



# 2024 RESILIENCE LEARNING MONTH

## EVENT SUMMARY



### The Economic Impact of Weather Shocks on a Cold-Climate Developing Economy: Evidence from Mongolia

24 October 2024 (Tuesday)  
10–11:15 a.m. Manila Time (GMT+8)  
ADB kHub



This session presents a study examining the macroeconomic effects of temperature and precipitation shocks in Mongolia, a developing economy in a cold region. Existing literature often focuses on the negative impacts of higher temperatures on the output of developing economies in hot climates, leaving a gap in understanding for developing countries in cold regions like Mongolia.

This study fills the research gap by using quarterly national and annual aimag (province) level data from 2000 to 2022 and employing the local projections estimation method. Key findings include that a temperature shock of 1-degree Celsius increase in average annual temperature has a contemporaneous effect of increasing output by 9.6%. However, output is 8.7% lower five years after the temperature shock. A 1-millimeter increase in precipitation boosts output by 0.87% two years post-shock. Agricultural output declines by 1.18% to 1.42% three years after a temperature increase. Disasters reduce agricultural output by 2.6% to 2.9% and livestock by 1.52%.

Policy recommendations include implementing climate adaptation strategies to mitigate long-term negative impacts of temperature increases, enhancing water management systems to optimize precipitation benefits, and providing targeted support for agriculture through insurance, financial assistance, and promoting climate-smart agriculture. Economic diversification can reduce reliance on climate-sensitive sectors, enhancing Mongolia's overall economic resilience.

**The economic impact of weather shocks in Mongolia is really a complex relationship. But understanding these transmission channels is important for us as we prepare projects and engage in policy dialogue with government.**

**KELLY BIRD**  
Advisor, EARD

## OPENING REMARKS



**KELLY BIRD**  
Advisor, EARD

## DISCUSSANT, Q&A



**ENKH-AMGALAN  
TSEELEI**  
Senior Climate  
Change Officer  
ADB



**EDWARD FABER**  
Senior Country Economist  
ADB

## SPEAKERS

Mongolia's climate trends:  
temperature and precipitation



**HOMER  
PAGKALINAWAN**  
Climate Change Officer  
ADB



**CARA TINIO**  
Associate  
Economics Officer  
ADB



**DOROTHEA M. RAMIZO**  
Associate Economics Officer  
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## KEY MESSAGES

- **Invest in climate-resilient infrastructure and agriculture.** Rising temperatures negatively impact economic output and livestock. Mongolia should invest in heat-resilient infrastructure and climate-smart agricultural practices.
- **Promote climate-resilient sectors by province.** Climate resilience strategies should vary by province based on precipitation levels. Water-intensive agriculture may thrive in wetter regions, while arid areas might focus on mining or renewable energy. Tailoring sectoral promotion to local climate conditions will diversify the economy and enhance resilience.
- **Address the climate financing gap.** Significant resources are required for climate adaptation and mitigation efforts. Mongolia should leverage international climate finance mechanisms and partnerships to secure the necessary funding. Developing a national climate finance strategy will strengthen the country's capacity to invest in resilience-building initiatives.

## FURTHER INFORMATION

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Global Non-linear Effect of Temperature on Economic Production

UN OCHR online data from dzud

SDC GG Herders successful wintering the dzud 2016

Resilience Capacity Analysis of Mongolian Herder Households

Mongolia Humanitarian Situation Report No. 2 (Dzud)