1- June 30

## ABBREVIATIONS AND ACRONYMS

AF	Additional Financing
AFBM	Annual Field Based Monitoring
AgRe	Agricultural Reinsurance (AgRe) company
Aimag	Province of Mongolia
AM	Aide Memoire
BIP	Base Insurance Product
CAS	Country Assistance Strategy
CDF	Contingent Debt Facility
CEO	Chief Executive Officer
CHF	Swiss francs
DCA	Development Credit Agreement
DRP	Disaster Response Product
GIC	Guaranteed Indemnity Contribution
dzud	extreme weather conditions causing widespread livestock mortality
FA	Financing Agreement
FIRST	Financial Sector Reform and Strengthening Initiative
FRC	Federal Regulatory Mission
GAFSP	the Global Agriculture and Food Security Program
GCC	Government Catastrophic Coverage
GDP	Gross Domestic Product
GoM	Government of Mongolia
IBLI	Index Based Livestock Insurance
IBLIP	Index-based Livestock Insurance Project
IDA	International Development Association
IFAD	International Fund for Agricultural Development
IE	Impact Evaluation
IPF	Indigenous Peoples Planning Framework
KPI	Key Performance Indicators
LAMP	Livestock and Agricultural Marketing Project
LIP	Livestock Insurance Indemnity Pool
LRI	Livestock R Insurance
M&E	Monitoring and Evaluation
MIS	Management Information Systems
MoFA	Ministry of Food and Agriculture
MoF	Ministry of Finance
MNT	Mongolian Tugrik
NSO	National Statistics Office

NDVI	Normalized Differentiated Vegetation Index
NGO	Non-Government Organization
PAD	Project Appraisal Document
PDO	Project development Objective
PHRD	Policy and Human Resources Development Fund (Government of Japan)
PIU	Project Implementation Unit
PIM	Project Implementation Manual
PPA	Promotion and Public Awareness
PIU	Project Implementation Unit
PRM	Pastoral Risk Management
PRSP	Poverty Reduction Strategy Paper
SDC	Swiss Agency for Development and Cooperation
SDR	Special Drawing Rights
SLP	Sustainable Livelihoods Project
Sum	Rural district
TF	Trust Fund
USD	United States Dollars
UNDP	United Nations Development Program
USAID	United States Agency for International Development
WB	World Bank

Vice President: Victoria Kwakwa

Country Director: Bert Hofman

Country Manager: James Anderson

Sector Manager: James Seward

Project and ICR Team Leader: Stephane Forman

ICR authors: Barry Patrick Maher and Ghada Elabed

**MONOLIA  
INDEX-BASED LIVESTOCK INSURANCE PROJECT**

**TABLE OF CONTENTS**

**Data Sheet**

- A. Basic Information
- B. Key Dates
- C. Ratings Summary
- D. Sector and Theme Codes
- E. Bank Staff
- F. Results Framework Analysis
- G. Ratings of Project Performance in ISRs
- H. Restructuring
- I. Disbursement Graph

**Contents**

1. Project Context, Development Objectives and Design.....	1
2. Key Factors Affecting Implementation and Outcomes .....	8
3. Assessment of Outcomes .....	18
4. Assessment of Risk to Development Outcome.....	299
5. Assessment of Bank and Borrower Performance .....	30
6. Lessons Learned .....	322
Annex 1. Project Costs and Financing.....	35
Annex 2. Outputs by Component .....	37
Annex 3. Economic and Financial Analysis .....	49
Annex 4. Bank Lending and Implementation Support/Supervision Processes .....	58
Annex 5. Impact evaluation Summary .....	60

**MAP**

**Text Boxes, Tables and Figures**

Figure 1 Evolution of the number of insured herders.....	12
Figure 2: Premium collected and loss experience.....	13
Figure 3: Impact of purchasing IBLI on post dzud herd sizes.....	21

<b>A. Basic Information</b>			
Country:	Mongolia	Project Name:	MN-Index-Based Livestock Insurance
Project ID:	P088816	L/C/TF Number(s):	IDA-40690,IDA-46870,TF-13074,TF-54740,TF-94002,TF-94827, TF 53738, FIRST
ICR Date:	09/30/2016	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	GOVERNMENT OF MONGOLIA
Original Total Commitment:	\$7.75 million equivalent	Disbursed Amount:	\$13.01 million equivalent
Revised Amount:	\$20.58 million equivalent		
<b>Environmental Category: C</b>			
<b>Implementing Agencies:</b> Ministry of Finance			
<b>Co-financers / Other External Partners:</b> Swiss Agency for Development, Republic of Korea			

<b>B. Key Dates</b>				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	07/20/2004	Effectiveness:	09/01/2005	09/01/2005
Appraisal:	03/21/2005	Restructuring(s):		June 2008 03/12/2008 07/17/2009 02/24/2010 03/30/2012 08/29/2013
Approval:	05/26/2005	Mid-term Review:	10/06/2008	10/09/2007
		Closing:	06/30/2010	03/31/2016

<b>C. Ratings Summary</b>	
<b>C.1 Performance Rating by ICR</b>	
Outcomes:	IBLIP- pilot: Highly Satisfactory IBLIP- AF: Highly Satisfactory Overall rating: Highly Satisfactory
Risk to Development Outcome:	Substantial
Bank Performance:	Satisfactory
Borrower Performance:	Satisfactory

<b>C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)</b>			
<b>Bank</b>	<b>Ratings</b>	<b>Borrower</b>	<b>Ratings</b>
Quality at Entry:	Highly Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory
<b>Overall Bank Performance:</b>	Satisfactory	<b>Overall Borrower Performance:</b>	Satisfactory
<b>C.3 Quality at Entry and Implementation Performance Indicators</b>			
<b>Implementation Performance</b>	<b>Indicators</b>	<b>QAG Assessments (if any)</b>	<b>Rating</b>
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Satisfactory		
<b>D. Sector and Theme Codes</b>			
		<b>Original</b>	<b>Actual</b>
<b>Sector Code (as % of total Bank financing)</b>			
Central Government		14	14
Insurance and Pension		20	20
Other Agriculture, Fishing and Forestry		66	66
<b>Theme Code (as % of total Bank financing)</b>			
Natural disaster management		24	24
Other Private Sector Development		13	13
Other social development		25	25
Regulation and competition policy		13	13
Rural services and infrastructure		25	25
<b>E. Bank Staff</b>			
<b>Positions</b>	<b>At ICR</b>	<b>At Approval</b>	
Vice President:	Victoria Kwakwa	Jemal-ud-din Kassum,	
Country Director/Manager:	Bert Hofman/James Anderson	David R. Dollar	
Practice Manager/Manager:	James Seward	Hoonae Kim	
Project Team Leader:	Stephane Forman	Nathan M. Belete	
ICR Team Leader:	Stephane Forman		
ICR Primary Authors :	Barry Maher and Ghada Elabed		

## F. Results Framework Analysis

### Project Development Objectives (from Project Appraisal Document)

To ascertain the viability of Index Based Livestock Insurance in Mongolia to reduce the impact of livestock mortality for herders' livelihoods through (i) developing and testing a pilot Index-Based Livestock Insurance Program in Selected Aimags; and (ii) building the institutional capacity and legal and institutional framework for the prospective replication and scale-up of said pilot Index Based Livestock Insurance Program nationwide.

### Revised Project Development Objectives (as approved by original approving authority)

To ascertain the viability of Index Based Livestock Insurance in Mongolia to reduce the impact of livestock mortality for herders' livelihoods through: (i) scaling up Index Based Livestock Insurance Program in Selected Aimags; and (ii) building the institutional capacity and legal and institutional framework for the sustainability of the Index Based Livestock Insurance Program.

#### (a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
<b>Indicator 1:</b>	Insurance sector indicates its intention to continue to offer IBLI products beyond the lifetime of the project			
Value quantitative or Qualitative	None, as this product does not exist	At least two local insurance companies participate in the program.		All 7 participating insurance companies have agreed to continue with the program
Date Achieved	2-May-2005			31-March-2016
Comments (inclu.% achievement)	This target was surpassed (350%)			
<b>Indicator 2:</b>	Government commitment to IBLI demonstrated by adoption of enabling legislation			
Value quantitative or Qualitative	no legislation	New law passes		Law Passed
Date Achieved	--			June 13, 2014
Comments (inclu.% achievement)	<b>This target was surpassed.</b> IBLI Law passed by Parliament on June 13, 2014 - that provided the legal basis for the establishment of the Agriculture Reinsurance Joint Stock Company (registered by the General Authority for State Registration on September 26, 2014 under the Company Law of Mongolia).			

#### (b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
<b>Indicator 1:</b>	Number of insurance companies participating in IBLIP			
Value quantitative or Qualitative	0	4		7
Date Achieved	2-May-2005			31- Mar-2016
Comments (inclu.% achievement)	This target was surpassed (175%)			
<b>Indicator 2:</b>	% of total soums in selected aimags offering IBLI			
Value quantitative or Qualitative	0%	90%		100%
Date Achieved	18-Jan-2010			31- Mar-2016
Comments (inclu.% achievement)	<b>This target was surpassed (111%).</b> 330 soums of 21 aimags.			
<b>Indicator 3:</b>	% of herders in contact with insurance agents offering LRI			
Value quantitative or Qualitative (Initial PDO)	0%	60%		68%
Date Achieved	2-May-2005			18-January-20109
Value quantitative or Qualitative (Additional finance PDO)	68%	60%		46%
Date Achieved	18-Jan-2010			31- Mar-2016
Comments (inclu.% achievement)	<b>This target was not met (76%).</b> For pilot Aimags where the project started 85% was achieved, whereas it was less than 50% in Aimags added in second phase, which reflects challenges with awareness raising in all 21 Aimags.			
<b>Indicator 4:</b>	Participating insurance companies provide contractual payments into LIIP and LRI reserves as contractually required.			
Value quantitative or Qualitative	0	100		100
Date Achieved	2-May-2005			31- Mar-2016

Comments (inclu.% achievement)	<b>This target was fully achieved (100%).</b> About MNT 614 million (45% of total gross premium) was deposited in the LIIP account in 2014, and MNT 245 million (18%) was allocated to the LRI Reserve account.			
<b>Indicator 5:</b>	% of due indemnity payments distributed to soum-level institutions (banks, etc.).			
Value quantitative or Qualitative	0	100		100
Date Achieved	2-May-2005			31-Mar-2016
Comments (inclu.% achievement)	<b>This target was fully achieved (100%).</b> MNT 40,553,678 in 2014			
<b>Indicator 6:</b>	% of due indemnity payments received by herders.			
Value quantitative or Qualitative	0%	100%		100%
Date Achieved	2-May-2005			31-Mar-2016
Comments (inclu.% achievement)	<b>This target was fully achieved (100%).</b> MNT 278,880,220 was paid out during project.			
<b>Indicator 7:</b>	% of herders in the selected area aware of the products			
Value quantitative or Qualitative	0%	80%		85.3%
Date Achieved	2-May-2005			31-Mar-2016
Comments (inclu.% achievement)	<b>This target was surpassed (107%).</b> The percentage goes up to 95.5% of herders in the 4 pilot aimags selected at the project's start.			
<b>Indicator 8:</b>	% of herders in the pilot area receiving information from project public awareness activities			
Value quantitative or Qualitative	0%	50%		56%
Date Achieved	2-May-2005			31-Mar-2016
Comments (inclu.% achievement)	<b>This target was surpassed (112%).</b>			
<b>Indicator 9:</b>	Regulations for IBLI drafted.			
Value	Not drafted	Drafted		Adopted

quantitative or Qualitative				
Date Achieved	18-Jan-2010			31-Mar-2016
Comments (inclu.% achievement)	<b>This target was surpassed (IBLI law adopted)</b>			
<b>Indicator 10:</b>	Number of soums where cost effective new methods for NSO livestock data collection and statistics introduced			
Value quantitative or Qualitative	0	200		330
Date Achieved	18-Jan-2010			31-Mar-2016
Comments (inclu.% achievement)	<b>This target was surpassed (165%).</b> Nationwide (330 soums from 21 Aimags + UB 9 districts). This has been fully institutionalized and is being undertaken yearly now, without project support anymore.			

### G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (USD millions)
1	11/04/2005	Satisfactory	Satisfactory	0.15
2	12/29/2006	Satisfactory	Satisfactory	0.81
3	01/15/2008	Satisfactory	Satisfactory	1.30
4	10/20/2008	Satisfactory	Satisfactory	1.95
5	01/20/2010	Satisfactory	Satisfactory	2.67
6	12/29/2010	Satisfactory	Satisfactory	4.81
7	03/29/2012	Moderately Satisfactory	Moderately Satisfactory	6.13
8	04/22/2013	Moderately Satisfactory	Moderately Satisfactory	7.64
9	06/07/2013	Satisfactory	Satisfactory	7.96
10	12/14/2013	Satisfactory	Satisfactory	8.68
11	06/22/2014	Satisfactory	Satisfactory	9.49
12	12/05/2014	Satisfactory	Satisfactory	9.91
13	06/08/2015	Satisfactory	Satisfactory	10.19
14	12/11/2015	Satisfactory	Satisfactory	10.53
15	03/22/2016	Satisfactory	Satisfactory	10.53

## H. Restructuring (if any)

Restructuring Dates	Board Approved PDO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		DO	IP		
Level 2 June 2008	No	S	S	XDR 0.87M	Allowed completion of a 4th insurance cycle and addition of a fourth Aimag; extension of closing date to 06/30/2011
Level 2 March 12, 2009	No	S	S	XDR 1.28M	took over FIRST which disbursed US\$0.25m then was cancelled for administrative reasons; AF of SDC US\$0.61 m
Level 2 July 17, 2009	No	S	S	XDR 1.28M	TA for project scale-up; AF from Korean TF US\$0.7m
Level 1 February 24, 2010	Yes	S	S	XDR 1.75M	Upscale to whole country - See components description (section 1.5 and 1.6); AF from IDA US\$10m; extension of closing date to 03/31/2014; change in PDO (see section 1.2 to 1.6)
Level 2 March 30, 2012	No	MS	MS	\$8.45m	Added analytical activities including Impact Assessment; New expenditure category to allow IDA Credit to pay for GoM reinsurance premium on the market ; AF from SDC of US\$1.45m
Level 2 August 29, 2013	No	S	S	\$10.83m	DCA amended to allow: (i) establish equalization reserve, (ii) indemnity payments to be done by insurers rather than PIU, and (iii) master policies to be developed between insurers and financial institutions; extension of closing date to March 31, 2016.

## I. Disbursement Profile

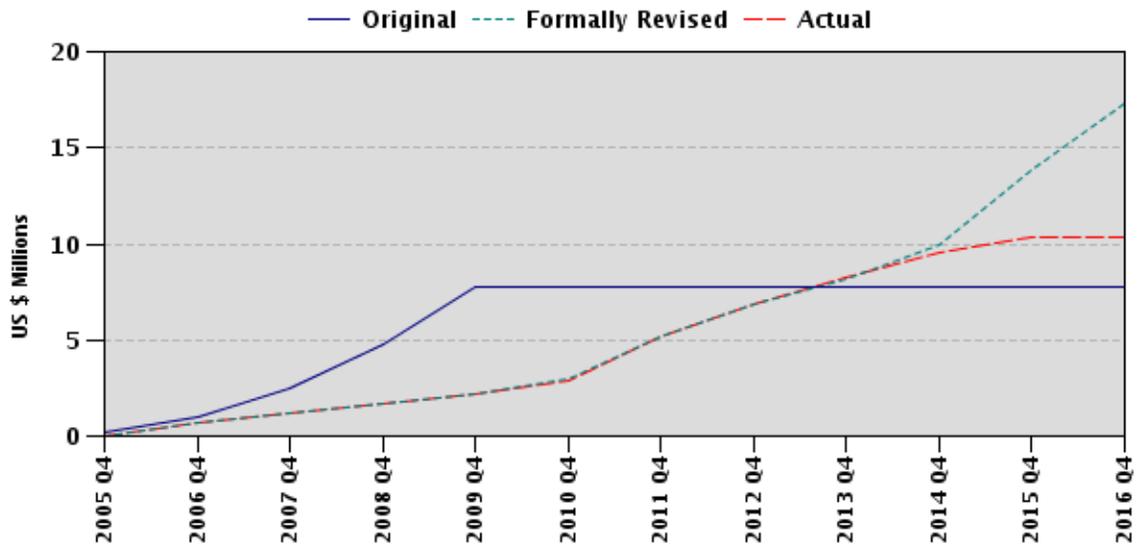


Table XX: Commitments and Disbursement summary

Net commitment (USD millions)		Total Disbursed	% Disbursed
IDA	11.25	10.43	91.91%
TF	2.67	2.67	100%
Total	13.92	13.01	93.46%

# 1. Project Context, Development Objectives and Design

## 1.1 Context at Appraisal

1. At appraisal, the agricultural sector played a central role in the new market-based Mongolian economy. With the end of the socialist period in 1990, Mongolia began dismantling the command economy and establishing a framework of laws, policies, and institutions to support a market-based system. In the wake of this transition, agriculture contributed around one third of Gross Domestic Product (GDP), and the undiversified economic base was completed by copper and gold mining, a small manufacturing sector, and the services and trading sector.

2. At the time, the agricultural sector was dominated by livestock husbandry, which had an 87 percent share of agricultural GDP and supported at least half the population. Livestock provided rural households with an important source of income, jobs and food security, and a means for investing and storing their wealth. The importance of livestock to the livelihoods of poor rural households has increased in the years preceding the appraisal with the shift from collectivized farming to family-based herding during the 1990s: the number of herding households doubled between 1990 and 1997.

3. Livestock herders and their families made up a large percentage of the poor in Mongolia, and were (and still are) vulnerable to *dzuds*. Eighty percent of the herders had less than 200 animals at appraisal. Herd sizes need to be greater than 200 to sustain a family at a reasonable level of income. However, severe climatic events often caused high rates of livestock mortality, jeopardizing rural livelihoods. In particular, the frequent droughts and severe winters/springs (known as *dzuds*) can devastate herd numbers. During the period between 1999 and 2002, immediately preceding the project, one third of the national herd was lost in successive *dzuds*. Over 10,000 households lost all their livestock, while the herd size of the others fell below sustainable levels. The impact was felt throughout the economy, with of economic value of dead animals for these three years exceeding \$US 200 million.

4. While the government's sectoral reform and livestock risk management policies can be effective for less extreme risks, they were ineffective against severe *dzud* events. The Government of Mongolia had prioritized the development of the livestock sector and, with support from donors, was introducing a program of sectoral reform, including support for improved pastoral risk management (PRM). Improved PRM, coupled with existing government activities to mitigate the impact of *dzuds*, for example through the distribution of hay and fodder reserves, can be effective to lower livestock mortality in less extreme *dzud* events. However, such measures are ineffective against more severe weather events, and cannot prevent high levels of mortality. In such instances, herders have to rely upon traditional informal coping mechanisms and *ad hoc* and unpredictable support from Government and international agencies (Goodland et al. 2009). A study by DWI showed that children who were exposed to the 2009/10 *dzud* as infants experienced permanent stunting, when compared to those who didn't experience the *dzud*. After *dzud*, restocking is the most important goal for herders (Goodland et al. 2009).

5. Insurance was a logical complement to risk management activities at the time of appraisal, but faced historical challenges. Although insurance is recognized as a key element of risk mitigation, the conventional approach to livestock insurance (based on individual losses) was ineffective in Mongolian conditions, with multiple failed attempts to introduce livestock insurance. It suffered from moral hazard—individual herders did not have an incentive to manage their herds so as to minimize the impacts of *dzuds* as they received payouts based on their individual losses— with high claims verification costs. Given the scale of the disasters during 1999 to 2002, it was clear that government needed to develop a market-based approach, which would share risks between herders, the insurance industry, and government. Involving the insurance industry, operating on a commercial basis, had the potential to improve the financial sustainability of livestock insurance and could contribute to strengthening the rural finance sector, which was a key element in Government strategy for rural economic diversification at the time. The domestic insurance was immature, undercapitalized and highly concentrated at appraisal, but the new Insurance law passed in 2004 provided an opportunity for Mongolia to strengthen the insurance industry through improved regulation and should be capitalized.

6. **The proposed insurance approach to be piloted was unprecedented.** Losses were based on an index not linked to the *dzud* event itself, but to livestock mortality. It combined self-insurance, market-based insurance and social insurance. Herders retain small losses that do not affect the viability of their business, while larger losses are transferred to the private insurance industry and only the final layer of catastrophic losses is borne by the government. The insurance would pay out to individual herders whenever the mortality rate in the local district (*soum*) exceeded a specific threshold. Key to the approach is the availability of good data to develop an appropriate index, and through the National Statistics Office (NSO), at appraisal, Mongolia had a 33-year time series on adult animal mortality that is available for all *soums* and for the four major species of animals (cattle and yak, horse, sheep, and goat). This data had the potential to provide the basis for developing actuarial information. Importantly, the index-based approach provides strong incentives to individual herders to continue to manage their herds so as to minimize the impacts of major livestock mortality events (as individual herders receive an insurance pay-out based on regional mortality, irrespective of their individual losses).

