

COMMENT

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JONAS BENDIKSEN/MAGNUM



Residents in the flood-prone district of Kurigram, Bangladesh, move a community mosque to safer ground.

Model human adaptation to climate change

We can no longer ignore feedbacks between global warming and how people respond, say **Paul I. Palmer** and **Matthew J. Smith**.

Current models of Earth's climate capture physical and biophysical processes. But the planet has entered a new state: humans are adapting to, as well as causing, environmental changes. This major feedback must be modelled. Projections of the future climate based on simple economic narratives¹ — from cuts in greenhouse-gas emissions to unmitigated growth — are unrealistic.

Faced with droughts and rising sea levels, people alter their behaviour. Even if global climate policy is effective, and nations deliver

on ambitious green-energy-production and sustainability targets, societies will be different in a warmer world. People will move to places that are richer in resources, or stay where they are and be pushed further into poverty. Population growth, urbanization, migration² and conflict³ will compound reactions to global temperature rises.

To understand how events might unfold and what kinds of responses will be most effective, Earth-system models need to capture human-climate dynamics. It will be an enormous challenge: we are only beginning

to understand how people respond to their environment. But omitting human behaviour is like designing a bridge without accounting for traffic.

DECISIONS, DECISIONS

There are two main scientific challenges to modelling socio-economic responses to climate change. The first is describing how humans make decisions. The second is describing the relationships between humans and the physical and biophysical components of the Earth system. ►