

# **Weak signals and strong narratives: incentives and lock-ins in climate change adaptation**

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Closing the climate adaptation gap and unlocking transformative change conference  
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# Evidence of adaptation is hard to find

The 2021 systematic review by the Global Adaptation Mapping Initiative (GAMI) concludes:

*‘Documented adaptations were largely fragmented, local and incremental, with limited evidence of transformational adaptation and negligible evidence of risk reduction outcomes.’*



## A systematic global stocktake of evidence on human adaptation to climate change

Assessing global progress on human adaptation to climate change is an urgent priority. Although the literature on adaptation to climate change is rapidly expanding, little is known about the actual extent of implementation. We systematically screened >48,000 articles using machine learning methods and a global network of 126 researchers. Our synthesis of the resulting 1,682 articles presents a systematic and comprehensive global stocktake of implemented human adaptation to climate change. Documented adaptations were largely fragmented, local and incremental, with limited evidence of transformational adaptation and negligible evidence of risk reduction outcomes. We identify eight priorities for global adaptation research: assess the effectiveness of adaptation responses, enhance the understanding of limits to adaptation, enable individuals and civil society to adapt, include missing places, scholars and scholarship, understand private sector responses, improve methods for synthesizing different forms of evidence, assess the adaptation at different temperature thresholds, and improve the inclusion of timescale and the dynamics of responses.

# The 'adaptation gap'

Carleton and Hsiang (2016) find many possible causes in the literature:

- High cost
- Weak incentives to adapt
- Limited access to credit to finance adaptation
- Limited rationality in planning for future risks
- Incorrect or limited information about the benefits of adaptation
- Perverse political incentives
- Weak government institutions
- Constraints to sharing risk among individuals and groups
- Access to technologies

REVIEW

SOCIAL SCIENCES

## Social and economic impacts of climate

Tamma A. Carleton<sup>1,2\*</sup> and Solomon M. Hsiang<sup>2,3\*,†</sup>

For centuries, thinkers have considered whether and how climatic conditions—such as temperature, rainfall, and violent storms—influence the nature of societies and the performance of economies. A multidisciplinary renaissance of quantitative empirical research is illuminating important linkages in the coupled climate-human system. We highlight key methodological innovations and results describing effects of climate on health, economics, conflict, migration, and demographics. Because of persistent “adaptation gaps,” current climate conditions continue to play a substantial role in shaping modern society, and future climate

*Science*. 353: September 2016

# Background (or hidden) climate adaptation

- Household-level data for Peruvian farmers (2007-2015)
- Extreme heat leads to:
  - declines in productivity
  - increased use of inputs (land and labour, including child labour)
  - changed crop mix (more tubers)
  - Other adaptive strategies (migration, off-farm labour, livestock disposals)

## **Climate Change and Agriculture: Subsistence Farmers' Response to Extreme Heat**

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# Incentives to adapt to climate risk

- Adaptation takes effort and a strategy (whether to **defend** or **retreat**)
- Investments of effort in climate risk management compete with other values and objectives
- Identifying activities as climate risk adaptation may be problematic:
  - Climate risks are **complex**: extreme events of slow-onset changes
  - For most social actors, the signals to adapt are **indirect** (not direct)
  - Most adaptation is private, but generate only **weakly-appropriable** benefits
- But, there is **likely to be much adaptation happening** – we need better methods for identifying this effort