



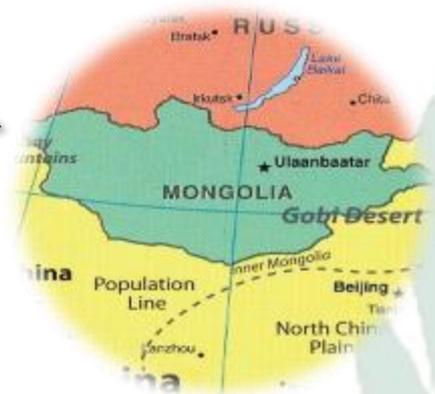
Session 2: Catalysing Resilience: The Power of New Technologies and Startups in Disaster Information Management

A country experience – Mongolia *Dzud* risk map

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MONGOLIA



Capital: **Ulaanbaatar**

Area: **1,566,000 km²**

Population: **3.4 million** (2021)

Density: **2.1 p/km²**

Elevation: **1500 m – 3000 m asl**

Average annual T: **0.7 °C**

Ext. Min T: **-31.1 °C - -55.3 °C**

Ext. Max. T: **+28.5 °C - +44.0 °C**

Livestock husbandry

Population: **71.7 million**

(2022)

GDP: **13%**

Labor force: **25%**

Export income: **5.4%**



DZUD

Mongolian term for an **extremely snowy winter** in which large numbers of **livestock die** due to **starvation** by being unable to graze, and the cold.



- **White dzud** – deep snow cover and low temperature;
- **Black dzud** - freezing temperatures and lack of snow and forage;
- **Iron dzud** – ice cover over pasture land that prevents livestock from grazing;
- **Hoofed dzud** - when dozens of livestock get concentrated in a limited area, and the combination of trampling and heavy grazing eliminates forage;
- **Combined** - when two or more types of *dzuds* occur simultaneously.



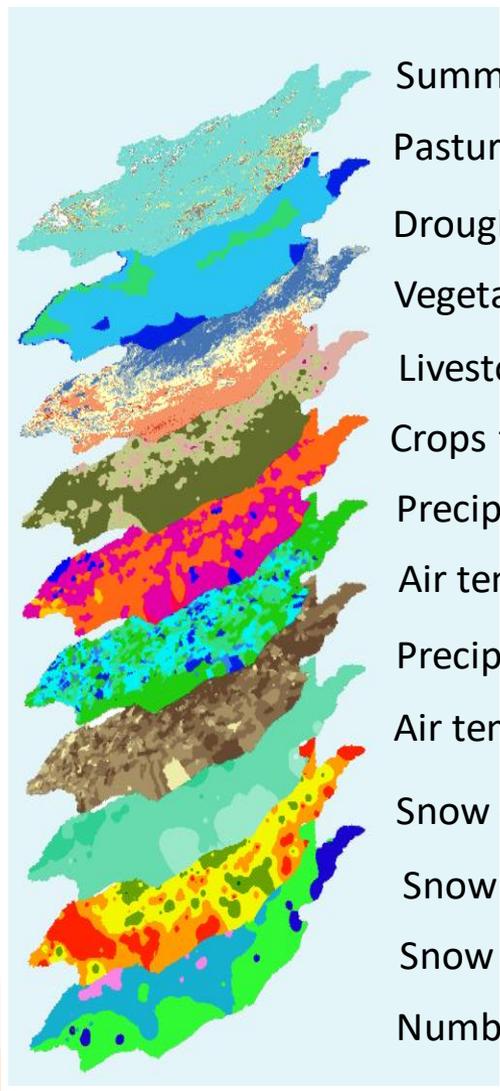
Past *dzuds*

Year	Type of disaster	Impact
1944-45*	<i>Dzud</i> + Drought	8.6 mln or 37%
1954-55	<i>Dzud</i>	
1956-57	<i>Dzud</i>	
1967-68*	<i>Dzud</i> + Drought	2.6 mln or 11.9%
1976-77	<i>Dzud</i>	
1986-87	<i>Dzud</i>	
1993-94	<i>Dzud</i>	
1996-97	<i>Dzud</i>	
1999-00	<i>Dzud</i> + Drought	4 m
2000-01	<i>Dzud</i> + Drought	12 mln
2001-02	<i>Dzud</i> + Drought	
2009-10	<i>Dzud</i> + Drought	

