Rethinking Resilience

A Policy Research Report

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Based on work by
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Main points

Climate change is accelerating but resilience is lagging

- Especially in poor countries and among poor people everywhere
- Resilience = ability to prepare for disruptions, recover quickly, and learn from experience

Uncertainty about climate hazards distorts responses

- Individuals and enterprises ‘play it safe’ or overinvest, and *poor people are more prone to do so*
- Markets rapidly raise premiums and make insurance unaffordable
- Government responses often distort household and firm behavior and *reduce* resilience

Resilience is considered the same as climate adaptation

- Climate Resilience = 2/3 * Economic Development + 1/3 * Climate Adaptation
- Overreliance on government action—public infrastructure and social interventions—and not enough attention to creating conditions for private markets—income, information and insurance
- The correct ordering: incomes, information, insurance, infrastructure, interventions

Three observations

1 Resilience depends much more on income growth than adaptation efforts

Tradeoff between mitigation and growth, but complementarity between resilience and growth

2 Income growth is slowing down, but climate change is speeding up

- Falling Long-term Growth Prospects: Trends and Policies
- The Great Reversal: Prospects and Policies for IDA Countries
- World Development Report 2024: The Middle-Income Trap

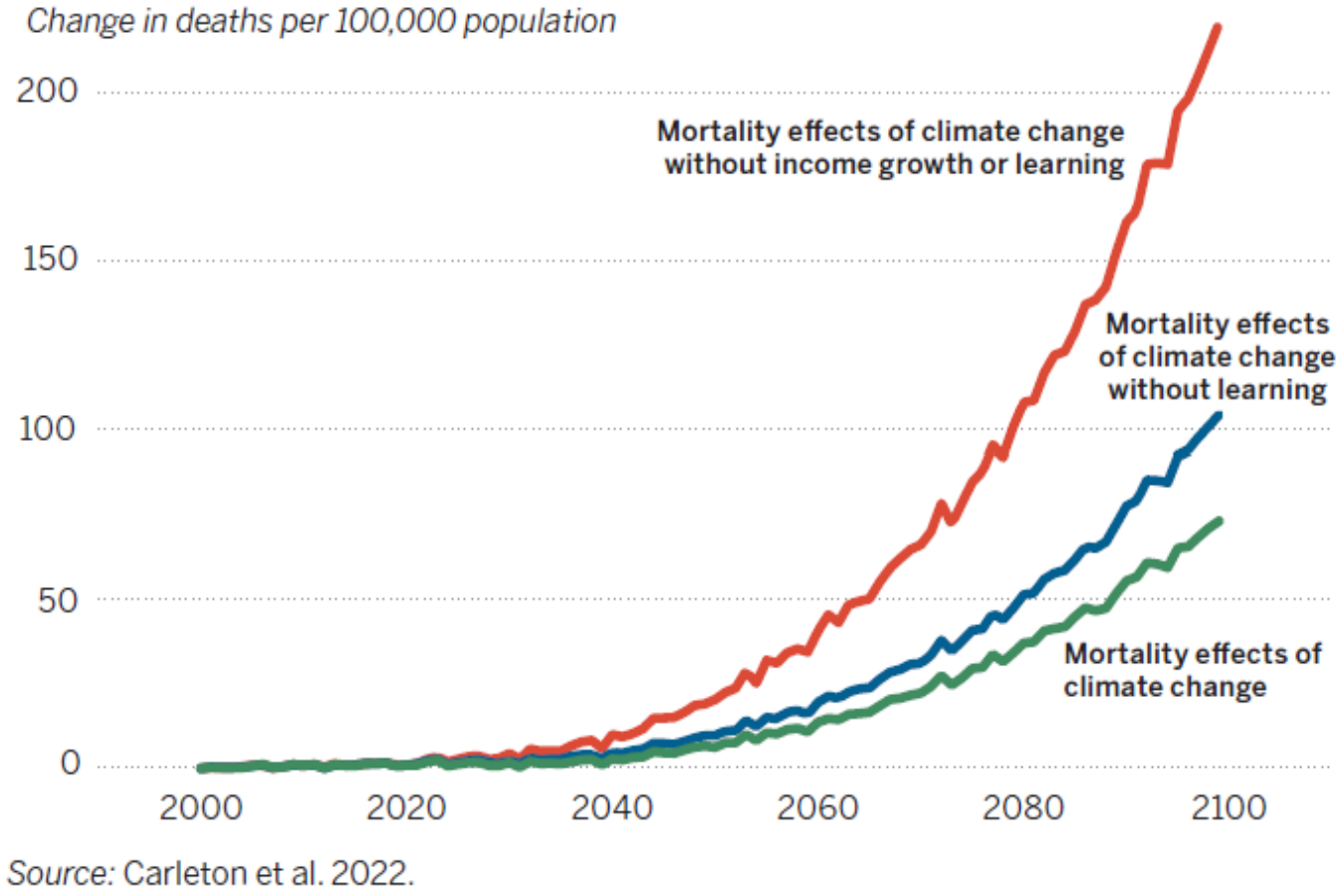
3 Poor people are prone to make bad decisions when faced with uncertainty