### **Rationale for Bank engagement**

7. The project was consistent with the World Bank (WB) mission and the Government of Mongolia (GoM) objective at appraisal of reducing poverty. The effects of *dzud* and consequent high levels of livestock mortality had a major impact on rural poverty. The latest survey at appraisal, published in 2004, showed that in the last few years the percentage of rural poverty had increased, to 43.2 percent, and exceeded the 31.2 percent level of urban poverty. This was a reversal of the situation before the recent *dzuds* when urban poverty was greater than rural poverty. Therefore, by mitigating the socio-economic impact of livestock losses due to *dzud*, the project would contribute to poverty reduction. There is also a strong rationale for supporting GoM manage the impact of *dzuds* to defend development gains, with strong evidence showing that *dzuds* cause large shocks to the GoM budget, and that they can cause malnutrition and stunting in children.<sup>1</sup>

---

<sup>1</sup> Groppo and Schindler (2014)

8. The project built on the WB operational portfolio in Mongolia. At the time of appraisal, the commercial insurance sector in Mongolia did not have the technical resources to develop an innovative product. The introduction of an entirely new product, such as the one proposed would not be undertaken without external support. The WB had global experience of innovative approaches to insurance for catastrophic events and therefore was well positioned to support this project. Examples with relevant elements include crop insurance in India and Mexico.

9. The project was also part of a broad strategy on PRM. It was an offshoot of the IDA-funded Sustainable Livelihoods Project (SLP), which encompassed a package of initiatives including participatory grazing and pasture management, support to herder self-help groups and support to the hay and fodder enterprise development. The project became an integral part of the SLP and filled an important gap in the PRM activities, supporting herding households and the development of the livestock sector.

10. Donors such as the International Fund for Agriculture Development (IFAD), the United Nations Development Program (UNDP) and United States Agency for International Development (USAID under the Gobi Initiative) were supporting projects with similar objectives to the SLP in other aimags. A successful pilot of index-based livestock insurance with the possibility of subsequent extension to a national basis would, therefore, support other donor initiatives for the development of the extensive livestock sector.

11. The project was consistent with the Country Assistance Strategy (CAS), approved just before the appraisal, which contained the objective of reducing rural vulnerabilities. At appraisal, the CAS stated that the WB will continue to pursue innovative approaches to reduce rural vulnerability. Since the effects of *dzud* and consequent high levels of livestock mortality have had a major impact on rural poverty, strengthened measures were required to mitigate them. The expectation was that insurance had the potential to mitigate these negative impacts.

## 1.2 Original Project Development Objectives (PDO) and Key Indicators

12. The project Development Objective (PDO) as stated in the Development Credit Agreement was to “ascertain the viability of Index Based Livestock Insurance in Mongolia to reduce the impact of livestock mortality for herders’ livelihoods through (i) developing and testing a pilot Index-Based Livestock Insurance Program in Selected Aimags; and (ii) building the institutional capacity and legal and institutional framework for the prospective replication and scale-up of said pilot Index Based Livestock Insurance Program nationwide.”<sup>2</sup>

13. The Project Appraisal Document (PAD) states the key indicators as follows. **PDO indicator one:** the insurance sector indicates its intention to continue offering Index-based Livestock Insurance (IBLI) products beyond the lifetime of the project, which will be influenced by these indicators: (i) by the end of the pilot, the government has expressed its commitment to IBLI through adopting enabling legislation; (ii) the percentage of herders who have purchased

---

<sup>2</sup> Note that the PDO as stated in the PAD uses slightly different wording.

the base insurance product (BIP) during the pilot is 3 % in YR1, 4% in YR2 and 5% in YR3; (iii) by the end of the project, mechanisms for transferring risk out of the country have been identified; and (iv) during each insurance cycle under the Project, between 2 to 6 local insurance companies have participated in IBLIP.

14. **PDO indicator two:** the Government indicates its commitment to continuing the Disaster Response Product (DRP) after the lifetime of the project, which will be influenced by (i) the percentage of herders who have participated in DRP during the pilot is 3 % in YR1, 4% in YR2 and 5% in YR3; (ii) DRP was effective in providing targeted support to herders after a *dzud* event; and (iii) by the end of the pilot, the Government has adopted an appropriate enabling institutional framework for the DRP.

### **1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/ justification**

15. Additional financing was provided to scale up the IBLI pilot. After four years of successful implementation of the pilot (including a one-year closing date extension and the adding of a fourth *aimag* as explained in paragraph 19 below), the Board approved additional financing (AF) in the amount of SDR6.3 million (US\$10 million). The main changes were (i) broadening the PDO to include building the institutional capacity and legal and institutional framework for the sustainability of the program; (ii) scaling up the project from four aimags to include all the 21 Mongolian aimags; (iii) introducing the Government Catastrophic Coverage (GCC); and (iv) extending the closing date from June 30, 2011 to March 31, 2014. In addition, due to low uptake of the DRP, it was agreed with Government to discontinue this product.

16. To reflect these changes, the PDO was amended as follows: *“To ascertain the viability of Index Based Livestock Insurance in Mongolia to reduce the impact of livestock mortality for herders' livelihoods through:(i) scaling up Index Based Livestock Insurance Program in Selected aimags; and (ii) building the institutional capacity and legal and institutional framework for the sustainability of the Index Based Livestock Insurance Program.”*

17. At the time of the AF, the key indicators changed to reflect the focus on scaling up. By the project’s closure, if successful, the elements would be in place for the BIP to continue to be offered to herders nationwide. The PDO indicator one remained the same as in the original credit, but PDO indicator two concerning DRP and the corresponding set of indicators were dropped as DRP would be discontinued.

18. One of the intermediate indicators from component 3 “Cost effective new methods for NSO livestock data collection and statistics tested”, was replaced by “Number of soums implementing cost effective new methods for NSO livestock data collection and statistics”. No other new key indicators were added. Target values in the Results Monitoring framework have been updated. All other indicators remain valid. Table 1 summarizes the different changes in the indicators.

Original Indicators (as in	KPI?	Revised Key Performance Indicators (as in	Reason for change
----------------------------	------	---	-------------------

<b>IBLI-pilot)</b>		<b>IBLI-AF)</b>	
<b>PDO</b>			
Government's commitment to IBLI through adopting enabling legislation.		The target became to pass a new law in YR6	
Government's commitment to continuing the DRP after the lifetime of the project	Yes	This indicator was dropped	The DRP project would be discontinued
<b>Intermediate outcomes</b>			
Number of insurance companies participating in IBLIP	Yes	The annual target changed from 2-6 to 4 when AF was approved	
Percentage of total herders in pilot aimags purchasing BIP	Yes	The end of project target changed from 5% to 15% when AF was approved	
Percentage of total <i>soums</i> in selected aimags offering BIP	No	The end of project target changed from 80% to 90% when AF was approved	
Percentage of total herders in pilot aimags participating in DRP	Yes	Dropped	The DRP was discontinued for the project scale-up and extension
Participating insurance companies provide 100 percent of contractual payments into LIIP and Government BIP reserves when required.	No	Slightly modified to: participating insurance companies provide contractual payments into LIIP and LRI reserves as contractually required.	
Consistency between mid-year census and end of year census.	No	dropped	It became irrelevant since this activity ended by the approval of the AF.
Percentage of herders in the pilot area aware of the product	No	The end of project target changed from 75% to 80% when AF was approved	
Percentage of total herders in the pilot area receiving face to face information from project public awareness teams	No	% of herders in the pilot area receiving information from project public awareness activities	With the scale-up of the project, face to face activities have been phased out due to their cost.
Cost effective new methods for NSO livestock data collection and statistics tested	No	Changed to: Number of <i>soums</i> where cost effective new methods for NSO livestock data collection and statistics introduced	The new indicator was easier to measure than the original one.

**Table 1 Summary of the differences between the Original and Revised Key Performance Indicators (KPI)**

## **1.4 Main Beneficiaries**

19. **Original credit—IBLI-pilot.** The direct beneficiaries of component 1 were the herders in the three pilot aimags: Bayankhongor, Khentii, and Uvs (although shortly after approval they became 4 aimags, with the addition of Sukhbaatar aimag) for three consecutive seasons. In addition, the Project aimed to benefit participating insurance companies' staff and PIU through technical support for the training. Under component 2, the project would provide a range of

promotion and public awareness activities (PPA) targeted to herders and herder groups, livestock service providers such as veterinarians, parliamentarians, government officials, insurance companies, and commercial banks and other micro-finance institutions, NGOs and donor organizations. Under component 3, the project would provide institutional capacity building to NSO to strengthen its livestock data systems. It would also provide support for developing legal and regulatory framework in close collaboration with the Financial Regulatory Commission (FRC) and the Ministry of Finance (MoF). Under component 4, the M&E capacity of the PIU was strengthened.

20. **Additional financing—IBLI-AF.** The categories of direct beneficiaries were the same as under the pilot. In addition, all the herders in all of Mongolia became part of the direct beneficiaries as the scale up increased the number of beneficiary aimags from 4 to 21.

### 1.5 Original Components (as approved)

21. **The original credit (IBLI-pilot).** The original Project had five components intended to ascertain the viability of IBLI in Mongolia to reduce the impact of livestock mortality for herders. A detailed description of each component and the achieved outputs can be found in Annex 2.

22. *Component 1: Pilot Index-Based Livestock Insurance Programs (US\$6.32 million, including US\$5 for Contingent Debt Facility, or 65.6 percent of total Project cost with IDA contribution of US\$5.05)* sought to pilot the two IBLI products (DRP and BIP) by providing them to herders through insurance companies. Subcomponents were (i) livestock data collection (ii) IBLI software development; (iii) the provision of technical support for the training of Project Implementation Unit (PIU) and insurance company staff, together with the provision of essential materials; (iv) provision for and management of Contingent Debt Facility (CDF); and (v) pilot performance, review and refinement.

23. *Component 2: Promotion and Public Awareness Component (US\$0.89 million, or 9.2 percent of total Project cost with IDA contribution of US\$ 0.86).* Under this component, a range of PPA activities would be conducted to create awareness and educate key stakeholders on the details of the insurance product and the IBLI pilot. Subcomponents were: (i) identification of stakeholder public awareness needs and concerns; (ii) preparation and circulation of promotional materials. (iii) Face to face education of key local stakeholders and clients/beneficiaries; (iv) Radio and TV programs, (V) National and provincial workshops; and (VI) Inter-soum and aimag exchange visits.

24. *Component 3: Institutional Capacity Building Component (US\$0.65 million or 6.7 percent of total Project cost with all contribution from Japan PHRD Grant, and the FIRST Initiative Grant).* This component aimed to support the establishment of the institutional framework and capacity necessary for the potential expansion of the insurance products following demonstration of the viability of the concept. Under this component, the project would support (i) strengthening livestock data systems; (ii) developing legal and regulatory framework; and (iii) Examining options for nationwide expansion of IBLI.

25. *Component 4: Monitoring and Evaluation (M&E) Component (US\$0.27 million, or 2.8 percent of total Project cost with IDA contribution of US\$ 0.20).* This component sought to

follow and involve a range of stakeholders during the pilot program to track access by different social groups, to monitor responses to the new products and to determine if and how herders modify their behavior. Key elements were (i) a baseline survey; (ii) Annual field-based monitoring, (iii) Impact assessments; (iv) Post-event monitoring framework; and (v) M&E training and capacity building.

26. *Component 5: Project Management Component (US \$1.50 million, or 15.6% of total Project cost with IDA contribution of US\$1.39).* This component aimed at providing support to the PIU to enable it to function effectively and provide adequate management for the implementation of the project.

## **1.6 Revised Components**

27. **Additional Financing (AF).** The AF, approved by the Board on February 24, 2010, aimed to scale up the project and to extend the closing date from June 30, 2011 to March 21, 2014. The component titles of the project were unchanged, albeit with slight modifications. Within the components, there were modifications to reflect: (i) simplification of design and discontinuation of DRP; (ii) enhancement of likely sustainability through scaling back or redesigning support activities; (iii) and greater emphasis on institutional capacity and institutional and legal framework for sustainability, reflecting the shift from piloting to scale-up. The changes are summarized below (see also Annex 2).

28. *Component 1: Pilot Index-Based Livestock Insurance Programs (US\$11.348 million, including US\$11.348 CDF).* This remained the core component of the project, under which support was provided to the scaling up of the insurance. In addition to the activities undertaken under the pilot, substantial changes were introduced: (i) separating the commercial insurance from DRP; (ii) introducing the GCC; (iii) adding more aimags (from 4 aimags to 9 aimags in 2010, if successful adding an additional 6 aimags in 2011, and if reinsurance or additional contingency funds can be secured, adding the final six aimags in 2012.); and (iv) shifting from annual mid-year censuses as the basis for calculating livestock mortality to introducing sample based surveys.

29. *Component 2: Promotion and Public Awareness Component (US\$0.962 million).* Continue as per the pilot with the main change being the scaling back of face-to-face education due to their high cost and their logistical complexity for 21 aimags covered.

30. *Component 3: Institutional Capacity Building Component (US\$0.675 million).* This component would continue to provide support for capacity building of key public institutions that play a key role in implementation. Additions to the pilot activities include: (i) development of a livestock insurance law; and (ii) capacity building to FRC in developing an appropriate regulatory framework for IBLI.

31. *Component 4: Monitoring and Evaluation (M&E) Component (US\$0.395 million).* This component remained unchanged.

32. *Component 5: Project Management Component (US\$2.027 million).* This component remained unchanged.

## 1.7 Other significant changes

33. The original project (total: US\$9.88 million) was approved on May 2, 2005 with a closing date of June 30, 2010 and three main sources of funds: (i) IDA (US\$7.75m), (ii) Financial Sector Reform and Strengthening Initiative (FIRST - US\$0.56m), and (iii) Japanese Policy and Human Resources Development Fund (PHRD - US\$1.32m). It then went through a series of restructuring to allow interested partners to co-finance it, extend closing dates when necessary and bring changes and adjustments required as the project was progressing. These changes are summarized in the following table.

Table 2: Components' financing

Component	Original Financing (US\$ million)	Final Financing (US\$ million)
Component 1:	6.32	12.79
Component 2	0.89	0.96
Component 3:	0.65	0.67
Component 4	0.27	0.39
Component 5:	1.5	2.02

Table 3: project's restructurings

Restructuring level and date	Changes in PDO and KPI	Additional Financing	Extension of closing date	Other changes
Level 2 June 2008	No	No	Yes June 30, 2011	Allowed completion of a 4 <sup>th</sup> insurance cycle and addition of a fourth Aimag
Level 2 March 12, 2009	No	Yes SDC US\$0.61m	No	No (took over FIRST which disbursed US\$0.25m then was cancelled for administrative reasons)
Level 2 July 17, 2009	No	Yes Korean TF US\$0.7m	No	TA for project scale-up
Level 1 February 24, 2010	Yes (see section 1.2 to 1.6)	Yes IDA US\$10m	Yes March 31, 2014	Upscale to whole country - See components description (section 1.5 and 1.6)
Level 2 March 30, 2012	No	Yes SDC US\$1.45m	No	Added analytical activities including Impact Assessment New expenditure category to allow IDA Credit to pay for GoM reinsurance premium on the market
Level 2 August 29, 2013	No	No	Yes March 31, 2016	DCA amended to allow: (i) establish equalization reserve, (ii) indemnity payments to be done by insurers rather than PIU, and (iii) master policies to be developed between insurers and financial institutions.

## 2. Key Factors Affecting Implementation and Outcomes

## 2.1 Project Preparation, Design and Quality at Entry

34. *Part of broader livestock risk management strategy.* The project represented one component of the broad livestock risk management strategy of the GoM. It focused on the financial vulnerability of herders to *dzud* events, where other projects, such as the SLP, and the Livestock and Agricultural Marketing Project (LAMP), focused more on risk reduction and value chain enhancement activities. This meant that the project was designed in a framework that was mutually reinforcing, and not in isolation.

35. *High quality data on livestock mortality.* Unlike many of its developing country peers, Mongolia had an extensive data set on livestock mortality with over thirty years of historical values. With no taxes on head of livestock, there are no incentives to underreport, and hence the livestock databases are of relatively high quality. Having high quality data is critical for insurance, as actuaries need it to calculate premiums and capital. This database readily available enabled the early attraction of private sector insurers, which was a key design feature.

36. Other factors that led to the success of the project, and Mongolia to become an international leader and innovator in the area of index based livestock insurance (IBLI), were gained from: (i) Mongolia's experience in (a) failing to introduce standard livestock insurance products, and (b) responding to *dzuds* before the project (paragraph 3); (ii) a robust country-led program with strong government commitment and WB senior management's support despite the high risk and innovative nature of the concept; (iii) coordinated engagement of all partners, inside the Bank with a cross-sectoral team mobilized bringing deep expertise in the areas of index insurance and livestock, and outside with support from several partners; (iv) emphasis on good communications and strong co-ordination between MoF, the Ministry of Agriculture, the Ministry of Justice and the FRC to ensure a consistent messaging and buy-in from stakeholders; and (vii) the constitutional grounds for government to support the livestock sector.

37. *Project design.* IBLI was a new and innovative concept, so the project built on international best practice when developing large scale insurance programs, and amended such practice to Mongolian context. WB provided substantial technical support in the design of the program. This drew lessons from international best practice in USA, Mexico and India where large scale programs have been established from crop. A public private partnership approach was adopted, based on the experience that all successful large scale insurance programs have active involvement from the public and private sector. In the initial phases, the project was rolled out on a pilot basis with the objective of giving confidence to the private sector and incentivize future engagement, while consulting it on key IBLI features. As the FRC didn't exist during project design, and IBLI was an innovative product, initially a separate license was required by agents who wished to sell IBLI. This gave the PIU more control over the training of the agents, and enabling high capacity at the agent level, which is critical as they are the people who interface with the herders. The design of the project, given its innovative nature, was awarded the Golden Plough award from the WB.<sup>3</sup>

---

<sup>3</sup> The Golden Plough award is a prestigious award for innovative project designs.

38. The DCA was prescriptive in the design. The project preparation team realized there was a strong rationale for having the DCA much more descriptive, and so they adopted a difficult but necessary path of writing the agreement in more detail. The reasons for this were: (i) the WB designed and deployed an innovative CDF to provide reinsurance protection to the government, and wanted to ensure the disbursement conditions of the CDF would be linked to herders; (ii) the insurance industry was in its infancy, so conditions were clearly documented on premium collection and claims payment to ensure confidence could be built in the project with proper audit trails and grievance mechanisms, and; (iii) there was minimum legislation and regulation in place, thus the higher need to be prescriptive in the documents. The down side of a prescriptive DCA is that if any changes were necessary as the project evolved during implementation, a restructuring would be required (of which there were several).

39. **Appropriate project components.** The project was designed with five key components, which were mutually reinforcing. Looking at each in turn:

- i. Pilot IBLIP:* this component focused on developing a strong value proposition, to herders to encourage them to purchase IBLI products and to the private sector to encourage them to engage with and sell IBLI. It supported the development of actuarially fair pricing for risk to ensure sustainability in the long term; a sound insurance risk management practice through using the CDF to finance the costs of extreme risks; the establishment of a risk pool which was used to share risk and encourage private sector to join; recognizing that affordability will be a challenge for some herders and so included the DRP as a more affordable option to pilot; the need to start with a pilot approach to test the viability; payments were made directly to herders so the project team could control the finances; developed a systems to track funds and paperwork to and from herder to build trust; the costs of selling and managing the insurance were separated from the cost of risk for insurance companies in terms of reporting which allowed insurance companies to understand and meet the cost of selling policies; a PIU office was set up in all aimags where IBLI was tested to support the sales process through education, M&E and capacity development, and; the selection of three different aimags for the pilot phase to test the viability, each with a different risk profile, which has the advantages of: (1) diversifying the risk for insurance companies, making the product more attractive; (2) it increases the chances of there being a claim, which experience shows is critical in initial years of pilot index insurance programs as clients need to see it actually paying out.
- ii. Promotion and Public Awareness component:* Index insurance is a complex product to understand, and a key challenge from international experience in the need to educate all parties (insurers, herders and governments) on how it operates, justifying a single component for it.
- iii. Institutional capacity building component.* Again given innovative nature, capacities needed development at the national, *aimag* and *soum* level. The PIU established a steering committee including all key ministries in government to ensure key stakeholders were part of the IBLI decision making process. In addition, several working groups were set up, including a legal working group (to draft key legislation and regulations), an accounting working group (to correctly register IBLI income and expenditures), and a public awareness working group (to effectively raise awareness) to draw on expertise from the Ministries of Finance, Agriculture, insurance companies, and FRC to tackle key challenges encountered in the project.

- iv. M&E:* There was a recognized high need for M&E given the innovative nature of the project leading to a dedicated M&E component. The key focus was on gathering indicators from field at the grass roots level, in addition to conducting surveys annually to refine and shape approach as project developed. Design of M&E was flexible to ensure it could change as pilot learns over time, which occurred during implementation, showcasing an excellent example of how M&E should be used, driving innovation and refinement in project over cycle.