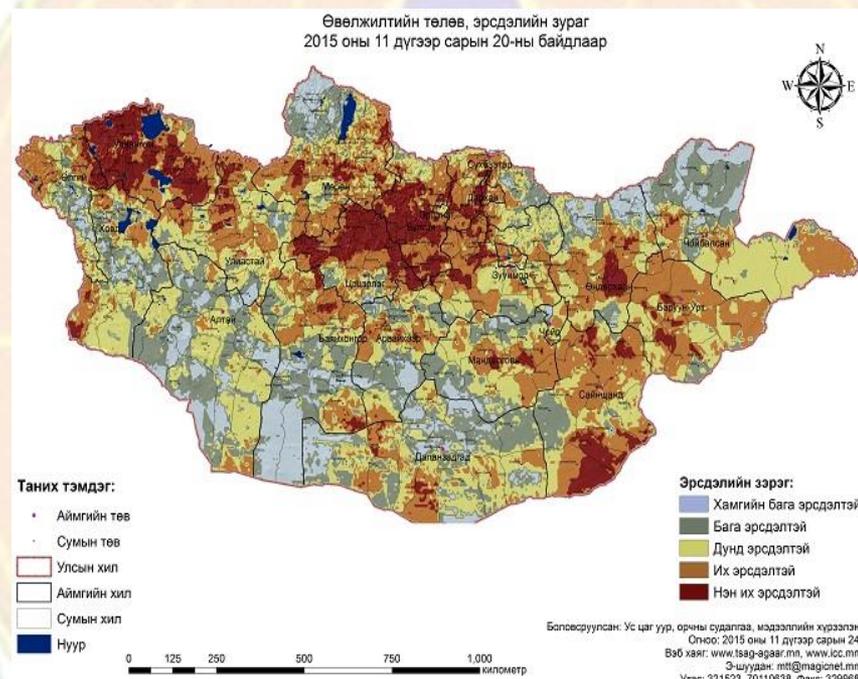
* Monkey year, Lunar calendar



Dzud risk map – since 2015

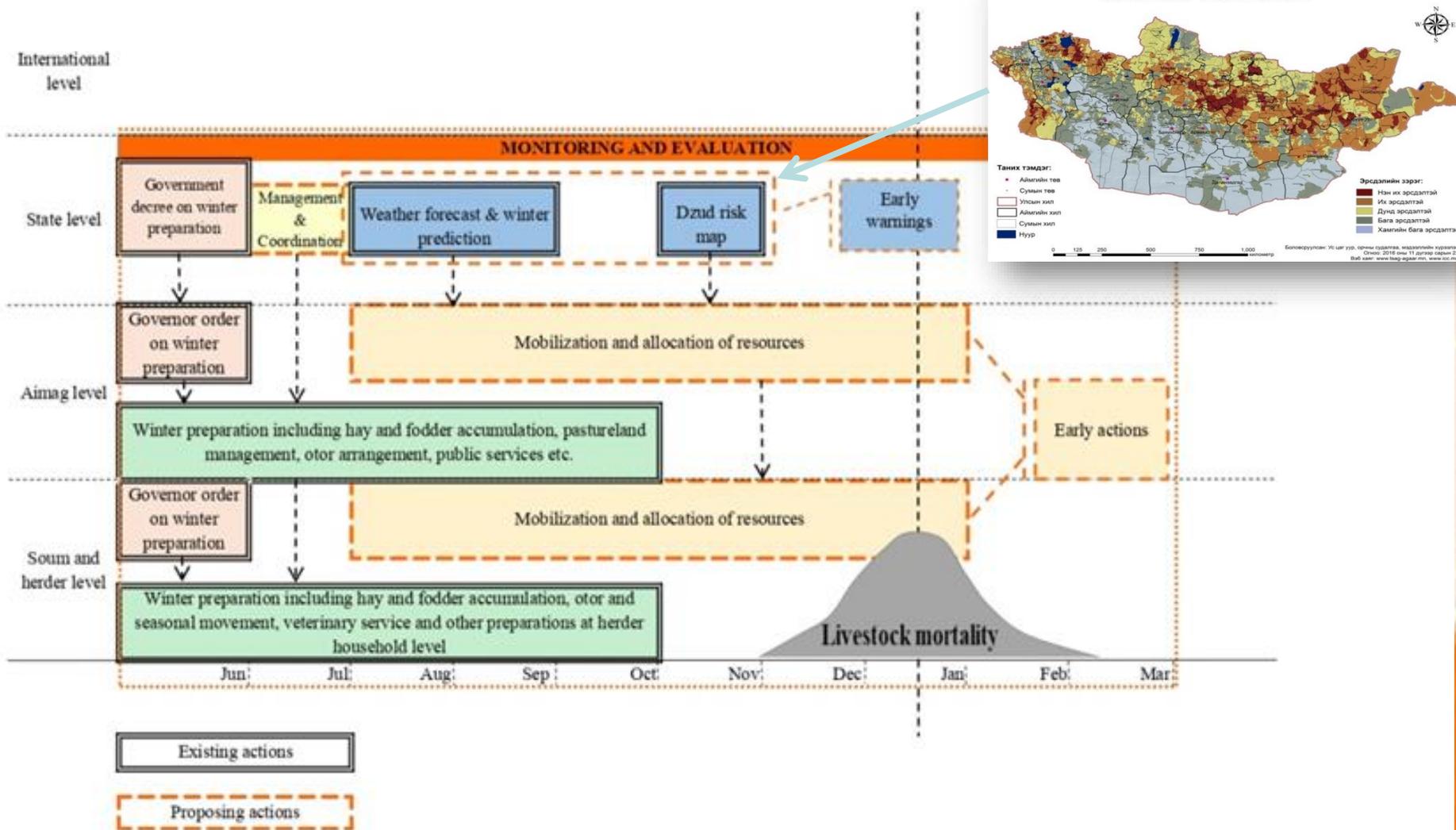


- Summer condition
- Pasture carrying capacity
- Drought, MODIS
- Vegetation, NOAA
- Livestock number
- Crops from 1500 stations
- Precipitation anomaly
- Air temperature anomaly
- Precipitation forecast
- Air temperature forecast
- Snow density
- Snow depth
- Snow cover
- Number of snow dates





Early warning, early actions





Thank you!



Ulaanbaatar