Rethinking Resilience: Forthcoming Policy Research Report 2025

The biggest part of resilience is economic development

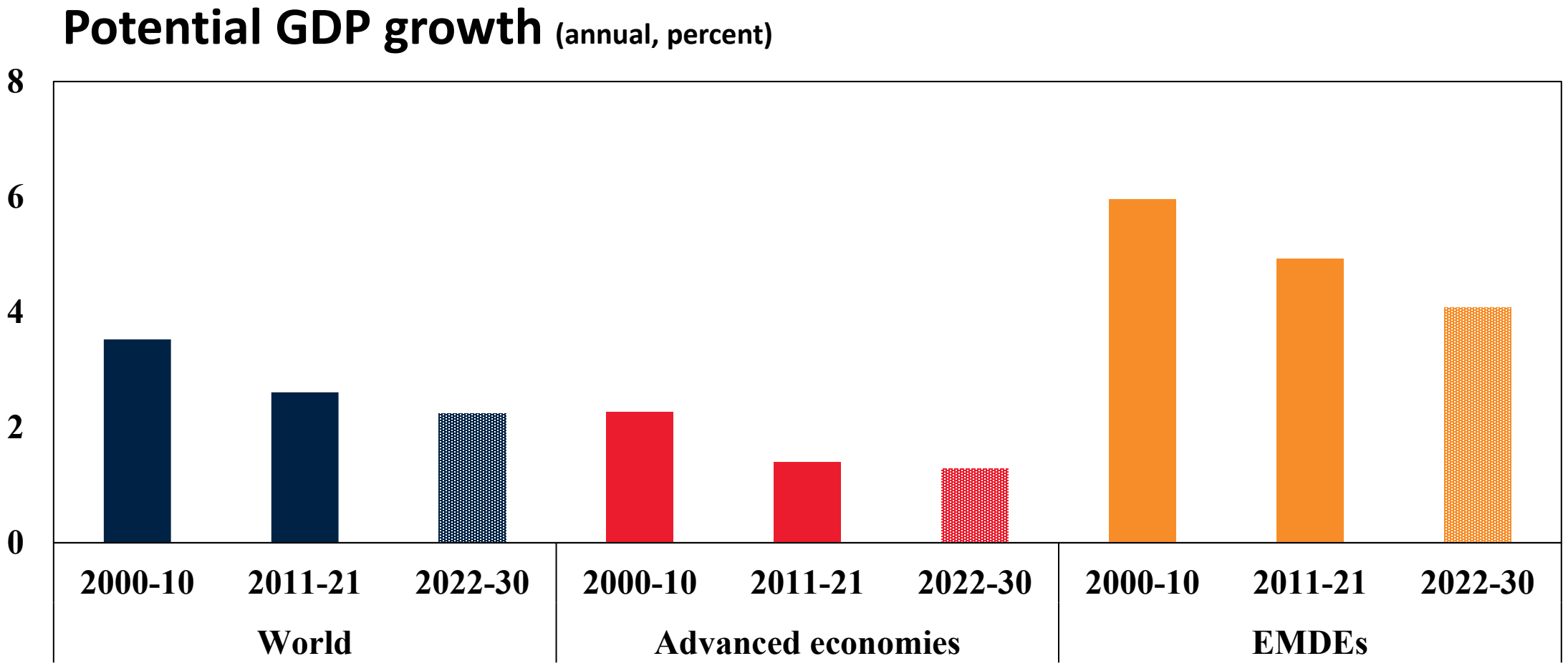
Mortality effects
79 percent due to income increases, 21 percent due to adapting to change

Income growth is the main way to build resilience



Source: Carleton et al (2022)