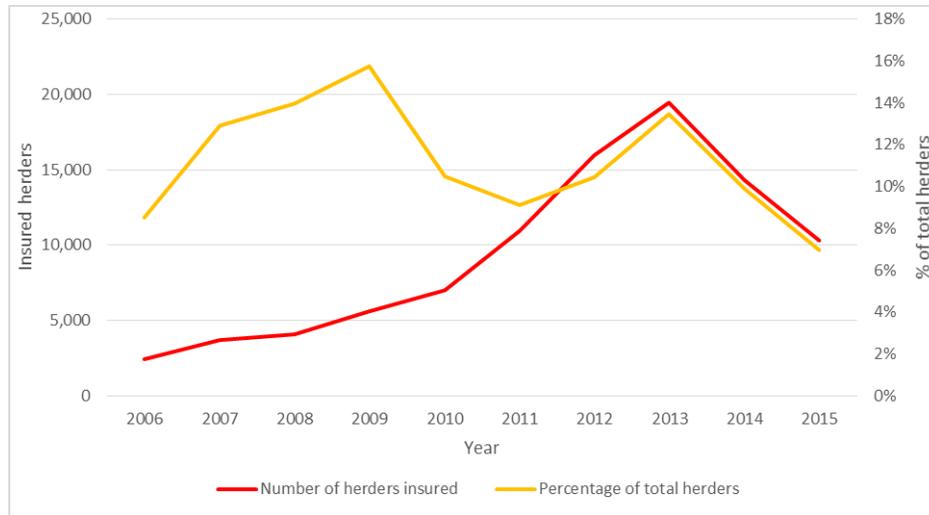
40. **Risk Assessment:** The major risks identified at appraisal included lack of participation of insurance companies, poor claims data, low take up of insurance policies, favorable weather conditions leading to no payouts during pilot phase (meaning that the herders would not see the insurance actually working and making payouts). These risks were relevant to national insurance programs in an environment of uneven capacity. The mitigation measures were appropriate and proved effective. For example, to minimize the risk to participating insurance companies, the project included a stop loss provision at 105% of the base premiums. Similarly, to obtain high quality claim data the project provided direct support to the NSO to undertake a June census and provided monitors from outside the census areas to check operational details of data collection. To ensure a sustainable demand for IBLI, the project provided an intensive promotion & public awareness campaign.

## 2.2 Implementation

41. Consistent strong implementation with innovation, contributing to country-wide results. The successive *dzuds* from 1999 to 2002, and their associated damage, galvanized the government to fully support the project throughout the ten years of implementation. The project continuously learnt from experience, amending and fine-tuning its approach (further details under 1): (i) sales method to herders changing from direct sales, to training of trainers with 11,000 people (although double-counting possible) attended training and 2,454 insurance agents licensed; (ii) managing extreme insurance risk changing from using the CDF to reinsurance protection to establishing an equalization reserve, and finally the balance sheet of the Agricultural Reinsurance (AgRe) company; (iii) distribution channels changing from direct sales to including herders who do not own the livestock but are responsible for its management<sup>4</sup> to group policies to intermediary sales, and; (iv) data, moving to higher quality and more rapidly collected data, which received the ultimate endorsement when reinsurance companies agreed to take on the livestock mortality risk with claims based on it. This innovating, learning and growing process of exemplary project implementation paid dividends, and can be witnessed through the solid performance of the project on the results indicators throughout the life of the project. The below graph shows number of herders insured, as well as % of total herders, throughout the life of the project.

---

<sup>4</sup> These herders are particularly vulnerable as they are often chosen because they do not own livestock but still bear responsibility in case of losses and have limited assets to buffer them against shocks. Expanding insurance to them was a key step in helping the most vulnerable manage risks.



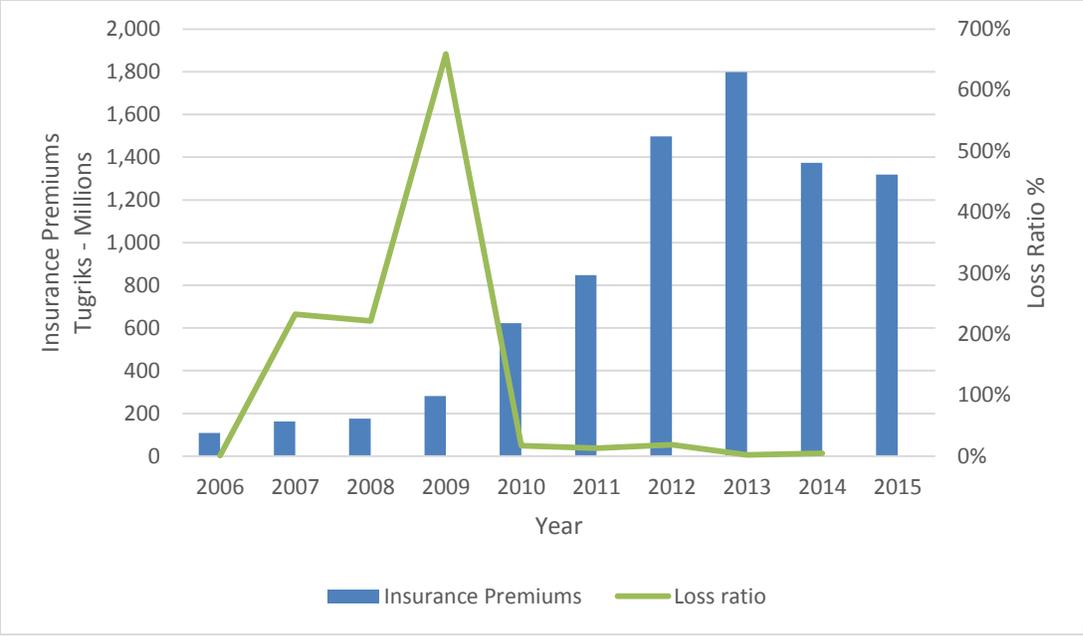
**Figure 1 Evolution of the number of insured herders<sup>5</sup>**

42. The DRP was discontinued. This was due to the fact that households who wishing to avail of the protection from the DRP needed to enter into a contract with an insurance agent and pay an administrative fee for the product. This process and fee proved to be high a hurdle for such households to vault, and so take up of this product was below sustainable levels. Thus, after successfully testing its viability, DRP was discontinued to enable the project team focus on the more successful BIP.

43. Strong engagement from both public and private sector throughout project: Project worked effectively with private sector, ensuring their sustained engagement and motivation throughout the ten years of the project. This was achieved by ensuring the private sector were involved in all key decision making steps (for example their agreement was sought for purchasing the stop loss reinsurance agreement), as well as other aspects of the project including agent training, and risk sharing arrangements. These steps that ensured strong engagement from the private sector are further described in paragraph 2of Annex 2, and positively impacted the project as evidenced from the results indicators (number of insurance companies participating), as well as the profitability of the business (participating insurance companies earned profit of c. 2 billion Tugriks (US\$100 million) between 2006 and 2015. This is reflected in the increases in the premiums collected, which grew by 28% per year on average over the life of the project (see Figure 2 below).

---

<sup>5</sup> Note – for the % of total herders, the denominator is taken as the total number of herders in target Aimags. Thus, in 2010 with the scaling up of the project to an additional 6 Aimags, the denominator increased significantly as it includes the herders in the additional Aimags, and so the % drops. Since 2013, it should be noted that the number of herders insured has been declining, representing the challenges of selling IBLI to herders. Raising awareness and the long distances agents have to travel were highlighted as a key reason for decreasing sales, which became more challenging when the product expanded nationally. Ensuring these challenges will be address will be critical for the sustainability of the product going forward (more under Lessons Learnt below).



**Figure 2: Premium collected and loss experience**

44. *Response to 2010 Dzud.* The 2010 *dzud* impacted approximately 80% of the country territory and 97,500 households were affected. The losses to heads of livestock reached approximately 9.7 million with an estimated value of US\$477 million. Given the project was still in the pilot phase, it was operational in only four *aimags*. A payout of US\$1.3million was made to more than 4,000 households to offset financial losses. Despite these payouts (see loss ratio in **Figure 2**), not only did all insurance companies stay with the program displaying their confidence in the methodology used to calculate claims, three additional insurance companies joined. This event showed the insurance working for herders and provided an example to take to herders going forward when explaining the concept of insurance. In the *aimags* where large payouts were made, they in fact maintained the number of herders insured, even in recent years with low payouts (due to good weather), showing that a large loss event is important to retain policyholder. Finally, an impact assessment of the payouts demonstrated that in the *aimags* where large payouts were made, herd sizes recovered quicker (see impact evaluation summary in Annex 5. Impact evaluation Summary).

45. *International reinsurance deal executed.* A strong endorsement for the project was that after the 2010 *dzud*, the PIU managed to secure their first reinsurance deal, transferring the livestock risk out of the country for the first time and receiving a large vote in confidence in the premium collection and claims payment system from the international reinsurance industry. Securing reinsurance also enables the PIU to reduce the fee it charged insurance companies for participating in the IBLI program, as well as lowering their capital requirements for participating. This reduced the costs on insurers and so ensured they remained with the project during scale up.

46. *Support from donors.* Many donor partners support the project (see 33). Interviews were conducted with SDC, the largest donor partner (in terms of resources) who believed the project was well implemented. This was due to the high quality of the design of the project, and the

strong leadership of GoM, with support from technical experts in the World Bank, throughout implementation.

47. *Legal and institutional framework.* The project provided sustained support to the development of the legal and institutional framework to ensure the sustainability of IBLI in the long term. International insurance, legal and actuarial consultants were brought on mission to Mongolia to share international best practices for developing a sound legal and institutional framework for insurance programs. This culminated in the adoption of the IBLI Law in 2013, which made the product fully legal in Mongolia. The project further supported the development of the institutional framework with the founding of the AgRe company, a public sector reinsurance company with the mandate to manage BIP going forward, and sufficient capital to ensure sustainability in the mid-long term (see 3.4 Efficiency Rating: Highly Satisfactory).

### **2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization**

48. The M&E framework was designed in collaboration with the government and other stakeholders. The Result Framework (as detailed in Annex 3 of the PAD and Annex 2 of the AF) was overall well designed: each of the indicators was directly linked to a Project outcome, adequately measured progress towards the overall PDO, and the framework succeeded in measuring the direct outcomes of the Project. However, the intermediate outcome indicator “Cost effective new methods for NSO livestock data collection and statistics tested” that was in component 3 of the original credit was hard to measure. Therefore, the RF of the scaled-up project replaced it by “Number of soums implementing cost effective new methods for NSO livestock data collection and statistics”.

49. The original M&E plan encompassed: (i) The creation of a centralized M&E system for the IBLIP - Performance Management System (PMS), which relies on the RF, and is supported by a detailed Management Information System (MIS) with recruitment of an M&E specialist at PIU level, supported when required by international technical assistance, and (ii) Key activities supporting the MIS would be at the micro level (monthly and quarterly progress monitoring, and annual consolidated progress monitoring), at the macro level (Annual Field Based Monitoring (AFBM) and impact evaluation (IE) at the project midpoint and endpoint), and at special circumstances (post event monitoring, and ad hoc special studies). A baseline survey was undertaken. The survey covered 16 insurance companies, statistics offices of 3 aimags, 512 herding households and all sum administrations in 24 sums, in project and non-project aimags. In addition to collecting baseline indicators for the results framework, the findings of the baseline survey allowed the fine tuning of the project’s promotion and public awareness activities. For example, the baseline survey revealed that experienced herders were more reluctant to change their risk management strategies, and therefore, they were less willing to buy IBLI than their younger counterparts. This finding allowed the project’s team to tailor its public promotion strategy based on the beneficiary’s age.

50. *M&E implementation and use.* As explained in detail in Annex 2, M&E activities were successfully implemented. More importantly, findings played an instrumental role in refining the IBLI product, especially during the pilot phase. For instance, by documenting herders’ views on the pilot AFBM reports improved the understanding of the determinants of herder’s uptake of

IBLI. Similarly, post-event monitoring frameworks were successful at evaluating and tracking logistical aspects such as timing, delivery and receipt of payments as well as monitoring and evaluating recipient's responses.

51. *Impact assessment.* The first impact assessment was conducted jointly with the AFBM in 2007. In 2010, it was agreed that the project would make a rigorous impact assessment after three insurance cycles, based on a methodology developed by an international consultant, and this was completed in 2015. Despite shortcomings due to the delay (challenging to rely on baseline data, so recall data from 2009/2010 used instead), the impact evaluation helped assess the hypothesis that the insurance program was a welfare improving intervention (see section 3.2 and Annex 5).

## 2.4 Safeguard and Fiduciary Compliance

52. *Safeguard compliance.* The pilot project (original credit) was classified as Category C in terms of Safeguards and did not trigger any safeguard policy related to the environment or social issues. The AF triggered the Indigenous Peoples OP 4.10 (see 55).

53. *Environmental Safeguards.* Overall, Environmental Safeguard compliance throughout the project was rated "Satisfactory" by the Bank Safeguard Specialist as the project is concerned with a purely financial product, it has no direct environmental impacts.

54. *Social Safeguards.* The final ISR rating on Safeguard was "Satisfactory". No specific management actions were identified by any WB mission or safeguards reviewer. It was established that since the IBLI product was made available to all herders in pilot *aimags*, regardless of ethnic identity, the IBLI-pilot was not expected to have any specific effects on minority populations. Nevertheless, the project M&E component was expected to systematically monitor diversity issues as stated in the PAD to track whether access for all is enabled. This was done as the project maintained an M&E system to closely monitor the uptake of the insurance by herders and any changes in herder behavior as a result of the project.

55. The AF of the project triggered the Indigenous Peoples OP 4.10 since it seemed likely that identified indigenous populations of the Tsaatan reindeer herders who live in Tsagaannuur and Rentsenlkhumbe *soums* in northern Khuvsgul *aimag* would be included in the scale up. Reinders thrive in *dzud*, but as these herders held other livestock, the OP 4.10 policy was triggered. As stated in the semi-annual progress report of 2009, the PIU has developed the "Mongolia-Index-based Livestock Insurance Project Additional Financing Indigenous Peoples Planning Framework" (IBLIP-IPF). The IBLI-IPF was disclosed in-country February 21, 2009, on Infoshop on March 13, 2009 and disseminated among the Tsaatan communities through (i) being published in the newspaper "Dalai Eej", the Khuvsgul *aimag*'s local newspaper, (ii) the Khuvsgul *aimag* library; and (iii) Tsagaannuur *soum* governor office.

56. It was agreed that the number of Tsaatan beneficiaries from all IBLIP-AF components will be recorded for activities and reported to IBLIP-AF officer twice per year, once Khuvsgul *aimag* has been included. However, as reindeer does not suffer from the *dzud*, there was no uptake of IBLI among reindeer herders.

57. Since the project was also likely to include Kazakh populations in western provinces (who do not speak Mongolian language), all the relevant projects materials would be translated into Kazak for project activities in those areas. This requirement was met ensuring that the minority herders in Bayan-Ulgii *aimag* had understanding and opportunity to participate<sup>6</sup>.

58. *Procurement.* Overall, there were no major procurement issues with this project. The final ISR rates the management of procurement processes as “Satisfactory”. Seven ex-post procurement reviews were conducted during project implementation (2008, 2009, 2011, 2013, 2012, 2014 and 2015). The ex-post reports and the supervision mission’s Aide Memoires included recommendations that helped improve the management of the procurement processes, including: (i) strengthening the procurement capacity through training workshops, preparation and dissemination of sample procurement document, and a staffing plan for project implementation, (ii) splitting up the functions of financial management and procurement during the scale-up of the project and creation of a position for a new procurement and contract management officer, and (iii) inviting the PIU to continually seek guidance and assistance from the relevant staff in the WB to ensure compliance since the PIU team was new.

59. The initial lack of experience of the PIU procurement staff, and their high turnover rate caused minor issues. Thanks to the constant support provided from the WB procurement specialist who remained the same throughout the lifetime of the project, and to the responsiveness of the PIU staffs, these issues were dealt with in a timely and satisfying way.

60. *Financial management.* The final ISR rated FM as “Satisfactory”, and in general, financial reports and annual audits have been submitted regularly and timely. In addition, most of FM reports noted that “the project had an adequate project financial management system that can provide, with reasonable assurance, accurate and timely information on the project implementation progress and the credit and grant proceeds are being used for their intended purpose”. All of the audits carried out during the life of the project were clean.

61. During the first seven ISRs, the implementing agency demonstrated an inconsistent FM performance, largely due to high turnover of FM staff and a steep learning curve. Throughout the lifecycle of the project, the WB FM team provided recommendations that helped improve the quality of FM ratings, and with the implementing agencies increased appreciation and level of commitment to having a stable FM team in place, the last 6 ISRSs rating improved to the level of Satisfactory. These recommendations included: (i) improving the areas of internal control particularly contract management and planning; (ii) budgeting project resources adequately to ensure timely and smooth implementation of the project; (iii) improving the completeness and accuracy of financial records, and (iv) conducting variance analysis and comparison and include them in FM reports.

62. *Disbursement.* Performance in terms of the disbursement rate was satisfactory overall. Overall, 96 percent of the funds originating from Grants were disbursed by the end of the project. IDA funds were disbursed with a rate of 59 percent: US\$6.4 million of the CDF were cancelled

---

<sup>6</sup> For example, as described in the semi-annual IBLI progress report of 2012: 5,000 out of the 80,000 copies of the “*Livestock Insurance Advisory Leaflet*” distributed nationwide have been printed in Kazakh language and distributed to Bayan-Ulgii *aimag*

at project closure as the cumulative losses incurred by herders, and consequently the cumulative payouts they received through the lifecycle of the project, have not been high enough to exhaust the entire allocation of the CDF, which was expected and is fortunate for the herders (no major *dzud* since 2010).

## **2.5 Post-completion Operation/Next Phase**

63. The PIU ensured a smooth transition to a fully institutionalized IBLI program. An important outcome of the project was the creation of AgRe that took over the PIU after the end of the project. Together with the passing of the IBLI law, this represents an institutionalization of the IBLIP. To ensure a smooth transition of operations over the AgRe, the PIU: (i) organized workshops and trainings near project closing to ensure capacity was transferred; (ii) transferred key staff from the PIU, who also benefited from capacity building and training during the lifetime of the project; (iii) drafted ToRs for the remaining key staff to work for AgRe; (iv) hired consultants to draft an operations manual, reports (PPAs, sales, monitoring) and business plans for AgRe; (v) developed a capital assessment stochastic model; (vi) hired product development specialists, and; (vii) closed its branches in two stages: 7 closed in 2013 and 14 closed in 2014, with their assets transferred either to the local department of the ministry agriculture or National Emergency Management Agency (NEMA) branch.

64. AgRe has ambitious growth plans. AgRe's management have set aggressive growth targets aiming to insure 25-30% of herders (more than double the current demand) by 2019. To do so, they are broadening their network of agents to sell IBLI, and developing an aggressive partnership strategy with both banks and local insurance companies. They are in addition looking to deepen partner capacity in the area of IBLI and are developing a training curriculum to be delivered through a series of trainings and workshops. Given challenges faced to date with take-up, this strategy will have to be carefully implemented to reach this ambitious target.

### **Recommended follow-up operations.**

65. *IDA lending operation with AgRe.* Recognizing the need to diversify their economy beyond the mining sector, and their dependence on China as an export buyer, Mongolia wants to expand their range of export products to other sectors with buyers from other countries. A key challenge, however, to budding entrepreneurs in the export sector is access to credit. Banks are unwilling to lend due to risks, some of which are insurable, faced by these small businesses. Responding to Mongolia's request, and looking to piggy-back on the investment in capital, capacity as well as institutional structure of AgRe, a \$US20 million IDA operation (Export Development Project - P147438) was approved in June 2016, where AgRe will be provided with the capacity and capital to develop insurance products to de-risk the export value chain, and so look to encourage lending to these small businesses.

66. *Future agriculture IDA lending operation building on the IBLI success.* The Mongolian economy has significantly changed over the past ten years and faces new challenges. Transforming the livestock sector by shifting its focus from reducing the vulnerability of herders to increasing its contribution to the GDP through increased commercialization could support development of the Mongolian economy. However, a major challenge to the commercialization agenda is the lack of access to credit by herders and agribusinesses that they supply with animals

and raw material. Rural lenders perceive herders and agribusinesses as risky investments due to weather shocks that cause high livestock mortality (ARMT report).

67. The WB Agriculture Global Practice is engaged in an ongoing dialog with the GoM on the commercialization agenda, with plans to begin preparing an agriculture IDA lending operation in 2016. An area which could be explored under this project is the use of IBLI to de-risk rural lending, and so enhance herders and agribusinesses' access to credit.

### 3. Assessment of Outcomes

#### 3.1 Relevance of Objectives, Design and Implementation

68. **The Project Development Objectives were clear, were and remain highly relevant and important to Mongolia's economy, herders' welfare, and poverty reduction goals.** The PDO was highly relevant when designed, with the change to reflect the scale-up of the project during AF, and continues to reflect the priorities of the sector. Though designed as a pilot to test the viability of IBLI in Mongolia, the project combined effective protection of herders against *dzud* events with extensive strengthening of the insurance industry and disaster response and data collection capacity of government by building medium - and long-term capacity. Collaboration between the public and private sector was deliberately planned and supported, and this delivered excellent results, which eventuated in the establishment of AgRe.

69. The capacities created by the project remain highly relevant for IBLI, the insurance sector as well as the disaster risk management agenda. The infrastructure of insurance markets and data can be utilized to further protect the poor and vulnerable in Mongolia with other insurance products (life insurance for example) and enabling government and herders to become better prepared for, and respond to, disasters. The investments supported preparedness at the national, provincial and district levels to respond to shocks to livestock herds. As shocks will continue to occur, the project was and will remain highly relevant. Herders need access to funds rapidly in the event of a *dzud*, to protect the investments they have made in their livelihoods, protect their welfare and ensure that substantial (potentially catastrophic) human and economic costs are prevented.

70. The capacities built under the IBLIP provide solid foundations from which to tackle the unknown costs of disaster events, including but not exclusive to, *dzud* events. Improved data collection methodologies will allow for better planning and preparedness of the livestock sector for *dzud* events, and the strengthened insurance sector will allow herders and governments to transfer risk, as well as to facilitate rapid access to funds in the event of a disaster.

71. *Dzuds* are infrequent, but the risk is high because of their impact. Better risk information, and capacity for monitoring herd size can enable the government to more rapidly respond in the event of a disaster. This yields large benefits as it has been well documented that preparedness and early response are more effective and efficient ways of managing disaster response. This goal is embodied in the Sendai Framework for Disaster Risk Reduction 2015-2030, which was adopted by UN Member States, including Mongolia. Mongolia authorities have recognized the value of effective risk financing strategies to manage the contingent liability of *dzud* events.

