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Consequences of extreme weather events for developing countries based on the example of Mongolia

By Kati Kraehnert and Claudia Kemfert

In parts of Germany this summer, temperatures were extremely high and there was no rain to speak of: this is an example of an extreme weather event. Many people experienced physical discomfort and the livelihoods of some were threatened. Think of crop damage due to drought. Every unusually hot summer is not the consequence of climate change, nor are all hurricanes and all floods. Earlier decades also had their share of torrential rain and drought. But extreme weather events and climate change are directly related. Climate forecasts predict that in the future, extreme weather events will occur even more frequently and with higher intensity.

Prosperous countries such as Germany can cope with the damage caused by extreme weather comparatively well. Many people and households are insured and when damage is caused by drought, farmers can receive state aid for particularly hard-hit farms. The picture looks quite different in many developing countries. Due to their geographical location, they are subject to extreme weather events more frequently than developed countries. At the same time the damage is of higher magnitude, because there is often no system of precautionary financial provisions (for example, insurance). One reason for this is that many people in developing countries live close to the minimum subsistence level. After an extreme event occurs, many people may no longer be able to meet their basic needs. And the infrastructure and national social security systems in many developing countries are hardly viable. Often, households must fend for themselves when it comes to coping with negative events or shocks.

There is only a rudimentary body of knowledge about the consequences of extreme weather events for people in developing countries. However, we need this knowledge

to be able to plan useful policy measures—both in affected countries and for development aid. In most cases, we have little or no microdata, that is, data at the household or individual level that are essential for developing systematic, individual solutions. The relevant panel datasets either do not exist, are qualitatively too poor for well-founded analysis, or not accessible for scientific purposes.

This is the starting point for the current issue of the DIW Weekly Report. It consists of three studies based on a project funded by the German Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung, BMBF): Coping with Shocks in Mongolia. As part of the project, researchers at the German Institute for Economic Research (DIW Berlin) collected household panel data in Mongolia and evaluated the data with econometric methods. They focused on three questions: how do extreme weather events—in the case of Mongolia, an extremely cold, snowy winter—affect household assets? Do extreme winters influence schooling? And would index-based weather insurance provide households with effective protection against the consequences of extreme weather events?

Mongolia is representative of developing countries that are vulnerable to extreme weather events due to their geographical location. Extreme winters with temperatures that often drop to below -40 degrees Celsius make many rural regions uninhabitable, particularly because agriculture is not viable under those conditions. Large parts of Mongolia's rural population migrate to urban areas, but they are often unqualified for the urban job market and many end up living in poverty.

The findings of this research project show that index-based weather insurance is an instrument that can provide households with support—a tangible, important realization for development assistance agencies in wealthy countries.

Because of their decades of greenhouse gas emissions, wealthy countries have a moral obligation to help poorer countries successfully deal with climate change.

But merely mitigating the consequences of extreme weather events in other countries is not enough. Developed countries must lift their heads from the sand and take action to reduce the level of pollution their own countries are emitting. In addition to the energy transformation toward renewable energy sources that is underway in some European countries, such as Germany (but not by any means complete), a turnaround

in the transportation sector is also required—away from subsidies for combustion motors that damage the environment and toward greater electromobility and more rail transport—to mention but one field of activity. Much potential is waiting to be tapped in the building sector as well. More energy upgrades must be completed faster to lower energy consumption. Industrial countries need a two-pronged strategy: on the one hand, active climate protection and on the other, aid for the countries affected by the consequences of climate damage.

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