72. By tackling the *dzud* threat that is of ongoing concern to the Mongolian economy and population, the project's objectives remain highly relevant to Mongolia. With the state having a constitutional mandate to protect livestock, and certainty that *dzud* events will occur again in the future; it is not a matter of "if" but "when" the insurance policies will make payouts. Reduction in the impact of *dzuds* on herders can be seen as a valuable public good.

73. The PDO continues to be aligned with the Agriculture Policy of the GoM. The Livestock sector continues to be a top Government priority as emphasized in the new State Policy on Food and Agriculture adopted by the Parliament in November 2015 (both economic and cultural), and IBLI well identified in this policy as a key innovative approach to addressing high levels of risk for herders.

74. The project design and implementation strategy remains relevant, aligned with the FY13-FY17 CPS and is considered in new projects. Livestock remains one of the main drivers of economic growth in Mongolia, representing 12 percent of GDP, contributing to around 10% of all export revenues, and employing more than 27 percent of the labor force. Moreover, livestock constitutes 63 percent of the assets of rural households. However risks that periodically causes livestock losses remain a challenge. The rapid economic expansion driven by the mining boom raises concern that rural economies will be further left behind. Therefore, sustainably addressing continued vulnerabilities of herders is key in addressing raising inequalities.

### 3.2 Achievement of Project Development Objectives

75. **The PDO of IBLI-pilot has been substantially achieved.** It successfully ascertained the viability of IBLI in Mongolia and reduced the impact of livestock mortality for herders' livelihoods. The achievement of the initial PDO led to the provision of AF to scale up the project nationwide from 4 *aimags* to 21 *aimags*. Implementation progress has been good and many of the original performance targets have been met or exceeded (see

76. Table below).

77. *Ascertained viability of IBLI in Mongolia.* The IBLI pilot successfully passed two viability tests in 2008 and 2009 when high mortality rates triggered significant indemnity payments (in 2008, US\$340,000 was paid to 1783 herders, and in 2009 2,117 herders received payments amounting to US\$275,700 in total). All eligible herders received their indemnity payments in a timely manner. In addition, all four of the participating insurance companies expressed interest in continuing their participation for 2010 despite these two years of successive losses.

78. An additional demonstration of the viability of IBLI at the end of the pilot was the sustained high level of uptake of the insurance product among herders. BIP sales were greater than expected: around 2,400 policies were sold in all 56 pilot *soums* in 2006 sales year, over 3,700 policies were sold in 2007, in 2008, 4,047 policies were sold with a premium of approximately US\$120,000 and in 2009, 5,654 policies for a premium of US\$136,000. These increases have occurred despite the low triggering of policies and indemnity payments (prior to 2008 economic crisis) and also with a declining cashmere price in 2008 and 2009, which limited the cash available to herders.

79. Finally, the availability of high quality and cost effective mortality data generated by NSO represents a further assurance on the viability of IBLIP as good quality data is a fundamental requirement for the underwriting of the risk.

80. The DWI study also demonstrates that IBLI reduced the impact of livestock mortality on herders' livelihoods. IBLI provided them with cash which was used to cover expenses for food, education, and health as a substitute for selling animals and relieved them from credit constraints. There is a suggestive evidence that insured households were more likely to take credit during the disaster, which may have been used to purchase new livestock.

81. **The PDO of IBLI-AF has been substantially achieved.** By the end of the project, IBLIP had ascertained the viability of IBLI in Mongolia and building on the pilot, successfully and sustainably scaled up the IBLI insurance program to all aimags in Mongolia, and reduced the impact of livestock mortality on herders' livelihood.

82. *Ascertained viability of IBLIP.* IBLIP was successfully scaled up nationwide from the four pilot aimags, and it build the institutional capacity and framework for the sustainability of the IBLI program. Since the beginning of the IBLI program, ten insurance cycles were implemented, and indemnity were provided for nine years. Cumulatively over the life of the project 93,700 herders purchased the insurance paying 8.1 billion Tugriks (US\$405 million) in insurance premiums, and 16,545 received indemnity payments totaling 3.2 billion Tugriks (US\$160 million). The insurance covered 21 aimags and 330 soums. Annual monitoring reports show that 8.5%-15.5% of herders in aimags covered by the project buy the IBLI every year, demonstrating the change in mindset of herders to proactively manage risk. Furthermore, expanding access to IBLI in addition facilitated expansion of financial inclusion in Mongolia, which has been proven in of itself to build the resilience of low income households through provision of financial services (savings, credit, insurance). This sustained demand for IBLI is encouraging since last two years of good weather, the decrease in public awareness activities by the end of the project, and the knowledge that IBLI will no longer be administered by the PIU could have had the opposite effect.

83. The legal and institutional framework was successfully built to ensure sustainability of the IBLI program after the end of the project. Essential public and private sector capacity in insurance principals across the country was developed, and performance of these capacities improved based on M&E reports. By rapidly and effectively making payouts to herders effected by *dzud* events (most notably in 2010), these capacities have already contributed to dramatic and sustained decreases in impacts of *dzuds* on herder welfare. With the Parliament passing the law on IBLI in June 13, 2014, the Government has laid the foundation to ensure sustainability of IBLI in the mid-long term in Mongolia.

84. All activities were completed by the Project closing date. In March 2016, the national and provincial project teams came together with their partners in Ulaanbaatar for a final project review, to take stock of the achievements.

85. Decreased impact on livestock mortality for herders' livelihood was observed. An independent impact evaluation conducted in 2014 and a post event impact evaluation conducted

in 2015 both independently confirm the significant impacts of the Project as described in the PDO as explained in paragraph 90. A description of the different methodologies used and a full summary of the IE can be found in Annex 5.

86. The main outcome observed after the payouts from the 2010 *dzud* was a more rapid restocking of herd size for herders who received a payout, so stronger resilience to shocks. A rigorous impact assessment carried out after this event showed that the rate of herd growth in herder households that had IBLI was far greater than those who did not. This can be seen in Figure 3. These successful final outcomes are directly tied to the fact that these households received payouts after the 2010 *dzud* as demonstrated by the rigorous identification strategy used in the impact assessment report.

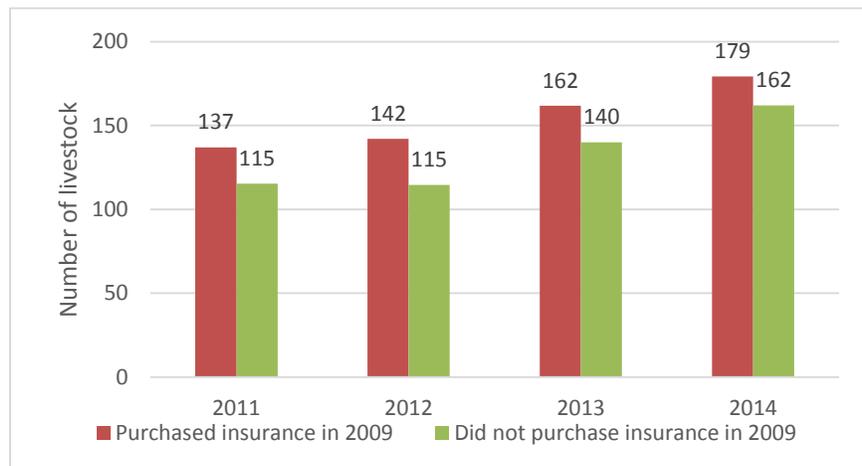


Figure 3<sup>7</sup>: Impact of purchasing IBLI on post *dzud* herd sizes

87. The buffer the targeted provision of support to herders provides contrasts with the experience in dozens of developing countries which struggle to provide targeted financial assistance to households in the case of disasters. Evidence has shown that rapid response is more cost effective than delayed response<sup>8</sup>, thus it can be inferred that the IBLI program reduced the cost of response, and the negative impact of *dzud* on herder welfare.

Mr. Dulamdoy,  
Governor of  
Unurkhan-gai  
Aimag



**Quote**  
The Index Based Livestock Insurance Project has a positive impact on aimag government finances through decreasing the financial risk they face

<sup>7</sup> This graph presents regression-adjusted means adapted from the regression results presented in Table 5 of DWI IE report.

<sup>8</sup> See “The Economics of Early Response and Resilience: Lessons from Kenya” by DFID

88. The financial costs to Government of Dzud events is inherently uncertain. The project program turned an unknown financial cost of government (a ‘contingent liability’)

by providing financial support to herders.

into a known cost. Whereas previously there was a large implicit contingent liability on government to respond when *dzud* events occur, which, as highlighted by the MoF, causes budget volatility, hampers budget planning and results in the reallocation of government resources away from high yielding investments, the IBLI project removed part of this contingent liability from government and transferred it to the private sector (as herders paid premiums and received insurance payouts). This sentiment was further endorsed at the aimag level by Governor Dulamdoy of Unurkhangai Aimag.

### 3.3 Efficacy: Highly Satisfactory

89. **The Efficacy of the project is evident from its design and implementation, leading to the achievement of the PDO.** The four project components, which each demonstrated impressive results (see below), devoted deliberate attention and substantial resources to coordination, were mutually reinforcing and critical building blocks for achieving the PDO indicators. The PDO indicators in turn demonstrated a strong link to achievement of the PDO, and proved to be the most effective means of achieving the PDO at the pilot and full scale levels.

90. The counterfactual in this case is straightforward to demonstrate, due to the failed attempts of GoM to introduce livestock insurance in the past, as detailed in paragraph 5. These past failed attempts to introduce livestock insurance show that the PDO would not be achievable in the absence of the support the project provided to develop a sustainable livestock insurance market in Mongolia. .

Looking at the results of each component in turn:

91. *Having functioning IBLI in selected aimags.* This objective was to support the piloting and subsequent scale up of IBLI in selected aimags in Mongolia. The project undertook a range of activities to ensure that the results would be achieved.

92. By the end of the project, the IBLI product was available in 21 (every) aimag in Mongolia and 330 soums, vastly

M.Jalavdorj  
First deputy  
director,  
MIG insurance  
LLC



#### Quotes

With the implementation of the Index-Based Livestock Insurance Project, the livestock insurance sales revenue reached 2 billion tugriks (around USD\$1 million) at its peak. Thousands of herders are interested in livestock insurance. Insurance companies have already established their reserve funds. Dzud or a natural disaster occurs frequently and we have to be ready for this risk. This is the main characteristic of insurance business. The importance of the project lies in the establishment of reserve funds and expansion of insurance industry. On the other hand, herders felt that their assets were safe. They got used to receive indemnity payments too.

exceeding expectations. The project effectively encouraged and engaged with the private sector, making it a notable example of where public private partnerships in the area of insurance for the poor can successfully deliver high quality products and services. Moreover, the program

delivered profits to the insurance industry (participating insurance companies have earned a profit of about 2 Billion tugriks / US\$1 million between 2006 and 2015), making a solid business case for its continued engagement.

93. The target for number of insurance companies participating surpassed the upper level for its target of before the end of the project, demonstrating the high level of confidence of the private sector in the project. Finally, the project surpassed its targets for % of herders insured in every year up until 2009<sup>9</sup>, and despite the fact that it fell below this target after the additional financing, it remains a notable and exceptional example of a successful index based insurance program.

<p><i>T. Batzul CEO, Mongol insurance LLC</i></p>		<p style="text-align: right;"><b>Quotes</b></p> <p>Insurance companies alone would never insure livestock if this project was not implemented. In the sense that it is indexed, the project succeeded in establishing a fair system for everyone to calculate the risk correctly. It established reserve funds and increased them to improve risk tolerance and provide indemnity payments. If the risk is not materialized, there is a potential to make a profit. Therefore, the Index-Based Livestock Insurance Project has naturalized livestock insurance in Mongolia. Moreover, there were many other benefits for insurance companies from the project, including establishment of bases in local areas, training and education of insurance agents and creation of new jobs.</p>
---	---	--

94. *Herders making informed decisions on purchasing IBLI.* The project invested significant resources into ensuring that herders were well informed about the IBLI product, and based on that information can make an informed decision on whether to purchase. Raising awareness of financial products has been noted as a key challenge to expansion of insurance programs to low-income households globally. The project set ambitious targets in terms of raising awareness about the IBLI, and consistently surpassed these targets. By the end of the project, awareness had improved to such an extent that in all *aimags* in Mongolia over 85% of herders were aware of the IBLI product, with over 36% of them receiving face to face training on the topic. This herculean task of raising awareness was successfully implemented through the PIU establishing a regional branch in each aimag IBLI was being sold (all aimags by project completion), and employing staff to conduct extensive training, and training of trainers in the field. Clearly this strategy demonstrated the key role of outreach by project staff.

<b>Quotes</b>

<sup>9</sup> At this point, an additional financing was carried to scale up the program at a national level and with that the target was increased from 10% to 15%. Given the complexity of expanding a program to such a wide scale, the project lagged slightly behind this target, with nearly reaching it in 2013

*D.Lkhagva, a herder from Bayan-Quotes Owoo soum, Khentii aimag*



Thanks to the insurance covering my livestock, the loss of livestock from a blizzard in last spring was fully recovered. I received indemnity payment of 22 million tugriks (USD\$10 thousand) and recognize now the real benefit of index-based livestock insurance.

95. *Reduced impact of livestock mortality on herders' livelihood.* During the 2009/2010 insurance cycle, Mongolia suffered a severe *dzud* (see 44). High losses across the four provinces covered by the insurance, resulted in significant indemnity payouts to insured herders (1.8 billion tugriks). Some 40% of all herding households lost more than half their herd (UNDP and National Emergency Management Agency 2010). The post

event impact evaluation showed that a high level of payout efficiency overall, with IBLI payments helping insured herders to recover their herd size faster than uninsured herders. The effectiveness of the insurance system was evident event three years later. Herders who purchased IBLI in 2009 and received indemnity payment in fall 2010 had a higher herd size in 2011, 2012, and 2013 compared to herders who did not purchase the IBLI. The magnitude of the overall economic impact (herd re-establishment) is relatively large, but it tends to attenuate in the years following the *dzud*. In 2011, insured herders owned on average 15 to 16 percent more livestock that uninsured households; in 2012 they owned between 22 percent and 27 percent more livestock; and in 2013, they own about 17 percent more (for more details, see Annex 5).

### 3.4 Efficiency

**Rating: Highly Satisfactory**

96. The original Financial and Economic analysis was updated using data collected from project reports, NSO databases, and national and international databases for purposes of comparability, with some adjustments to assumptions as described in Annex 3. At appraisal in 2005, it was decided that a traditional economic and financial analysis of the IBLIP project, which reports internal rates of return, present values, etc., was not feasible because of the probabilistic nature of the benefits of insurance--insured herders get a payout only in high livestock mortality years. Therefore, the analysis was based on a simple multi-period herd simulation model to gain insights into the benefit of the project to herders. The model was run for two sums (one high mortality and one low mortality sum) in Bayankhongor aimag (pilot aimag).

Summary results of the economic and financial analysis:

97. The results are qualitatively similar to the findings of the original economic analysis. Net income increases for a with-project (insured) herder over an uninsured herder in both sums. Net income increases are considerable and are 7%, 6 and 4% higher in Jargalant sum and 5%, 6% and 7% higher in Bumbugur sum relative to the without-project base net income for each of the percentage coverage levels simulated (i.e., 30%, 50% and 100% of animal value respectively).

98. The with-project herder's value of the herd in Jargalant sum is higher at the end of the period (2015) relative to the without-project herd value by 12% to 19% depending on the percentage of livestock species value insured.

99. With lower relative mortality rates in Jargalant sum, the with-project herder's value of the herd at the end of the period (2015) is higher than in Bumbugur sum.

100. The benefits of IBLI payouts to herders increase with the amount of coverage they choose for their livestock. The largest gains in terms of livestock value take place when 100% of the livestock is insured, but even the gains when insuring only 30% of the value of the livestock are considerable.

101. The value at risk (at 5% and 10%) of the herder's income with and without insurance does not show large differences. However, the value at risk of the income (at 10%) is generally higher when insurance is purchased relative to the without insurance scenarios for both sums. This means that the insured herder is less exposed to low incomes when insured at the 100% level than the uninsured herder.

102. There is a high probability that AgRe will be sustainable in the mid-long term. A stochastic simulation exercise was conducted to investigate how the capital of AgRe could grow over a five year time period. With the given level of capital, reinsurance strategy and planned growth in premiums over time, the results showed that AgRe's capital is expected to grow by approx. 40% to Tugrik 29 billion in five years. In addition, they showed that there is an approx. 92% chance that the capital of AgRe will be greater than the current level, Tugrik 20 billion, in five years. These figures demonstrate the sound financial position of AgRe, given its level of capitalization and business plan moving forward.

### **3.5 Justification of Overall Outcome Rating**

**Rating: Highly Satisfactory**

103. **Overall Outcome Rating of IBLI-pilot is Highly Satisfactory.** The overall outcome rating of Highly Satisfactory is based on the Highly Satisfactory achievement of the following:

- **PDO achievement: High.** The project achieved the PDO, based on data from ISRs, Government reporting, and the two IEs. All PDO indicators and nearly all intermediate indicators were met or exceeded.
- **Relevance of objectives, design and implementation: High Relevance.** The Project's objectives, design and methodology were highly relevant, and have continued to be relevant to the sector, as evidenced by: a) its alignment with the State Policy on Food and Agriculture of the GoM, b) its alignment with FY13-FY17 CAS for Mongolia, c) the fact that other projects under development built on IBLI's design, d) strong Government commitment, and e) significant AF leveraged to scale up IBLI nationwide.
- **Efficiency: Highly Satisfactory.** Good indicators of economic efficiency and sustainability of project impact.

Number of indicators that:	Project development objective indicators	Indicators of viability of IBLI program	Other intermediate outcome indicators (e.g., training, risk awareness)	Share of all project indicators
Surpassed target	2	2	2	<b>55%</b>
Fully achieved target	1	2	1	<b>36%</b>
Partly achieved target	0	0	1	<b>9%</b>
Target not applicable	0	0	0	<b>0</b>

Table 4 Project outcomes: nearly all targets surpassed or met—IBLI--pilot

104. **The Overall Outcome Rating of IBLI-AF is Highly Satisfactory.** The overall outcome rating of Highly Satisfactory is based on the Highly Satisfactory achievement of the following:

- PDO achievement: High. The project more than achieved the PDO, based on data from ISRs, Government reporting, and the two IEs. All PDO indicators and nearly all intermediate indicators were met or exceeded. Targets for many indicators of system performance were surpassed (Table 2).
- Evidenced rapid and accurate payments to insured herders in the event of dzuds, vast improvements in the livestock data collection and management system nationally in Mongolia, increased understanding and awareness of insurance among the herder population, sustained (and profitable) engagement from private sector insurance companies, the passing of the IBLI law in June 2014, the establishment and capitalization of the AgRe to manage the program going forward.

105. The outcome stands out as clearly satisfactory within the country and project parameter. While modest, the investments were highly innovative and therefore challenging technically and managerially – and these challenges were met in a way that has been, and can continue to serve as, an example to follow in other countries.

106. The innovative nature of the project concept led to a need to continually adjust and refine the approach over time. This in turn led to the long project period (approx. 10 years). Furthermore, the ICR team acknowledge that approx. US\$7.5 million of project resources remain undisbursed at project completion. It should be noted that these resources were allocated to the (innovative) CDF, which would only be disbursed in the event of a catastrophic dzud. Fortunately for Mongolia (and perhaps unfortunately for the disbursement schedule), no such event occurred and thus these resources were not drawn down. However, the very fact that the CDF existed enabled GoM to further expand access to IBLI, confident in the knowledge that those resources were available in the event of large payouts.

107. The systemic capacity improvements occurred over a prolonged and sustained time period to ensure ongoing sustainability of IBLI upon completion of the project. These investments have led to the development of an insurance program which can effectively manage the financial costs of catastrophe risk, which otherwise would have severe negative effects on the government.

**Relevance of objectives, design and implementation: High Relevance.**

108. The Project was and remains highly relevant. It was aligned to the government’s plan, the legal framework and country capacity and financial infrastructure. The GoM showed consistency over the decade of the project in its support and dedication to establish the IBLI program to provide critical financial assistance to herders in the aftermath of disasters to protect their welfare. Developing such ex-ante mechanisms is time consuming, costly and requires specialist expertise as well as long term commitment, which has made the failure rate of such programs high in other countries. Unlike the vast majority of developing countries, under IBLI Mongolia succeeded in implementing a sustainable index based insurance program that is superior to, and far less costly than, coping with the aftermath of a disaster ex-post. It is a tribute to the commitment and sound policy-making of the GoM that the investments in capacities were pursued over the long time horizon of the project, and then institutionalized through the passing of the IBLI law as well as the establishment of the AgRe.

**Efficiency: Highly Satisfactory.**

109. Good indicators of economic efficiency and sustainability of project impact. Very high economic and welfare benefits were generated by modest investments in developing national capacity and a supportive institutional infrastructure.

110. Finally, the highly satisfactory overall outcome rating is justified by the remarkable results in outcome indicators across the board. This is a world-class achievement that very favorably contrasts with the failure of multiple index based insurance programs in many other countries. The outcomes in building a sustainable national IBLI program also stand out as an example of how such programs can reach scale and be sustainable, with many other developing countries failing to scale up beyond the pilot phase and are not commercially viable<sup>10</sup>. The merits of sound ex-ante financial planning are heralded in book ‘Dull Disasters’, a comprehensive piece of academic research by Dr. Daniel Clarke and Dr. Steffen Dercon, the Chief Economist of DfID. The IBLI program was a concrete example of such planning, and was unambiguously an investment that should be replicated widely.

111. Finally, the project itself, while has some risks to development outcomes, had no shortcomings.

Number of indicators that:	Project development objective indicators	Indicators of viability of IBLI program	Other intermediate outcome indicators (e.g., training, awareness)	Share of all project indicators
Surpassed target	1	2	3	<b>50%</b>
Fully achieved target	1	3	1	<b>42%</b>
Partly achieved target	0	1	0	<b>8%</b>
Target not applicable	0	0	0	<b>0</b>

**Table 5 Project outcomes: nearly all targets surpassed or met—IBLI--pilot**

<sup>10</sup> See for example Binswanger-Mkhize (2012); Carter et al. (2014); Miranda and Farrin (2012)

### 3.6 Overarching Themes, Other Outcomes and Impacts

112. The IBLI project contributed to an increased financial awareness. The project invested significant resources in developing the capacity of herders on insurance and risk management. As a result, herders gained a high level of knowledge of insurance and credit concepts and basic numeracy skills needed to effectively participate in insurance and credit markets.<sup>11</sup>

113. The IBLI project contributed to an expansion and deepening of financial inclusion. Increased financial awareness had a ‘spill-over’ effect by supporting the expansion of rural credit, savings and insurance markets. In fact, 80 percent of insured herders had a formal loan compared to only 72% of the non-insured herders (IE results). From 2006, current accounts were opened for all herders who purchased insurance, giving herders access to savings. Furthermore, banks offered interest discounts on loans if herders purchased insurance, leading to 5,561 herders borrowing 16.3 billion Tugriks (US\$815 million) over the life of the project, and receiving a total discount (due to interest reduction) of 392.8 million Tugriks (US\$ 20 million). Insurance companies expanded their operations into rural locations in Mongolia to promote the IBLI as well as other insurance products. By 2012, there were 72 branches outside Ulaanbaatar of 5 insurance companies working in the country.

114. Linking credit with index insurance has the potential to boost rural lending for smallholder farmers, therefore increasing their chances to be integrated in value chains, which was demonstrated by IBLIP<sup>12</sup>.

115. *Enabling access for national banks to international capital providers.* National banks have been able to mobilize capital from international providers, previously inaccessible, due to the fact that herders are insured. A condition of gaining access to this low cost capital is that the borrowers are insured (this indicator serves as a positive risk management metric). In the upcoming year Khan bank, one of the largest private banks in Mongolia, will be using this capital to offer lower interest rates on their loans to remain competitive in the market.

116. *Risk management tool for meso-stability.* Post *dzud* events unemployment can increase in the effected aimags as herders can lose all their livestock and migrate to aimag centers in search of work. This puts pressure on government resources, service delivery and employment opportunities in the aimag centers. Through an interview with an aimag Governor the team learnt of how the provision of IBLI payouts post *dzud* events can avoid this outcome by giving herders the resources to maintain their herding livelihoods (for example by purchasing new livestock).

117. *Enhanced capacity of the NSO.* The NSO benefited greatly from the IBLIP project, with many unintended outcomes occurring which significantly improved their function as a data collection agency (see more under 3), including: (i) developing a state of the art mid-year survey

---

<sup>11</sup> as the ICR team noted during its visit to a sample of insured and non-insured herders

<sup>12</sup> By insuring against covariate shocks that simultaneously hit a group of smallholders, which is also the main reason behind defaulting on loans, index insurance de-risks rural lending. In addition, for asset-poor smallholders, index insurance can substitute the collateral requirement as the insurance payouts compensates the bank in case of an inability of the smallholder to pay back the loan.

which was carried over into the annual census; (ii) developing a household data base, making more informed rural lending, reducing documentation and time to get a loan, informing MoFA planning and making the survey appropriate for the Mongolian context.

### **3.7 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops**

No workshop conducted. A closing seminar was conducted in March 30, 2016 during which the PIU handed over the project, the Golden Plough Award, and the remaining reserve of 2.1 billion MNT to AgRe.

## **4. Assessment of Risk to Development Outcome**

Rating: **Substantial**

118. Multiple activities have been undertaken to ensure the development outcome of the project continues, including the establishment of the IBLI Law, the formation and capitalization of AgRe, the actuarially based pricing methodology, the development of new sales channels for IBLI. However, the rating on Risks to Development Outcome has been deemed as “Substantial” for the following two reasons. First, political influence in the board threatens the capacity of AgRe to successfully operate the complex program that is IBLI in the mid-long term. Secondly, given awareness is critical for voluntary insurance products, more, not less, resources should be allocated to this task.

119. *Corporate governance challenges within AgRe.* With the establishment of AgRe and the commitment of capital to the amount of Tugrik 30 billion (US\$15 million) (of which Tugrik 20 billion has been provided (US\$10 million), the Government developed the infrastructure for the continuation of the IBLI program in the short to medium term. However, after the company was formed and the acting CEO secured a reinsurer license from FRC, the charter and composition of the board was amended, with additional powers vested to the board and a deputy CEO was appointed to replace the acting CEO. The WB team inquired to Government to provide justification for the changes, however none has yet been given. Political influence in state run entities can be a challenge, and can jeopardize the sustainability of the entity due to mismanagement, in-transparent use of funds, dissuading private sector investment (and therefore expertise, which can add significant value in the insurance industry). Given the board of AgRe will be critical to ensure the long term sustainability of the program, and it is subject to political interference, this represents a substantial risk to the development outcomes in of itself. A mitigating factor to consider is the fact that AgRe now enters into reinsurance contracts annually with the international reinsurance industry, whose standards for high quality data and sound governance could be seen as a positive influence on decisions of the AgRe board.

120. *Awareness raising is critical.* It will be difficult to continue the deep and prolonged awareness raising activities that have been carried out by the PIU, to great success, to ensure herders are well informed about the IBLI product. Since taking over responsibility of the IBLI program in 2015, AgRe has closed all the PIU regional offices in the aimags, which fulfill the critical function of awareness raising as well as sales support for insurance companies. The decline of attention and financing witnessed over the past 12 months has created a sustainability issue. As the product is a voluntary product, herders must fully understand it before they will be

willing to pay the premium. Thus the cost of the public good nature of insurance / IBLI awareness raising must be met for IBLI to be sustainable in the long term. Ensuring adequate budgets to sustain and further increase this activity should remain a priority because of the large positive economic and welfare impacts of such expenditures.

## **5. Assessment of Bank and Borrower Performance**

### **5.1 Bank Performance**

#### **(a) Bank Performance in Ensuring Quality at Entry**

Rating: **Highly Satisfactory**

121. The Project was prepared in response to the request from Mongolia to test the viability of IBLI through a pilot with support from a strong team from the WB, comprising diverse specialists and operation officers—all with technical skills necessary to guide project design. Despite the fact that a project such as IBLI was unprecedented, WB management provided strong and consistent support. WB team benefited from internal collaboration bringing both finance and agricultural experts onto the team, in addition to external collaboration with FAO and other experts who were actively engaged and knowledgeable in the area of index insurance. WB support to the government in preparing the government's plans was effective and appreciated by counterparts. The project, in turn, aligned very well with these plans. WB support to project preparation was rooted in national as well as international experience and expertise. It was informed by the previous efforts of Mongolia to herders from the impact of high mortality (the restocking programs to previous attempts to introduce livestock insurance). It was in addition informed by international best practice for large scale insurance programs, drawing on experience from India, Mexico, Spain and the United States where successful programs exist. The internalization of this experience by the project team, and incorporation of such best practice into the IBLI project ensured that quality at entry was not only highly satisfactory, but also highly innovative. This led to the project being awarded the Golden Plough award by World Bank senior management. The mitigation plan for addressing critical risks was sound and relevant.

#### **(b) Quality of Supervision**

Rating: **Satisfactory**

122. The task team was multi-sectoral and provided effective and well-coordinated implementation support, with relentless follow-up on the details of implementation of the numerous and diverse activities. As the scale and scope of the project grew, the task team continued to meet client demand. This is evidenced through the task team leaders' ability to successfully complete the additional financing, and two project restructuring exercises, showing the required pro-activity and flexibility. These changes in the project did not cause any delays in moving from the pilot to the scale up phase. Some minor delays were encountered in this process, however the delays were rapidly addressed and did not impact the overall performance of the project. As the project moved from pilot to scale up phase, the task team recognized the need to bring in additional international expertise to support Mongolia guide the project through the process, conducting sound institutional analysis and making recommendations based on international best practice. It is a testament to the commitment and ability to embrace innovation

of the WB's multi-sectoral team that the initial ambitious targets, which were subsequently raised through the additional financing, were achieved and many were exceeded, despite the complex multi-sectoral challenges and innovative nature of the project. This is made more impressive by the fact that, given the complex and innovative nature of the IBLI project, national expertise needed to be supported with supervisory support drawing on international experts from around the globe. As demonstrated above, safeguards, procurement and FM issues were well and timely handled.

#### **(c) Justification of Rating for Overall Bank Performance**

Rating: **Satisfactory**

123. Strong WB performance during the preparation phase, preparation of a robust multi-sectoral framework, drawing from international expertise and best practice, coordination with partners around a country-owned plan, and an ongoing commitment to use WB lending instruments to meet Mongolia's needs was followed by the team's relentless attention to the details of implementation in two major sectors and consistently high and successful coordination effort in the supervision phase. This excellent performance warrants an overall Bank performance rating of Satisfactory.

### **5.2 Borrower Performance**

#### **(a) Government Performance**

Rating: **Satisfactory**

124. The project achieved its PDO indicators. Equally important, nearly all interim targets were met during implementation and many were exceeded. The initial piloting of IBLI, and following its success the scaling up of the IBLI project, enabled the Government to provide herders with a viable option to protect their welfare against the impacts of *dzud*, which took advantage of the efficiency of private sector service and risk management delivery. Moreover, the GoM established a legal and institutional framework to support the IBLI program in the mid-long term. The government provided the policy framework and leadership to support the successful implementation of the IBLI project, which was tested on numerous occasions with adverse weather conditions. The government mobilized to effectively share its knowledge with the international community on multiple occasions through international insurance and reinsurance events. This contribution was beyond that envisaged in the project design, and added substantial value to the global knowledge agenda on developing successful national index based insurance programs. Commitment to building national insurance programs is extremely difficult to sustain, as shown by the high failure rate in most developing countries. The government's sustained commitment to the project for over a decade is by itself sufficient grounds for a satisfactory rating.

#### **(b) Implementing Agency or Agencies Performance**

Rating: **Satisfactory**

125. IBLI was implemented by the PIU which sat within the MoF. That said, herding by its nature is rural. Thus the PIU established a methodology to work effectively across a vast,

sparsely populated country (Mongolia is the most sparsely populated country in the world). The difficulties created by a complex project with decentralized implementation were effectively addressed and overcome thanks to exceptional commitment to advancing the IBLI project by the PIU. In addition, as the IBLI project was at its time unprecedented (and is still to this day unique in terms of WB lending operations), the PIU displayed enormous capacity to innovate in the face of challenges, which constantly arose due to the uncharted path the project took. Moreover, implementing agencies made adjustments flexibly, supported deliberate and successful coordination across sectors at central, *aimag* and *soum* levels, and exploited opportunities for additional efficiencies, to stretch the limited resources available to produce additional results. The PIU staff was carefully selected and resulted in a highly motivated and qualified team, most of which was transferred to AgRe. When the ICR team engaged with stakeholders in Mongolia, be it from the insurance, ministerial, provincial governments or indeed herders themselves, the opinion about the PIU was unanimous and resounding – it did an excellent job.

### **(c) Justification of Rating for Overall Borrower Performance**

Rating: **Satisfactory**

126. IBLI achieved excellent results as a multi-sectoral project because of strong government leadership and commitment from the MoF, with support from the ministry of agriculture and justice, responsible for implementation. Sustaining this program is required for ensuring high economic and welfare benefits within Mongolia and going beyond the project to contribute knowledge to the global knowledge agenda on national insurance programs more than offsets the final ISR rating of moderately satisfactory in the project period. Altogether, a satisfactory rating is therefore thoroughly justified.

## **6. Lessons Learned**

127. The authors believe there were two key lessons, and multiple additional lessons, learned from the IBLI project.

### **128. Risk taking, tempered with sound risk management, can reap large dividends.**

Acknowledgement should be given to the GoM and WB management for agreeing to undertake this project. At the time it began, in 2005, IBLI was unprecedented globally. In addition, the insurance market in Mongolia was in its infancy and did not reach beyond Ulaanbaatar. This meant that insurance capacity, both in the public and private sector, was limited. These facts alone meant that this project was high risk, both for the government as well as for World Bank management. Recognizing the risks, the project preparation team developed several effective risk management measures to mitigate them, including: (i) having a prescriptive DCA, limiting the scope for misuse of funds; (ii) limiting the scope of the PDO to piloting the product in the initial phase, and; (iii) bringing a multi-sectorial team to prepare the project, drawing on wide expertise to create innovative, viable solutions. Acknowledging these efforts, the project was approved and now stands as a universally accepted success, in the WB as well as with the national government, the provincial government, insurance companies, international reinsurance companies and, most importantly, the ultimate beneficiaries - herders. This project stands as an example of how lowering the risk aversion of management and client counterparts in governments can lead to ground breaking projects that address a development challenge previously thought impossible to solve.

129. **Contingent IDA has significant value.** The CDF, now a relic of times past, played a critical role in the success of the project. In the early years when there was no capacity in country to bear catastrophic risk, the CDF was there, providing a layer of catastrophe protection for government. This innovative design feature enabled the project to gain several years of successful experience in underwriting, administering and paying claims through IBLI, several years in which the project developed credible operational experience. Not only was this protection provided in theory, it was in practice, when in 2005 a large Dzud event that led to the loss of c. 30% of the national herd triggered a payout of c. \$1.1 million from the CDF to herders. The CDF was then further vindicated in 2006 when international reinsurance companies began providing insurance protection to the IBLI portfolio, serving as the highest credibility stamp for an insurance product. Having contingent disbursement conditions on the CDF IDA was a fundamental component of the project design, without which the project would have been a non-starter.

Additional lessons learnt include:

130. *Past failures can be overcome by technically robust solutions.* This project stands as an example of how piloting and scaling up a new approach can overcome challenges which have led to past failures. The Government of Mongolia, on multiple occasions, attempted to introduce livestock insurance. However, plagued by moral hazard and anti-selection they failed. IBLI innovated technically sound solutions drawn from international best practices, which then were adapted over the life of the project, through additional financing and restructuring, to the Mongolian context. The points listed in paragraph 36 are in addition important.

131. *A carefully planned monitoring and evaluation strategy can enhance a project, and increase impact.* The M&E system, especially the AFBM, enabled the PIU to constantly monitor the project, amend the approach, and continue to innovate in developing insurance products that matches the needs of herders, the requirements of the private sector, and therefore, achieved high take up.

132. *With new insurance products, having payouts helps.* From conducting interviews at the aimag and soum level, the team unanimously heard that the Dzud, and subsequent large payouts, in Bayankhongor in 2005 were a critical example to draw on to explain how the insurance works to herders.

133. *A strong enabling environment is a prerequisite for the success of an innovation such as index insurance.* The legal and institutional framework put in place thanks to the IBLI program generated an atmosphere of trust that enabled the development of the private insurance sector, and created the demand for insurance among herders.

134. *A quality assurance mechanism is important for the success of an innovation, especially in the early stages of its development.* The IBLI program invested heavily in product design, in particular the livestock mortality databases, to enable timely, objective and transparent payouts.

135. *Awareness building takes time, and resources and get creative when promoting an innovation helps.* The project experience evidenced the significant time it takes to build up understanding and awareness for insurance products, especially complex ones like IBLI. The

project spent significant resources on PPA, yet still there were some aimags where awareness remains low. It is recommended that at least 3-4 years of intensive awareness raising (on the ground staff, face to face trainings, capacitating of insurance agents) is done at the soum level to ensure enough understanding and awareness is raised, and that projects recognize that face-to-face training is not financially viable when looking to scale up to large numbers. Some interesting examples of promotion from the project include: (i) the prestigious national 'herder award' granted each year, now requires applicants to be insured; (ii) PIU staff developed decks of cards, with each card providing one piece of information on the IBLI program, and; (iii) rural banks offered discounts on loans (0.2% per month during project).

136. *Data is a foundation stone for insurance programs*, and the fact that Mongolia had a relatively high quality, long term data base was critical in pursuing the project.

137. *The public private partnership approach to develop national agriculture insurance programs proved effective yet again*. This approach was adopted building on international best practice.

138. *The project was resource-intensive for the WB team, which should be taken into account for future replicability*. This project has mobilized agriculture and finance/insurance experts from Ag GP and F&M GP for 10 years, in addition to a group of high-level consultants. This was made possible thanks to strong support by WB senior management and financial support from donor partners. The capacity of the WB to replicate such a project elsewhere should be carefully considered (as more recently shown in India or in Kenya), and properly resourced.

139. *Insurance needs to be part of a broader risk management strategy*, which can promote a virtuous cycle of good behavior.

140. Novel approaches require an initial pilot with strong capacity building, public awareness and a robust M&E.

## Annex 1. Project Costs and Financing

### a) Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Consultant services	2.25	2.69	120%
Good and services	0.45	0.27	59%
Training and workshop	1.36	0.53	39%
Contingent debt	3.66	0.76	21%
Public awarness campaign	0.77	0.79	102%
Consultant services for project management	1.70	1.60	94%
Incremental operationg costs	0.50	0.50	100%
Goods under Part c1	0.02	0.02	98%
Reinurance	0.24	0.05	19%
Expenditure not claimed Centralized in State treasury			
Bank charges	0.00		
<b>Total Baseline Cost</b>	10.95	7.20	66%
Physical Contingencies	0.06	0.00	0.00
Price Contingencies	0.19	0.00	0.00
<b>Total Project Costs</b>	11.20	7.20	64%
Front-end fee PPF	0.00	0.00	.00
Front-end fee IBRD	0.00	0.00	.00
<b>Total Financing Required</b>	11.20	7.20	

a/ Data for appraisal and actual estimates comes from the IBLIP\_FY16 audit report (with conversion from Mongolian MNT to USD at the rate of 1 USD =1.98 MNT); data for physical and price contingencies comes from the PAD.

### (b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower		0.26	0.00	.00
Credit of International Development Association (IDA)—IDA-46870	Credit	10	5.72	57%
Credit of International Development Association (IDA)—IDA-40690	Credit	7.75	4.61	59%
JAPAN Policy Human Resource	Grant	1.32	1.32	100%

Development Fund grant - PHRD Grants- -TF054740				
The Japanese government Grant -- TF 53738	Grant	0.36	0.36	100%
The Financial Sector Reform and Strengthening Initiative		0.56	0.00	.00
Swiss Confederation Government grant —TF13074	Grant	1.37	1.37	100%
Korea Partnership on Poverty Reduction and Socio-Economic Development grant --TF94827	Grant	0.7	0.7	100%
Swiss Confederation Government grant TF94002	Grant	0.61	0.61	100%

## Annex 2. Outputs by Component

Before describing the outputs of the IBLI project by component, we present a summary of its main achievements below.

1. **Consistent strong implementation with innovation, contributing to country-wide results.** The successive *dzuds* from 1999 to 2002, and their associated damage, galvanized the government to fully support the project throughout the ten years of implementation. The project continuously learnt from experience, amending and fine-tuning its approach: (i) initially the PIU trained agents directly to sell IBLI. Then they used the ‘training of trainers’ model - train an individual who then trains agents in the field, to facilitate expansion to all 21 aimags. Over the life of the project over 11,000 people (although double-counting possible) attended training and 2,454 insurance agents were licensed; (ii) managing insurance risk – in the initial years the highly innovative WB CDF managed the costs of extreme risks. After the program gained experience it successfully purchased reinsurance from the international markets. It then established an equalization reserve, and finally, the Agricultural Reinsurance (AgRe) company was established as a sustainable entity to manage the IBLI program going forward; (iii) distribution channels: initially selling directly to herders to ensure the project had control over the sales process. Then IBLI was opened up to herders who do not own the livestock but are responsible for its management<sup>13</sup>. Then the project sold group policies to multiple herders. Finally, the PIU capacitated intermediaries to explain and sell the IBLI, including banks and insurance companies, which enabled wider take up to be achieved at reasonable costs, and; (iv) the innovation on the data front, moving to higher quality and more rapidly collected data sources through the life of the project. Initially the census method was used to collect data, however this was time a consuming process and conducted at the end of the calendar year which would lead to long delays in payouts. With the project, Mongolia adopted a statistically rigorous survey methodology to collect data mid-year, which was a more rapid, cost effective way of collecting data in addition to enabling IBLI to make payouts to herders in a timelier manner. The ultimate endorsement of this data was when international reinsurance companies agreed to take on the livestock mortality risk with claims based on it. This innovating, learning and growing process of exemplary project implementation paid dividends, and can be witnessed through the solid performance of the project on the results indicators throughout the life of the project.

2. **Strong engagement from both public and private sector throughout project:** Project worked effectively with private sector, ensuring their sustained engagement and motivation throughout the ten years of the project. This was achieved by ensuring the private sector were involved in all key decision making steps (for example their agreement was sought for purchasing the stop loss reinsurance agreement), as well as other aspects of the project including agent training, and risk sharing arrangements. Moreover, the project maintained a strong value proposition to the private sector throughout the life of the project by: (1) providing significant capacity building of private sector partners to build their knowledge in a new area of insurance,

---

<sup>13</sup> These herders are particularly vulnerable as they are often chosen because they do not own livestock but still bear responsibility in case of losses and have limited assets to buffer them against shocks. Expanding insurance to them was a key step in helping the most vulnerable manage risks.

not only in the capital but also at the aimag level staff; (2) link the expansion of IBLI into the rural development plans of insurance companies – senior management in some insurance companies bought into the strategic development concept of expansion of insurance outside of Ulaanbaatar. In addition, with the passing of the Motor Third Party Liability act insurance companies were motivated to expand to rural locations, and PIU leveraged this by pitching the cross selling potential of IBLI; (3) through establishing a risk pool, to efficiently share risk among insurers and the government (and ensure that their balance sheets were protected from large losses such as *dzuds*); (4) through developing an effective reinsurance strategy to protect insurance companies against catastrophic risk, and securing high quality reinsurance. These steps ensured strong engagement from the private sector, which is shown in the results indicators (number of insurance companies participating), as well as the profitability of the business (participating insurance companies earned profit of c. 2 billion Tugriks (US\$100 million) between 2006 and 2015. This is reflected in the increases in the premiums collected, which grew by 28% per year on average over the life of the project.

3. **Enhanced capacity of the NSO.** The NSO benefited greatly from the IBLIP project, with many unintended outcomes occurring which significantly improved their function as a data collection agency, including: (i) the survey carried out mid-year using a state of the art methodology with training from USDA. This methodology reduced errors in data collection. Seeing it's quality, the NSO carried this methodology over to the annual census they carry out in December, which is mandated by law, thus improving the quality of the annual census; (ii) the data base that the NSO could establish at the household level through the project has now taken over as the key database for all the household data the NSO collects, including the annual census data. The NSO has currently entered into a tripartite agreement with MoAF and rural banks to share specific, protected, household related information. This will have four critical benefits to the Mongolian economy: (i) it will enable banks to undertake a better informed lending strategy, thus reducing their exposure to aggregate risk and so the risk of bankruptcy (which has seen to be a large drain on public resources in other countries (AIG in USA, rural banks in India); (ii) it reduces the documentation and time required from herders to take out a loan, making the process more straight forward; (iii) MoFA are now using this herder information to inform their planning, making their risk reduction and response plans better risk informed; and (iv) the capacity in NSO was developed to such a high level that after the USDA training completed and left NSO with a draft sample survey to conduct the mid-year survey, they have internalized the training and design this survey themselves, making it more appropriate for the Mongolian context.

4. **Component 1: Pilot Index-Based Livestock Insurance Programs(US\$6.32 million, including US\$5 for Contingent Debt Facility, or 65.6 percent of total Project cost with IDA contribution of US\$5.05).** The main objective of this component was to ensure that Index based livestock insurance, which was made of the two IBLI products described below, functions in the three (later four) pilot aimags. The component had five subcomponents: (i) livestock data collection; (ii) IBLI software development; (iii) training during pilot implementation; (iv) Contingent Debt Facility (CDF) and, (v) Pilot performance, review and refinement.

The IBLI product as initially designed was made of two sub-products: first, a base product (BIP), which is a commercial product, sold and serviced by insurance companies. It was supposed to payout when the sum mortality rates exceed specified percentages, in the range 7 to 10 percent and depending on species. The maximum payment for the BIP would be when the mortality rates reach a specified “exhaustion point” of 30 percent for Bayankhongor and Uvs and 25% for Khenti. These numbers were subject to annual review and change if necessary.

Second, a disaster response product (DRP), which is a social product funded by the Government. It begun payment at mortality rates that exceed the BIP “exhaustion point”. Herders who purchase the BIP were automatically registered for DRP for the same number of species and livestock. For additional animals or for herders who decide not to purchase BIP, herders must pay MNT 40 per sheep unit (subject to annual review).

With scaling up of the project to the 21 *aimags*, the DRP sub-product has been discontinued.

5. *Livestock data collection.* Under this activity, the project aimed at supporting NSO in collecting and analyzing data that will be the basis for calculating annual soum level livestock mortality rates. Thanks to technical assistance provided by the USDA NASS, this objective was achieved. The survey carried out mid-year used a state of the art methodology that reduced errors in data collection.

6. *IBLI software development.* This activity was intended to enhance the existing IBLI educational software, the initial design of three operational software packages for operating the pilots, and the necessary testing, technical support and modification during the pilot period. This objective was achieved. The development of the IBLI software was successfully completed, and an audit of the 2006 sales shows that it was working properly (in 98% of the cases, see aide memoire of the second supervision mission, dated September 2006). The IBLI software has been installed at aimags and at PIU at UB. Other add-ons include a stand-alone Data Entry software, MIS software, and Portfolio Risk Assessment Software that has been made available, after training, to the participating insurance companies. A GIS feature to allow mapping of sum data to understand spatial patterns was also incorporated.

7. *Training during pilot implementation.* This sub-component aimed at providing technical support for the training of Project Implementation Unit (PIU) and insurance company staff, together with the provision of essential materials.

8. *Provision for and management of Contingent Debt Facility (CDF).* Under this subcomponent, approximately US\$5 million were made available in a Government held CDF to be used to fund indemnity payments to herders under the DRP and to meet any shortfall in indemnity payments under the BIP. In the second insurance cycle, the MoF made an official request to use the CDF on July 18, 2008, and the funds were deposited into the LIIP account on August 4, 2008 (relatively fast).

9. *Product Performance and Refinement.* Under this activity, performance criteria regarding the appropriateness of the insurance scheme was established to enable necessary adjustments of the insurance product. As shown by the continuous improvement in the design of the product through the pilot, this subcomponent has successfully reached its objective. For example, two years of successive losses by insurance companies have led to the introduction of an aimag-level stop loss, to limit losses due to high mortality in individual aimags, which would be priced into the government reinsurance.

10. Ultimately, this component overachieved all its objective: the pilot had four successful insurance cycles in (2006-2007), (2007-2008), (2008-2009), and (2009-2010). The sales of BIP have been greater than anticipated: 2412 policies were sold in all three pilot aimags in the first insurance cycle, over 3000 policies sold in the second insurance cycle, 4074 policies were sold in the third insurance cycle, and 5628 were sold in the fourth insurance cycle, including the newly added aimag. This result is unexpected, given the low amount of indemnity disbursed before 2008 (only \$142,000, or 2.8% of the CDF has been disbursed by 2008), and the declining price of cashmere in 2008 and 2009, which limited the ability of herders to pay for IBLI in cash.

11. Mongolia experienced two years of successive *dzuds*, and insured herders received payouts two years in a row, which resulted in losses for insurance companies. Despite these losses, all the four insurance companies that were present in the fourth insurance cycle had expressed their interest in continuing their participation for the fifth insurance cycle.

12. In addition, the mechanisms proved to be successful at disbursing the indemnity to herders in a timely manner. For example, by mid-August, all 1783 eligible herders received their claims (\$US340, 000).

13. During the fourth insurance cycle of the pilot phase, Mongolia suffered a severe *dzud*, the worst in recorded history in terms of numbers of livestock lost (around 0.7 million head) with high levels of losses across the four aimags covered by the insurance, resulting in significant indemnity payouts to insured herders. In fact, 84% of the insured herders received a total indemnity payment of US\$1.42 million. The survival of the pilot to this *dzud* event is a strong demonstration of its success. The table below summarizes the performance of the IBLI pilot.

	2006	2007	2008	2009
<b>Insured herders (penetration rate)</b>	2,412 (8.7%)	3,075 (12.8%)	4,047 (14%)	5,628

<b>Total livestock insured (#)(penetration rate)</b>	292,000 (5.5%)	409,000 (5.8%)	489,800 (6%)	789,038
<b>Insurance companies</b>	3	4	4	4
<b>Insurance agents</b>	144	154	183	
<b>Pilot aimags</b>	3	3	3	4

Table 6: Performance of the pilot

14. **Component 2. Promotion and Public Awareness Component (US\$0. 89 million, or 9.2 percent of total Project cost with IDA contribution of US\$ 0.86).** Under this component, the project aimed at creating awareness and educating key stakeholders on the details of the insurance product and the IBLI pilot. Stakeholders included herders and herder groups, local government officials, insurance sales agents, commercial banks and other micro-finance institutions, NGOs and relevant projects, parliamentarians, Government officials, donor organizations and insurance/banking institutions.

15. Being aware of the existence of the IBLIP products, and understanding how they work were the most important determinant for the uptake of these products. Therefore, the high participation rates of herders in this project can be attributed to the highly satisfactory implementation of this component. In addition, project documents as well as discussions with local stakeholders and PIU agents revealed that these activities were pivotal for the understanding of IBLI by local stakeholders.

16. The component had six awareness raising activities (i) identification of stakeholder public awareness needs and concerns; (ii) preparation and circulation of promotional materials. (iii) Face to face education of key local stakeholders and clients/beneficiaries; (iv) Radio and TV programs, (v) National and provincial workshops; and (vi) Inter-sum and aimag exchange visits.

- An extensive and comprehensive print and broadcast media campaign. The PIU conducted a comprehensive print and broadcast media campaign that included a very wide range of products: brochures, newsletters, TV advertisements, radio programs, playing cards with IBLI policies on each card, competitions, to name a few. Herders visited by the ICR team said that these materials enhanced their knowledge and understanding of the product.
- An extensive face to face education of key stakeholders and clients/beneficiaries. This activity was very extensive in the pilot aimags reaching almost 95% of all herder households in the first year and 56% in the second year. In the third year of the pilot, only 30% of the herders benefited from this activity. To overcome negative perception of livestock insurance among some herders, it was recommended that more focused discussions during the face-to-face education were made with influential herders.

- Radio and TV programs. Seven different topics were advertised on the Mongolian National Broadcasting TV (TV5 and TV 9). Radio advertisements were also transmitted through the Mongolian National Radio on a regular basis.
- National and provincial workshops on focus areas. Almost 600 workshops and meetings have been held to discuss the various aspects of the insurance scheme. These meetings/workshops range from parliamentary discussions on issues related to the legal and regulatory framework of the insurance scheme to sessions with groups of herders in a bagh on the basis of how the index is developed.

17. A slimmed down PPA campaign was introduced with the fourth aimag. While face-to-face education is one of the most effective ways to explain the product to herders, it is expensive. With the additional Sukhbaatar aimag being added to the pilot in the fourth insurance cycle, a slimmed down approach was adopted with a more targeted approach to face to face education and increased emphasis on alternative, cheaper media. This new approach did not compromise the degree of awareness of the project<sup>14</sup>. Furthermore, and also for financial sustainability, in Sukhbaatar and subsequent new aimags, as an alternative to the full time soum coordinator for the project, who in the pilot aimags has been one of the focal points for information sharing and promotion, local government officers, in particular, deputy soum governors, soum agriculture officers and bag governors, took over the role of promoting the project at the local level.

18. **Component 3: Institutional Capacity Building Component (US\$0. 65 million or 6.7 percent of total Project cost with all contribution from Japan PHRD Grant, and the FIRST Initiative Grant).** The objective of this component was to provide support to establish the institutional framework and capacity necessary for the potential expansion of the insurance products following demonstration of the viability of the concept. The component had three sub-components: (i) strengthening livestock data systems; (ii) developing legal and regulatory framework; and (iii) Examining options for nationwide expansion of IBLI.

19. *Strengthening livestock data systems.* This subcomponent aimed at enhancing the GoM's agencies, including the NSO to assess and develop alternative cost-effective methods for livestock data collection. This is particularly important since the success of the IBLI scheme is completely dependent on the provision of reliable and accurate livestock mortality data. Overall, this sub-component has been achieved successfully. First, the capacity of the NSO for conducting mid-year census has been enhanced since the methodology and the questionnaires were revised; and soum enumerators have been trained in the questionnaire usage. Second, instead of using a costly census methodology for the mid-year survey of June (used to calculate livestock mortality), the NSO has successfully started using a sample survey methodology the results of which show only insignificant differences with the census. These results are an

---

<sup>14</sup> In the original three aimags, face to face education was stopped, and awareness of the product instead depended on herder to herder communication, and promotional materials. For new aimags, the proposed approach is less intensive than in the original three aimags, though does include a face to face education program for the first year when the product is first being introduced with a continued focus on training of trainers as well as herders.

important achievement for the NSO as sample based surveys are cheaper than census surveys. A comprehensive technical assistance program for the National Statistics' office (NSO) with the National Agriculture Statistical Service of the United States' Department of Agriculture (NASS) was instrumental in achieving the objective of this sub-component.

20. *Developing legal and regulatory framework.* This subcomponent aimed at developing the necessary legal and institutional framework for the sustainability and prospective scale-up of the pilot IBLI Program on a nation-wide scale. The subcomponent also aimed at enhancing the capacity of the Government of Mongolia's related supervisory agencies (financial Regulatory Committee (to be established) and/or the insurance Supervisory Agency).

21. The main intermediate result, drafting IBLI regulation, has not been achieved by the end of the pilot because a Legal Working Group (established by the Government in the Spring of 2008, and including representatives of Ministry of Finance, Ministry of Justice and Internal Affairs, Ministry of Food, Agriculture, and Light Industry, insurance companies, scientists and researchers), decided that the IBLI framework should be regulated by a new and independent Law. This is because unlike traditional insurance, in which payments are made based on individual losses, IBLI's payments are made based on a soum mortality index.

22. To elaborate the new IBLI Law, a new Legal Working Group (the IBLI Working Group) was established in accordance with the Minister of Finance's order dated June 2nd 2010. Its members have been drawn from MOF, MOFALI, MOJHA, FRC and participating insurance companies and included professors and researchers. It was chaired by the Vice-Minister of Finance. It was agreed to frame the new legislation in such a way to enable gradual scale-up of IBLI, and to be consistent with the project's approach and objectives.

23. *Examining options for nationwide expansion of IBLI.* The objective of this subcomponent was to create a plan for the expansion of IBLI and to assess the fiscal and economic implications of a national program. The objective of this subcomponent was successfully achieved since the outcome of this activity allowed the project to be scale-up nationwide.

24. A part of this subcomponent, the project worked closely with other key project counterparts such as the Financial Regulatory Commission, the Ministry of Justice, the Ministry of Finance, the Ministry of Agriculture and members of parliament to assess what type of support would be required to develop the agricultural insurance industry. The following was achieved:

- A study on the economic, financial, fiscal and social consequences of expanding the index-based livestock insurance program nationwide was realized. This study expanded the portfolio risk assessment software to all aimags in Mongolia, including the development of boundary maps of Mongolia at the sum level so as to carry out a thorough risk assessment of livestock mortality (*check if this took place*)
- Technical assistance started being provided for various feasibility studies to assess options/issues for nationwide scale-up.
- Another aimag was added to the pilot to enhance the learning potential from the pilot

- Enough interest was generated among insurance companies in the global reinsurance market. This was achieved thanks to a study tour to Europe that was organized by the PIU, where a delegation (including representatives from all four participating reinsurance companies, the Financial Regulation Commission, National Statistics Office and PIU) met with five reinsurance firms.
- Support to the development of an appropriate legal and regulatory framework was secured.

25. **Component 4: Monitoring and Evaluation (M&E) Component (US\$0.27 million, or 2.8 percent of total Project cost with IDA contribution of US\$ 0.20).** This component sought to track access by different social groups, to monitor responses to the newly introduced IBLI product, and to determine if and how herders modify their behavior. Key elements of this component were: (i) the baseline survey; (ii) the annual field based monitoring, (iii) the impact assessment, (iv) post-event monitoring framework, and (v) M&E training and capacity building. The objectives of this component as measured in the results framework were met: the targeted number of annual monitoring reports, impact assessments, and post-event indemnity response report were met; the number of herders interviews conducted met the target, and the number of dissemination workshops were met (check).

26. More importantly, the findings of these reports were used to inform changes in the design of the IBLI product. For example, thanks to the monitoring activities of the 2008 sales season, it was decided that the one on one education method to raise awareness among herders was costly and potentially unsustainable. In addition, the M&E revealed that herders were not sensitive to price, and that stipulating the administrative charge on the sales sheet caused confusion among herders.

27. The baseline survey. The baseline survey took place soon after the project became effective in 2005. It was carried out in the three pilot aimags and also in three non-pilot aimags and covered a total of 24 soums.

28. The annual field based monitoring (AFBM). An AFBM report was produced yearly throughout the lifetime of the pilot. The reports provided valuable information of the project on the field that allowed refining the IBLI product and its delivery mechanisms. In fact, it improved the understanding of the determinants of herder's uptake of IBLI by documenting their views on the pilot, and their understanding, knowledge and attitude towards the insurance contract. They also documented IBLI sales, and attitudes of insurance companies and their agents, attitudes and participation of government officials in the project activities, and the involvement of banks and non-banking financial organizations. They also documented the efficiency of the indemnity payment distribution, and more general perceptions of insurance. More importantly, they contained useful information on the PPA approaches, and were very valuable in assessing the different PPA approaches that were used. No delays were observed in this activity during the pilot, except the AFBM report of the fourth cycle as the financing was coming from the Korean Grant which only became effective in August 2010.

29. The impact assessment. The first impact assessment was conducted jointly with the AFBM in 2007. In 2010, it was agreed that the project would make a rigorous impact assessment after three insurance cycles have been completed, based on a methodology developed by an international consultant. It was also agreed to engage local consultants to work with international team to develop the detailed survey instrument and to carry the data collection, analysis and presentation. However, the PIU faced delays in selecting a consultancy to carry out this task. At first, funding was not available from the Swiss TF as the closing date has elapsed and required restructuring. When this problem was addressed, qualified consultants within the budget allocated to this task were not available. The ToRs for this task were cleared only during the scale-up phase of the project.

30. Post-event monitoring framework. This framework is initiated only if a significant event and payout occurs, as detailed in the M&E manual. It aimed at tracking and evaluating logistical aspects (such as timing, delivery and receipt of payments) as well as monitoring and evaluating recipient's responses (such as their degree of satisfaction with the process/timing, use of funds, influence on future insurance purchases, etc.)

31. M&E training and capacity building. Training was provided to XX aimag and soum staff on M&E methods and specific processes and approaches for the IBLIP M&E by the PIU and an international M&E consultant. Additional training was also provided to the PIU and the AFBM consultant on participatory methods such as community scorecard, citizen report card, and soft systems analysis.. In addition, an international consultant team provided capacity building to the PIU and helped it design an M&E Manual that was translated into Mongolian and disseminated in all soum secretaries and aimag coordinators.

**Restructured credit No.: IDA4096-MG; IDA4680-MN, TF094002-MN, TF094827; Project IP: P088816**

32. With the additional financing to scale up the project from 4 provinces (aimags) up to an additional 17, the component titles of the original credit did not change, but there were minor modifications to reflect : (i) Simplification of design and discontinuation of DRP, (ii) enhancement of likely sustainability through scaling back or redesigning support activities; and (iii) greater emphasis on institutional capacity and institutional and legal frameworks for sustainability, reflecting the shift from piloting to scale-up. The components, their modifications and their output are as follows:

33. **Component 1: Index-Based Livestock Insurance Programs (US\$11.348 million, including US\$11.348 CDF).** This component remained the core component of the project. In addition to the five activities of the original component 1 under the pilot, the following substantial changes were made: (1) separating the commercial insurance from the DRP; (2) introducing the Government Catastrophic Coverage; (iii) scaling-up the project from 4 aimags to a national coverage (5 aimags in 2010, and 6 in 2011, and 6 in 2012); and (iv) introducing sample based data surveys instead of annual-midyear censuses as the basis for livestock mortality calculation to reduce data collection costs and increase the accuracy of the mortality

estimates. The main objective of this component was to ensure that Index based livestock insurance is scaled-up.

34. This component has overachieved its objective. First, 7 private insurance companies were participating in the project by the tenth insurance cycle, offering an insurance contract to almost 10,000 herders in all 21 aimags. In the first sales season in 2006, three insurance companies executed the sale of livestock insurance products. The number of participating insurance companies has gradually increased with the addition of Bodi insurance in 2007, Monre insurance in 2012, and Normin insurance and Practical insurance in 2013. In addition, as of 2015, there were 3,800 insurance agents (with overlap) selling IBLI policies on a part-time basis. The commitment of the insurance companies to the IBLI program is demonstrated through their decisions to stay in the program despite registering losses after the 2010 Dzud. This result is surprising given the relatively good climate observed during the past 3 insurance cycles, and the decreased intensity of public awareness activities due to the approaching project closure.

35. Second, international reinsurance was successfully secured for IBLI. In 2010, the first reinsurance contract was executed between the PIU and SCOR, an independent global reinsurance company, to cover part of the risk borne collectively by the insurance companies. This coverage with SCOR has been further expanded in 2011 and 2012 with QatarRe joining the program in 2013. Since 2013, further transfer of risk to the international reinsurance markets was achieved through contracting with SwissRe and Lloyds Syndicates.

36. **Component 2: Promotion and Public Awareness Component (US\$0. 962 million).** This component continued to raise awareness among the same stakeholders and using the same methods as during the pilot. This component was successful in raising the awareness levels of the herders. In fact, by the end of the project, 85.3% of herders in selected areas were aware of the product compared to the target of 80%. In addition, 56% of the herders in the pilot areas received information from the project, compared to the target of 50%.

37. The success of this component was thanks to the continuous effort put by the project to develop and use both innovative (for example, a risk management board game was used in the Northern aimags) and traditional approaches to disseminate information and educate on insurance. To sustain the financial viability of the scheme, face-to-face education, despite being the most effective education tool, was scaled back since it is costly. Subsequently, a new approach focusing on training of trainers were used to reduced cost. The restructuring of the project in 2012 allowed the reallocation of funds to the training expenditure category.

38. Furthermore, to make information dissemination and education effective, the activity was decentralized to the aimags. The aimag coordinators was tasked to prepare a program to reach herders and was responsible for implementation but service providers were still paid from headquarters (check when this was done).

39. **Component 3: Institutional Capacity Building Component (US\$0. 675 million).** As in the pilot, this component continued to provide support for capacity building for key public institutions that play key role in implementation. The only difference is that support under this component was refocused on sustainability of institutional arrangements (including legal and regulatory) and the capacity of stakeholders (NSO; insurance companies, FRC, etc.). The new

activities are (i) capacity building to strengthen livestock data collection systems; (ii) capacity building to support development of an appropriate legal and regulatory framework, including the development of a livestock insurance law; and (iii) capacity building to the FRC in developing an appropriate regulatory framework for IBLI, including providing assistance in developing prudential requirements and in considering future regulations that may be needed to support IBLI.

40. *Capacity building to strengthen livestock data collection systems.* Under this sub-component, the project aimed at continuing the capacity building activities undertaken under the pilot, to accompany the NSO in the successful scale-up of the project. Overall, this sub-component has been successfully achieved. The target number of soums where cost effective new methods for NSO livestock data collection and statistics introduced was overachieved (330 soums from 21 aimags and nine districts from Ulaan Baatar compared to a target of 200 soums by the end of the project). More importantly, the mid-year survey for livestock mortality calculation is now fully institutionalized and implemented a national scale without the project's support.

41. A remaining issue that does not affect the rating of this subcomponent, is that the cost of the mid-year surveys remains high, especially with the national scale-up of the project. This could negatively affect the future sustainability of the insurance scheme since it represents the largest share of its cost. The TT recommended finding other ways of financing this mid-year survey, (different from adding this cost to the administrative load of the insurance scheme since it could discourage its demand), and the idea of NSO financing this cost from its budget was proposed. However, it remains unclear whether this took place.

42. Capacity building to support development of an appropriate legal and regulatory framework, including the development of a livestock insurance law. Under this subcomponent, it was expected that an appropriate policy and institutional framework for the sustainability of the index insurance program beyond the lifetime of the project would be developed. This objective was successfully achieved as the Index based Livestock Insurance Law (IBLI) was passed by an Act of Parliament on June 13, 2014. It was even above the target since the target was only to draft the legislation (and the current status is that the law is adopted).

43. The drafts of the legislation were elaborated by a Legal Working Group (the IBLI) that was established in accordance with the Minister of Finance's order dated June 2nd 2010. Its members have been drawn from MOF, MOFALI, MOJHA, FRC and participating insurance companies and includes professors and researchers. It was chaired by the Vice-Minister of Finance.

44. Before drafting the IBLI Law, the Legal Working Group has successfully established a legal and regulatory program, in which public-private partnerships would remain with a clear separation of roles and responsibilities between the Mongolian Agriculture Reinsurance Joint Stock Company (AgRe), which would continue playing the role of the PIU after the end of the project, and the Government, which would continue to play a role similar to the IDA Contingent Facility. The institutional framework of the new legal entity was reviewed by consultants that determined that it provides a feasible and sustainable business model. In addition, a formal actuarial review of the ratemaking methodology was completed by an accredited international actuary teamed with a local actuary.

45. The Ministry of Finance followed-up and approved a charter for the establishment of AgRe on September 5, 2014 to take over the management of the IBLI program after the Bank's support ceases. The Government has also released an amount of 20 Billion MNT as the initial capital for the Company out of which 19.6 billion MNT has been invested in Government bonds leaving 0.4 billion MNT in the Company's accounts. The government has also established a Board of Directors and appointed officers to various positions. A business plan was prepared and used for securing a license for the Company. The Company was duly established, registered by the General Authority for State Registration and issued a certificate under the Company's Act on September 26, 2014. Following the establishment of the Company, the capital adequacy, operations manuals and relevant regulations have been drafted. The PIU made sure that all necessary capacity was transferred to the AgRe, organized training and workshops, and few PIU staff moved to the Company

46. Capacity building to the FRC. The Financial Regulatory Commission was established in January 2006, at the start of the IBLI pilot. This subcomponent aimed at strengthening the capacity of the FRC to develop an appropriate regulatory framework for IBLI, by providing assistance in developing prudential requirements and in considering future regulations that may be needed to support IBLI. This objective was successfully achieved as an international legal and regulatory consultant provided technical assistance to the company on: (i) the draft regulations to be issued under IBLI; (ii) the 2013 reinsurance agreement; (iii) the proposed 2014 reinsurance agreements and amendments. The consultant also drafted an IBLI Stop Loss Reinsurance Agreement and the Operating Agreement to replace the previous Cooperation agreement, including the final version of 2014 LRI herder policy. As a result of this technical assistance, 3 draft regulations applicable under IBLI law: Premium, Mutual risk fund and Independent Fund are in drafts and yet to be approved jointly by the MoF and FRC as required by Index-based Livestock Insurance Law (IBLI Law).

47. **Component 4: Monitoring and Evaluation (M&E) Component (US\$0.395 million).** This component and its objective did not change as a result of the scaling up of the project. All the activities carried out during the pilot were also successfully completed and contributed to the refinement of the product and its distribution mechanism. The final ISR rates this component as satisfactory. In addition to the other regular monitoring and evaluation activities, an impact assessment was carried out in 2014.

### Annex 3. Economic and Financial Analysis

1. The objective of the IBLIP project was to reduce the impact of livestock mortality on herders by transferring part of the mortality risk through an index based livestock contract. When *dzud* (severe drought and winters) strike Mongolian herders, the effects are devastating. Livestock, their main asset and source of livelihood, weaken and face an increased mortality risk. This situation forces poor households to sell their livestock to keep a minimum consumption level, which limits their ability to generate income. Anticipating the negative impacts of *dzud*, uninsured herders adopt costly risk management strategies, such as increasing their herd size at the cost of reduced livestock quality (i.e. health) and reduced availability of forage.

2. In theory, IBLIP has two anticipated types of impacts. First, indemnity payments received in case of high sum level mortality rates allow herders to re-stock, and therefore to preserve their main source of livelihood. As demonstrated in the impact study (annex 5), herders who purchased the index-based livestock insurance in 2009 and received indemnity payments in autumn 2010 (a *dzud* year) have a larger herd size in 2011, 2012, and 2013 compared to herders who did not purchase the index-based livestock insurance<sup>15</sup>. Second, anticipating the indemnity payment in case of a high mortality rate, insured herders would limit the herd size to the carrying capacity of their environment to keep a herd of a good quality. This finding has been verified thanks to interviews conducted with herders during field visits.

3. At appraisal, in 2005, it was decided that a traditional economic and financial analysis of the IBLIP project, which reports internal rates of return, was not feasible because of the probabilistic nature of the benefits of insurance--insured herders get a payout only in high livestock mortality years. An expected utility approach was also ruled out because of the complexity of measuring risk preference parameters<sup>16</sup>. Instead, to obtain insights into the effect of the project on herders, a multi-period herd model, simulated over the 1993 to 2003 period for the IBLI pilot was used to identify changes in with-project (i.e., insured) herder income, ending herd value, and herder household income volatility relative to without project (i.e., uninsured) herders. The model was run for six selected *sums*, two in each pilot *aimag*, Khentii *aimag* (Batnorov and Binder *sums*), Bayankhonga *aimag* (Jargalant and Baynonor *sums*), and Uvs *aimag* (Malchin and Olgii *sums*). Within each *aimag*, one *sum* was classified as high risk and one *sum* as low risk according to actual historical mortality rates experienced in each *sum*.

4. The PAD analysis indicated that when *dzud* mortality rates are relatively high, an insured herder is likely to have a higher yearly income over the long term than an uninsured herder, as well as a higher herd value. Furthermore, the insured herder is able to do this with a decreased herd size because the IBLI insurance can be substituted for the ever increasing herd size policy of risk mitigation practiced by most herders. This may have the long-term effect of keeping the livestock size consistent with the long-term carrying capacity of the range (especially in *dzud* prone areas) as well as increasing environmental benefits.

---

<sup>15</sup> The magnitude of the treatment effect is relatively large: In 2011, treated households own on average 15 to 16 percent more livestock than control households; in 2012, they own between 22 percent and 27 percent more livestock; and in 2013, they own about 17 percent more livestock. It can be seen that the positive effect of the indemnity payments appears to attenuate three years after the shock.

<sup>16</sup> See the following working paper for more details: Financial and Economic Analysis Working Paper, Mongolia Index-Based Livestock Insurance Project (IBLI), January 10, 2005, on file with World Bank and FAO Investment Centre. Also see Annex 9, World Bank Project Appraisal Document, May 2, 2005, Report No. 32220-Mn.

5. At the time of the appraisal of the additional financing for the national scaling up of IBLIP in 2009, a review concluded that the multi-period herd model was still a valid tool to learn about the impacts of IBLIP on herders<sup>17</sup>. Thus, the multi-period herd model simulation used in the PAD was updated and run over a ten year period from 1998 to 2007 for Malchin *sum* (low mortality) and Olgii *sum* (high mortality) in Uvs *aimag*. The results of 2009 analysis corroborates the 2005 analysis at appraisal. The results indicate that net income increases can be substantial for a with-project insured herder over an uninsured herder primarily because insured herders are able to restock using the combined BIP and DRP payout from each *dzud* event year. Net income increases are considerable and are 14%, 15% and 17% higher in Malchin *sum* and 13%, 22% and 37% higher in Olgii *sum* relative to the without-project base net income for each of the percentage coverage levels simulated (i.e., 30%, 50% and 100% of animal value respectively). Additionally, the value of the herd in Olgii *sum* (which has a high mortality risk) is higher at the end of the period (2007) relative to the without-project herd value by 88%, 95% and 115% depending on the percentage of livestock species value insured respectively. The high species mortality rates prevent the uninsured herder from increasing herd size above that of the with-project herder who uses the IBLI payouts for restocking.

6. Using the PAD Financial and Economic analysis as a guide for purposes of comparability, this ICR analysis updates the original simple multi-period herd simulation model to gain insights into the benefit of the project to herders, using data collected from project reports, NSO databases, and national and international databases. This analysis provides participating organizations with an insight into the impact of the project in terms of herder income, ending herd value, and herder household income volatility, using updated assumptions.

### **Main Assumptions of the model**

7. The multi-period herd model used in the PAD was updated over the 2005-2015 period to identify changes in with-project herder income, ending herd value, and income volatility. The model was simulated in two selected *sums*: Bumbugur *sum* (high risk) and Jargalant *sum* (low risk) in Bayankhongor *aimag* (pilot *aimag*)<sup>18</sup>. The model was also simulated for two *sums* in Tuv *aimag*, but this annex describes the results for Bayankhongor *aimag* only since the results of Tuv *aimag* are qualitatively the same.

8. Most of the assumptions remain the same for the ex-post simulation model analysis (they were validated by field visits) with three main exceptions: (i) the strike rate for the IBLI insurance program has been changed from 7% to 6% starting in 2009, (ii) the Disaster Response Product (DRP) has been discontinued, and (iii) the revenue from milk is accounted for when calculating herders' total revenue.

---

<sup>17</sup> Financial and Economic Analysis Working Paper, Mongolia Index-Based Livestock Insurance Project (IBLI), 2009, on file with World Bank and FAO Investment Centre. J.G. Nagy, TCIE, FAO Investment Centre.

<sup>18</sup> Selection of *aimags*. A choice was made to simulate the model for one the original *aimags* (two *sums* – high and low risk), as well as one of the *aAimags* included as part of the scaling-up of IBLI in 2010 to national level. Of the three original *Aimags* included in the project (Uvs, Bayankhongor and Khentii), the largest variation between low and high risk *Soums* was found in Bayankhongor with an average growth in herd sizes for 2003-2015 across all *Soums* of 243%. However, Bumbugur *sum* registered 596% growth and Jargalant only 80%. Bayankhongor was therefore selected from the original *aimags*. For the new *Aimag*, the earliest incorporated into the expansion in 2010 was Tuv with an average growth of 202%. The lowest and highest risk *Soums* respectively over this period (2003-2015) were Zammar (343%) and Batsumber (28%). These *Soums* within Tuv *Aimag* were accordingly selected.

9. *Model and Production Coefficients.* The model is adapted from a single period herd model formulated by the Centre for Policy Research (CPR) in Mongolia and is based on field survey information. The model has five species and begins with 200 animals in the initial year (*camels, 3; horses, 17; cattle 14; sheep, 88; goats, 78*).<sup>19</sup> The model specifies species coefficients for the percentage of reproductive females, yearlings per 100 females, live animals sold, and number of livestock consumed by the household. Coefficients are also specified for wool and cashmere yield/animal by species, and for milk production. Yearly mortality rates are actual rates calculated from the National Statistical Office (NSO) data and presented in Tables 1 for the two *sums*.

**Table 1. Animal Species Mortality Rates, Bayankhongor *aimag*, 2005-2015**

	Bumbugur <i>sum</i>					Jargalant <i>sum</i>				
	Camel	Horse	Cattle	Sheep	Goat	Camel	Horse	Cattle	Sheep	Goat
2005	1.6%	0.4%	1.2%	1.0%	0.2%	0.0%	0.4%	0.4%	0.4%	0.4%
2006	4.6%	0.6%	1.0%	1.2%	0.3%	0.0%	4.8%	5.3%	4.6%	5.4%
2007	7.7%	0.8%	1.3%	1.1%	0.3%	7.7%	3.4%	3.1%	2.5%	3.2%
2008	3.2%	1.1%	4.5%	0.3%	0.1%	0.0%	3.3%	2.7%	2.2%	2.3%
2009	27.2%	15.1%	10.5%	22.0%	12.9%	0.0%	4.3%	3.7%	7.0%	6.2%
2010	25.3%	27.8%	35.6%	41.1%	22.9%	6.3%	20.9%	26.8%	18.0%	18.0%
2011	7.4%	0.5%	0.9%	1.4%	1.1%	0.0%	4.2%	4.0%	2.7%	2.3%
2012	<b>11.0%</b>	<b>6.6%</b>	<b>7.9%</b>	<b>9.7%</b>	<b>5.4%</b>	0.0%	0.8%	0.6%	0.6%	1.0%
2013	<b>11.0%</b>	<b>6.6%</b>	<b>7.9%</b>	<b>9.7%</b>	<b>5.4%</b>	0.0%	0.9%	0.9%	0.3%	0.5%
2014	<b>11.0%</b>	<b>6.6%</b>	<b>7.9%</b>	<b>9.7%</b>	<b>5.4%</b>	0.0%	1.4%	0.3%	0.3%	0.4%
2015	<b>11.0%</b>	<b>6.6%</b>	<b>7.9%</b>	<b>9.7%</b>	<b>5.4%</b>	0.0%	0.5%	0.6%	0.3%	0.4%

Source: Calculations using NSO data; data in bold is missing and was replaced by the average historical rate

10. *Period of Analysis.* The period of analysis for the simulation is ten years over the period of 2005 (start of the IBLI project) to 2015 (closing of the IBLI project). This historical period simulated also contains the severe *dzud* event (mortality rates above 6%) of 2010 that caused the loss of 9.7 million heads of livestock with an estimated value of US\$477 million in Mongolia. The sums in Bayankhongor *aimag* were more affected by the *dzud* than their counterparts in Tuv *aimag* (see table 1).

11. *Prices and Sales Revenues.* The historical 2005 to 2015 animal and animal product prices are based on NSO data (for live animals, wool and cashmere, and hide and skin) and FAOSTAT data (for milk). Missing price data was estimated with the Consumer Price Index (IMF International financial Data, 2016) using 2015 as the base year. Yearly sales revenues are calculated for live animals sold, milk, wool, cashmere and skins and hides from consumed animals.

12. *Production Costs.* Yearly production costs that include taxes on animals, fodder, migration costs, veterinary services and fuel costs are accounted for to identify herder net revenues. As no yearly record of

<sup>19</sup> At appraisal, 80% of all herds in Mongolia were less than or equal to 200 animals and the model is representative of a large number of herders who have between 150 to 225 animals. It was estimated that the herd size required to sustain a family at a reasonable level of income is 200 or more animals. Although herd sizes in Mongolia have changed since the appraisal and the additional financing, we maintained this assumption for the purpose of comparability with the initial model.

the cost and amount of each of these items are readily available, updated costs/animal from the CPR Model were estimated each year to 2015 using the Consumer Price Index (Producer Price Index not available).

13. *Other Model Assumptions:*

- The herder's livestock mortality rate is the same as the *sum* mortality rate, which means that there is no basis risk.
- In a *dzud* year, the herder will sell one-half of normal livestock sales to preserve his productive asset.
- The herders sell all the milk that they produce (the auto-consumption is negligible).
- In addition, to maintain comparability with the original analysis, it is assumed that uninsured herders have the goal of increasing herd size as a self-insurance mechanism but the increase is limited to the annual species growth rate at the national level<sup>20</sup>.
- Herders do not receive any other disaster relief in the form of income or restocking of animals<sup>21</sup>.

14. *With-Project Assumptions, Strike Rates and Insurance Premiums.*

The with-project situation offers herders the possibility of purchasing IBLI by paying a premium that varies by specie<sup>22</sup>. Herders receive payouts based on the average mortality rate at the sum level, which is assumed to be the same as the herders' livestock mortality rate as explained above. When the sum level species mortality rates are higher than the species strike rate (6% for all animals), the herder receives a payout.

The actual payout amount depends on the percentage coverage of total insurable livestock value by species chosen by the herder (any amount between 1% and 100%). Additional with-project assumptions are as follows and are the same as in the original analysis.

- The herder will use one-half of insurance payment for household consumption and the other half for restocking of animals during the *dzud* year<sup>23</sup>.
- The composition of restocked animals is the same as the composition of the herd - restocking is done in proportion to the IBLI payout by species.
- The with-project herder will start with an initial herd size of 200 animals in 2005 but will limit the herd size to 225 animals in each of the following years. In fact, they use IBLI insurance as their main means for risk mitigation instead of an ever increasing herd size.

---

<sup>20</sup> We assumed that the national annual species growth rate remained the same since the additional financing.

<sup>21</sup> Field visits in 2016 revealed that the aid that herders receive in case of a *dzud* is ad-hoc (mostly hay and fodder), and is unlikely to disincentivize them from taking up insurance.

<sup>22</sup> Since data on *sum* level loaded premium was not available, it is assumed that the loaded premium at the sum level is the same as the loaded premium at the aimag level, which is in turn calculated by dividing the total insurance premium collected from the aimag by the total value of livestock insured.

<sup>23</sup> Field visits and findings of the impact evaluation revealed that herders used the insured payouts to restock and that they were concerned about not having a herd size above the carrying capacity of their grazing area.

- The model assumes a constant percentage value of livestock insured by species throughout the period. That is, if a herder selects 50% of the value of a livestock species to be insured, the model assumption is that 50% of the value of the species will be insured each and every year.

## Model Results

15. The multi-period herd model was simulated from 2005 to 2015, using the assumptions described above, and starting with herd size of 200 for both with-project and without project scenarios. Table 3 and Table 4 present a summary of the simulation model results. Results are given for three different percentage coverage levels of the total insurable value of all livestock species in the model (i.e., 30%, 50% and 100%), as was done in the original analysis, to capture the heterogeneity of the potential impacts depending on the chosen coverage level.

16. Table 3 presents the total IBLI payouts and the premiums paid by herders for the Bayankhongor aimag. Insurance premiums and payouts increase proportionally with the proportion of livestock value insured. The IBLI loss ratio (indemnity payouts/ premiums) in Jargalant sum is 0.5 whereas the loss ratio in Bumbugur sum is 1.18 reflecting the difference in the mortality risk between the two sums. The results in Table 3 indicate that the IBLI program benefits to herders will be different in each sum as would be expected because of the difference in *dzud* events and that herders would respond accordingly as to what animals to insure and at what rate.

Table 2. Herder IBLI Premiums and IBLI Payouts, Bayankhongor aimag (2015 Constant US\$)

livestock value insured	Jargalant Sum (Relatively Low Risk)				Bumbugur Sum (Relatively High Risk)			
	2006	2010 ( <i>dzud</i> )	2010	Total a/	2006	2010 ( <i>dzud</i> )	2015	Total a/
<b>30% b/</b>								
Premium	93	317	614	3,533	93	317	568	3,348
Payouts	835	846	0	2,580	835	2,246	164	5,166
<b>50%</b>								
Premium	155	528	1,040	5,946	154	531	979	5,722
Payouts	835	1,410	0	3,159	835	3,140	285	6,911
<b>100%</b>								
Premium	310	1,057	2,167	12,178	309	1,073	2,122	12,082
Payouts	835	2,820	0	4,607	835	5,409	631	11,455
Loss ratio c/				0.5				1.18

Source: Herd Models applied to Jargalant sum and Bumbugut sum).

a/ Total of all premiums paid by the herder over the 10 years and total of all payouts over the 10 years.

b/ All species are insured at the same rate in the model runs.

c/ Average loss ratio.

17. The results in Table 3, Figure 1, and Figure 3 corroborate the findings of the original economic analysis. They indicate that net income increases for a with-project (insured) herder over an uninsured herder in both *sums* because insured herders can restock using 50% of the insurance payout from each *dzud event* year while limiting the herd size to 225 animals. Net income increases are considerable and are 7%, 6 and 4% higher in Jargalant *sum* and 5%, 6% and 7% higher in Bumbugur *sum* relative to the without-project base net income for each of the percentage coverage levels simulated (i.e., 30%, 50% and 100% of animal value respectively). Additionally, the with-project herder's value of the herd in Jargalant *sum* is higher at the end of the period (2015) relative to the without-project herd value by 12% to 19%

depending on the percentage of livestock species value insured. The high species mortality rates prevent the without-project herder from increasing herd size above that of the with-project herder who uses the IBLI payouts for restocking. With lower relative mortality rates in Jargalant sum, the with-project herder's value of the herd at the end of the period (2015) is higher than in Bumbugur sum.

**Table 3. Summary of Simulation Model Results for Bayankhongor aimag**

	Without Project	With Project Results (%Livestock Value Insured)			Changes With Project (%Livestock Value Insured)		
		30%	50%	100%	30%	50%	100%
<b>I. Jargalant Sum, Bayankhongor Aimag</b>							
<u>Income (2015 constant US\$ )</u>							
Total net income over period a/	161,389	172,999	171,646	167,867	11,611	10,258	6,479
% change in net income					7%	6%	4%
Mean income /year	14,672	15,727	15,604	15,261	1,056	933	589
Std. Deviation	4,295	4,520	4,611	4,881			
Coefficient of Variation	29	29	30	32			
VaR(5%)	9,750	10,093	10,030	9,872			
VaR(10%)	10,103	10,185	10,123	9,968			
Value of herd in 2015 (2015US\$)	26,442	29,730	30,236	31,499	3,288	3,794	5,057
<u>Livestock Herd Numbers</u>							
Livestock total at end of 2015	232	225	225	225	-7	-7	-7
Mean livestock total over period	217	223	223	223	6	6	6
Animal Units (AU) in 2015	445	441	449	470	-3	5	25
Mean AU over period	401	411	414	421	11	13	21
<b>II. Bumbugur, Bayankhongor Aimag</b>							
<u>Income (2015 constant US\$)</u>							
Total net income over period a/	156,518	164,698	166,020	167,635	8,181	9,502	11,117
% change in net income					5%	6%	7%
Mean income /year	14,229	14,973	15,093	15,240	744	864	1,011
Std. Deviation	4,615	4,625	4,865	5,530			
Coefficient of Variation	32	31	32	36			
VaR(5%)	9,779	10,013	9,950	9,793			
VaR(10%)	10,113	10,015	9,953	9,799			
Value of herd in 2015 (2015 US\$)	25,741	27,515	28,441	30,833	1,774	2,700	5,093
<u>Livestock Herd Numbers</u>							
Livestock total at end 2015	218	225	225	225	7	7	7
Mean livestock total over period	216	218	220	222	2	4	7
Animal Units (AU) in 2015	422	427	442	478	5	19	56
Mean AU over period	401	407	414	429	6	13	29

Source: Herd Models applied to Jargalant sum and Bumbugur sum).

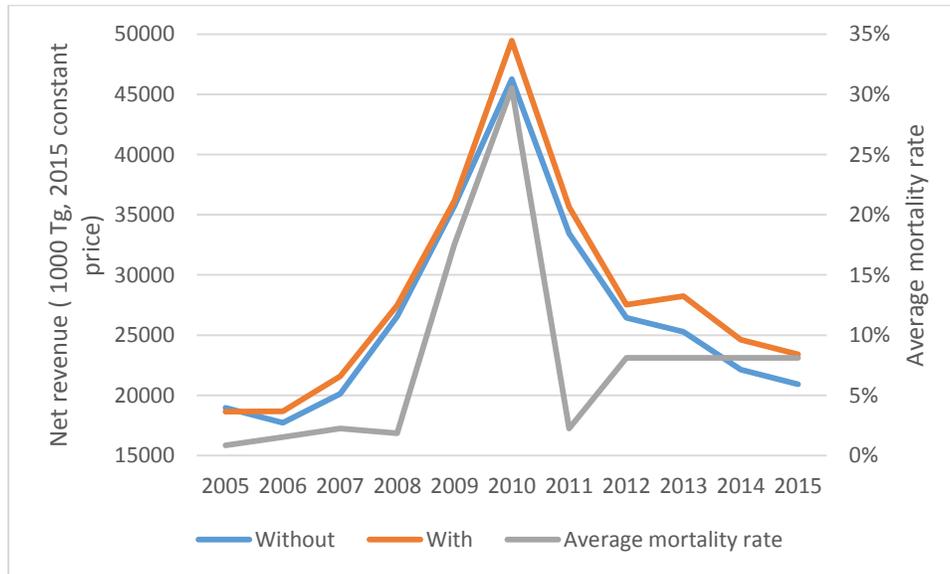
a/ Includes the 50% of IBLI payouts that the herder uses for household consumption.

18. The benefits of IBLI payouts to herders increase with the amount of coverage they choose for their livestock. The largest gains in terms of livestock value take place when 100% of the livestock is insured, but even the gains when insuring only 30% of the value of the livestock are considerable. The with-project income variability (the coefficient of variation), is higher than without-project income variability in both sums because of the relatively large payouts in 2010.

19. The value at risk (at 5% and 10%) of the herder's income with and without insurance does not show large differences. However, the value at risk of the income (at 5%) is generally higher when

insurance is purchased relative to the without insurance scenarios for both sums. This means that the insured herder is less exposed to low incomes when insured at the 100% level than the uninsured herder.

**Figure 4 Mortality rates and net revenue with and without insurance, 50% coverage level, Bumbugur sum**



**Figure 5 Mortality rates and livestock numbers with and without insurance (in sheep units), 50% coverage level, Bumbugur sum**

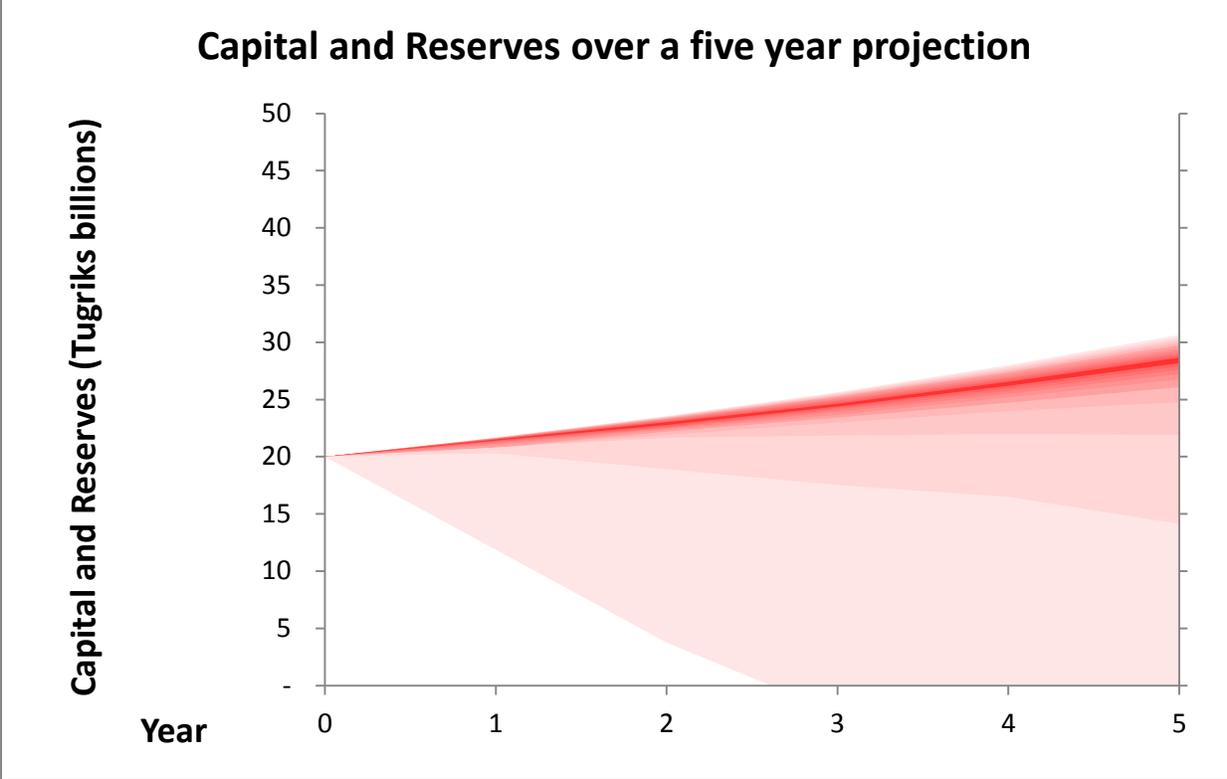


### Financial forecast analysis

20. A financial forecast analysis was conducted to explore the sustainability of the Agriculture Reinsurance company (AgRe) in the mid-long term. A dynamic financial analysis

(DFA) was developed, which conducted 10,000 simulations of potential outcomes for how the capital of AgRe will grow over a five year time horizon. These simulations were then analysed to understand the likely range of outcomes for the capital of AgRe. The assumptions of the DFA are given below. The results of the DFA can be seen in Figure 6.

Figure 6: DFA of Capital & reserves of AgRe over time



Explanation of results:

21. The chart shows the relative likelihood of possible outcomes for the growth in the capital of AgRe over a 5 year time horizon. The central band, coloured deep red, is the median projection and there is a 10% chance that this outcome will occur. The next deepest shade, on both sides of the central band, represents the 45<sup>th</sup> and 55<sup>th</sup> percentile outcomes, and therefore takes the distribution out to 20% (i.e. there is a 20% chance that the central deep red band or the next deepest shade band will occur); and so on, in steps of 10 percentage points until the outermost (lightest shade of red) band which takes the distribution to the 99% percentile (i.e. there is a 99% chance that the projection will be within all bands shown on the graph).

22. The median projection is that the capital of AgRe will grow by approx. 40% by year five to approx. Tugrik 29 billion. This growth is driven by growing the premiums, investment returns on assets and the application of a sound reinsurance strategy. This represents good expected outcome for AgRe, and shows that it is likely to be sustainable in the mid-long term.

23. There is an 8% chance that the capital will be less than the Tugrik 20bn, the assumed starting level of capitalization of AgRe. In other words, there is a 92% chance that after five years AgRe will maintain its level of capital. This again represents a good outcome for AgRe, and again displays that it is highly likely AgRe will be sustainable in the mid-long term.

24. There less than a 1% chance that the capital will be depleted by year five. Given AgRe is a (re)insurance company, it should be in the business of taking on and managing risk. Thus it should be case, and indeed is desirable, that the probability of depletion of capital is greater than zero over a five year time horizon. This demonstrates that AgRe is indeed taking on and managing risk in a calculated and strategic manner – on the one hand, reinsurance is good as it helps remove risk from the balance sheet. On the other hand, reinsurance is costly so can impact the profitability of a company is too much risk is transferred to their markets. AgRe appears to be striking this balance well, effectively using the capital it has been given by GoM to take on risk, and then ceding the more catastrophe risk to the reinsurance markets to protect its balance sheet (and capital) from extreme losses.

#### Assumptions of the model:

- Capital at year 1: Tugrik 20 billion
- Annual interest rate on retained capital: 3%
- Reinsurance attachment (expressed as a loss ratio): 56%
- Reinsurance exhaustion point (expressed as a loss ratio):202%
- Reinsurance Multiple (multiplied times the expected loss to calculate the reinsurance premium): 2
- Gross premiums in 2015: Tugrik 1.3 billion
- Annual premium growth rate: 15%

## Annex 4. Bank Lending and Implementation Support/Supervision Processes

### (a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
<b>Lending</b>			
Evelyn Bautista-Laguidao	Senior Executive Assistant	CROVP	
Davaanyam Bayartsogt	Consultant	EACMF	
Nathan M. Belete	Sector Manager	EASIS	
Yi Dong	Sr Financial Management Specia	EASFM	
Daniel R. Gibson	Consultant	EASDE	
Andrew D. Goodland	Senior Agriculture Economist	AFTA3	
Natasha Hayward	Senior Social Development Spec	EASID	
Rodney Lester	Consultant	LCSPF	
Xiaoping Li	Senior Procurement Specialist	AFTPW	
Olivier Mahul	Program Manager	FCMNB	
Robin Mearns	Sector Leader	AFTSN	
<b>Supervision/ICR</b>			
Stephane Forman	Senior Livestock Specialist	GFADR	Task Team Leader
Nathan M. Belete	Practice Manager	GFADR	
James Anderson	Country Manager	EACMF	
Barry Patrick Maher	Senior Financial Sector Specialist	GFM3A	ICR Author
Ghada Elabed	Young Professional	GFADR	ICR Author
Erdene Ochir Badarch	Operations Officer	EASCS	
Davaanyam Bayartsogt	Consultant	EACMF	
Dulguun Byambatsoo	E T Consultant	EASFM	
Yi Dong	Sr Financial Management Specia	EASFM	
Andrew D. Goodland	Senior Agriculture Economist	AFTA3	
Xiaoping Li	Senior Procurement Specialist	AFTPW	
Olivier Mahul	Program Manager	FCMNB	
Gayane Minasyan	Senior Environmental Economist	ECSN	
Lhagvasuren Ochir	Operations Officer	EACMF	
Martin M. Serrano	Senior Counsel	LEGES	
Gerelgua Tserendagva	Procurement Specialist	EASR2	

### (b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
<b>Lending</b>		
FY05		381.98
FY06		13.79
FY07		0.00
FY08		0.00

	<b>Total:</b>	395.77
<b>Supervision/ICR</b>		
FY05		0.00
FY06		67.28
FY07		56.33
FY08		79.36
FY09		40.76
FY10		83.63
FY11		66.84
FY12		59.98
FY13		83.01
FY14		74.72
FY15		87.36
FY16		107.63
	<b>Total:</b>	806.90

## Annex 5. Impact evaluation Summary

### Summary of impact evaluation report by Center for Social Excellence

48. **Objective of the evaluation:** in 2014, an Impact Evaluation was carried out by an independent evaluator (Center for Social Work Excellence) to assess the causal impacts of the IBLI Project on herders' livelihoods and their risk management conditions.

49. **Sample and data collected.** The study took place in 17 aimags and 51 soums (3 soums per aimag). To obtain a representative sample, 599 insured herder households were randomly selected from the list of herders who bought insurance at least once using stratified random sampling. For comparison purposes, a set of 599 herder households who lived in the same soum and had the same herd size and distance from the soum center, but never purchased insurance, were selected as a comparison group using the Propensity Score Matching Method. A total of 50 households that left the study were replaced in 2015.

50. Data collection took place in the fall of 2014 and the fall of 2015. In addition, information on the herder households in the years before and after the dzud of 2010 was also collected. In addition to household surveys, in 2014 and 2015 focus group discussions were held with a group of insured herders, and a group of non-insured herders, in each of the 51 soums visited. Parallel to that, more detailed interviews in each soum involving herders who are new to insurance, those who have been enrolled for multiple years, who have been on and off from insurance and those who have never enrolled in insurance were conducted.

51. **Methodology.** The impact evaluation strategy consisted in a combination of Matching and Difference-in-Difference. The matching method, through propensity score matching, did the following: (i) first, insured and non-insured herder households were sampled from the list of participating households from the project administrative data and livestock census data, respectively; (ii) second, in-depth data was collected on the sampled households, including information on demographics, herd size, characteristics of the household head, etc.; and (iii) third, pairs of insured and non-insured herder households that have similar characteristics (demographics, herd size, etc.) were created.

52. The difference-in-difference method was used by calculating the average differences between the two groups, insured and uninsured. Logistic regression and multiple regression analyses were also used to measure the differences

53. **Results:** The evaluation confirms that the IBLI program has been successful in meeting its goals.

- **Herd size.** Converting the total livestock of herders to a sheep unit, herd size increased by 24% for insured herders, and by 19% for non-insured herders over the study period. This implies a five percentage point increase in herd sizes because of insurance.
- **Specie mix of livestock.** Goats and sheep are hardier than cattle and horses, and therefore are expected to comprise the largest share of livestock assets in the presence of shocks. Therefore, insuring against these shocks is expected to result in a livestock mix that has lower proportion of goats and sheep. The impact study found that the number of horses and

cattle (which are higher quality animals) increased at a higher rate for insured herders. However, the growth rate of sheep herd was smaller among insured herders. There was no significant difference in the growth rate of camels or goats.

- **Insured species.** Most commonly insured animals are cattle and horses as these have the poorest survival in bad weather.
- **Quality of the herd.** Insured households were 1.57 times more likely to purchase high productivity breeds of livestock. In addition, the number of herder households who have taken measures to improve the quality of their livestock in the last 5 years after the dzud of 2010 was 6% higher in insured households than in uninsured households.
- **Household revenue from herding.** Insured herder households earned more income from the sale of live cattle, mutton and camel wool than uninsured herder households had. The income from selling live animals has increased less than for uninsured herder households.
- **Access to loans.** Around 80% of the insured households have access to bank loans compared to 72% of the non-insured households. Most herder households take out herder loan which is a consumption loan for herders.
- **Household wealth.** The findings are consistent with the hypothesis that having insurance frees up capital for herders to invest in asset accumulation. Insured households were more likely to purchase five of the eighteen types of assets than uninsured herders. Insured herders were 1.62 times more likely to purchase a water pump for a well, 1.27 times more likely to purchase a satellite dish, 1.30 times more likely to purchase a refrigerator, and 1.42 times more likely to purchase a home or an apartment. The types of assets purchased by the herders suggest a mix of additional investments (a water pump and a house) and a higher standard of living (satellite dish and refrigerator).
- **Bank accounts and savings.** Around 97.4% of the herder households have at least one bank account. However, insured households have higher ownership rates of savings accounts (60% versus 50%), debit accounts (93% versus 91%), and loan accounts (38% versus 32%).
- **Access to loans and financial services.** Access to loans services was improved as the opportunity for insured herder households to get a loan using their livestock as collateral increased. Insured households had 6% more access to bank loans, 6% more use of livestock as collateral, and 6% more likely to have taken a loan over the past five years.
- **Knowledge of IBLI.** The focus group discussions revealed that the majority of herders knew about IBLI, from news stories and advertising on TV and radio and in the press, as well as from hearing information directly from the agent.
- **Access to cash to pay for the insurance premium.** The timing of the premium payment was an issue. Because of the seasonal nature of livestock production and sales, herders face difficulties in accessing cash to pay for insurance—they only have cash at the time of cashmere sales in early summer, and this cash is usually saved for the Nadaam holiday, and at the time of meat and hide payments when animals are slaughtered at the start of winter. Herders who were interviewed as part of the impact study revealed that they would prefer to be able to pay for the premium in kind - as is traditional for many herder transactions. Note that to overcome this liquidity problem IBLIP worked with the banks to introduce a special bank loan product to pay for the premium.

54. However, since this study does not have a true baseline, it is difficult to attribute the findings to the project. In fact, baseline data was collected from the winter 2009/2010, and was collected via recall.

### **Summary of impact evaluation report by German Institute For Economic Research**

(Bertram-Hümmer, Veronika and Krähnert, Kati, Does Index Insurance Help Households Recover from Disaster? Evidence from IBLI Mongolia (October 2015). DIW Berlin Discussion Paper No. 1515)

55. **Objective.** This study investigates the impact of indemnity payments from IBLI on the asset recovery of households after the 2009/10 dzud.

56. **Sample and data collected.** Data for this study comes from three waves of household panel survey—the Coping with Shocks in Mongolia Household Panel Survey in collaboration with the National Statistical Office of Mongolia—which took place between June 2012 and May 2013, between June 2013 and May 2014, and between June 2014 and May 2015. The household survey was implemented in western Mongolia (three neighboring aimags of Uvs, Zavkhanm and Govi-Aaltai).

57. The sample comprises 59 insured households and 583 control households living in 49 out of 61 soums of these three aimags. The survey questionnaire collected data on demographics, household consumption expenditure, income, assets, subjective well-being, livestock holdings, and strategies in herding as well as infrastructure and environmental conditions in the soum. One module of the questionnaire focuses specifically on households ‘exposure to the 2009/10 dzud and post-dzud coping strategies that were applied.

58. **Methodology.** The study uses the bias-corrected matching estimator to account for selection into purchasing IBLI. By the time of the 2009/10 dzud, IBLI was still at its pilot stage and available in one of the three survey aimags. To estimate the impact of IBLI payments, the authors matched insured households living in the aimag where IBLI was available in 2009 with noninsured households living in the two other aimags where IBLI was not yet offered.

59. **Results.** The results indicate that IBLI payment helped herders affected by the dzud recover their herd size faster than uninsured herders. In addition, the results suggest that indemnity payments allow herders to avoid selling and slaughtering their animals since they use the cash received from IBLI for household consumption. Moreover, IBLI appears to enhance herders’ access to loans.

- **Shock recovery.** Overall, IBLI payments helped insured herders recover their herd size faster than uninsured herders. Herders who purchased IBLI in 2009 and received indemnity payment in fall 2010 had a higher herd size in 2011, 2012, and 2013 compared to herders who did not purchase the IBLI.
- The magnitude of the impact is relatively large, but it tends to attenuate in the years following the dzud. In 2011, insured herders owned on average 15 to 16 percent more livestock than uninsured households; in 2012 they owned between 22 percent and 27 percent more livestock; and in 2013, they own about 17 percent more.

- **Satisfaction with insurance.** About 75 percent of households insured in 2009 were satisfied with the indemnity they received, and the majority of those who benefited from the insurance payment continued to purchase insurance again in 2012, 2013, and 2014.
- **Usages of the indemnity payments.** About 73% of the insured households used the indemnity payment received in 2010 to buy food and other household necessities. 14 percent of households used the indemnity payment to cover education and health expenses. Only 22 percent of households reported using the indemnity payment in livestock activities, such as buying livestock fodder and improving shelter. None of the insured households reported using the indemnity payment to restock the herd. Also, 15% of insured herders used the indemnity to pay back a loan.
- The sample size of this study is very low, therefore, the results should be interpreted with caution.