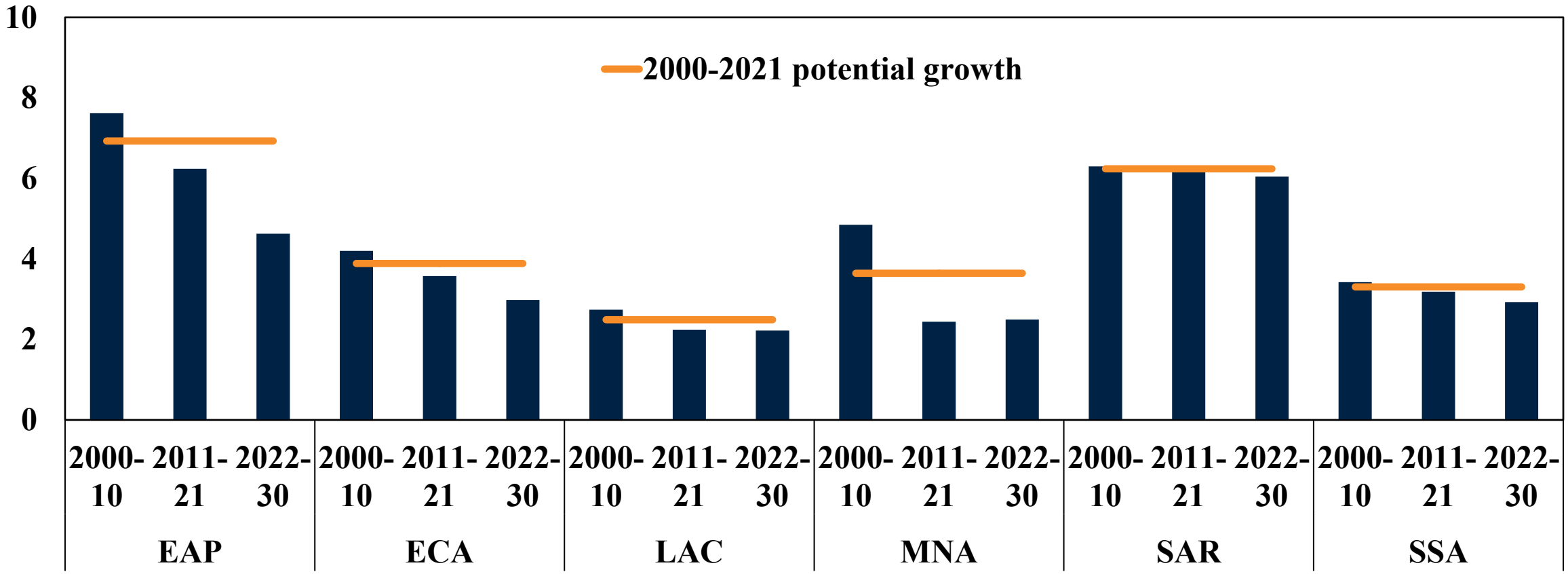
Problem: income growth is slowing across the globe



Source: Kose and Ohnsorge (2023). Note: Period averages. Potential growth is measured by production function. Shaded bars indicate forecasts.

Weakening growth, across the developing world

Potential growth in EMDE regions (Percent)



Source: World Bank. Note: EAP, ECA, LAC, MNA, SAR, and SSA refer to, respectively, East Asia and Pacific, Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, South Asia, and Sub-Saharan Africa. GDP-weighted arithmetic averages using potential growth estimate based on production function approach.

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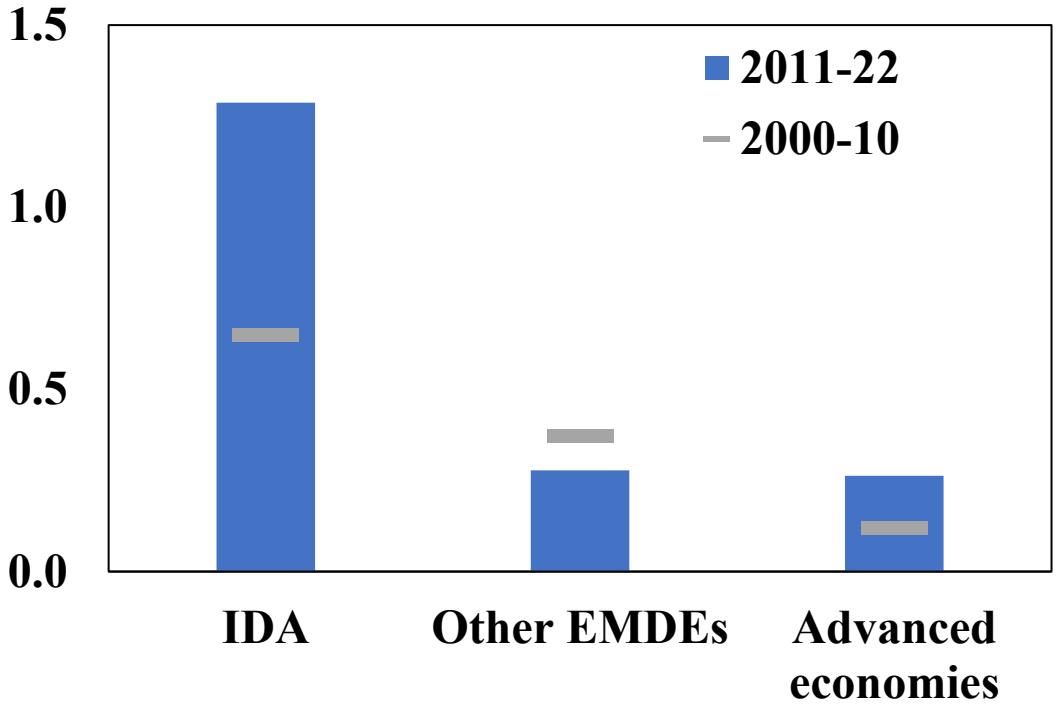
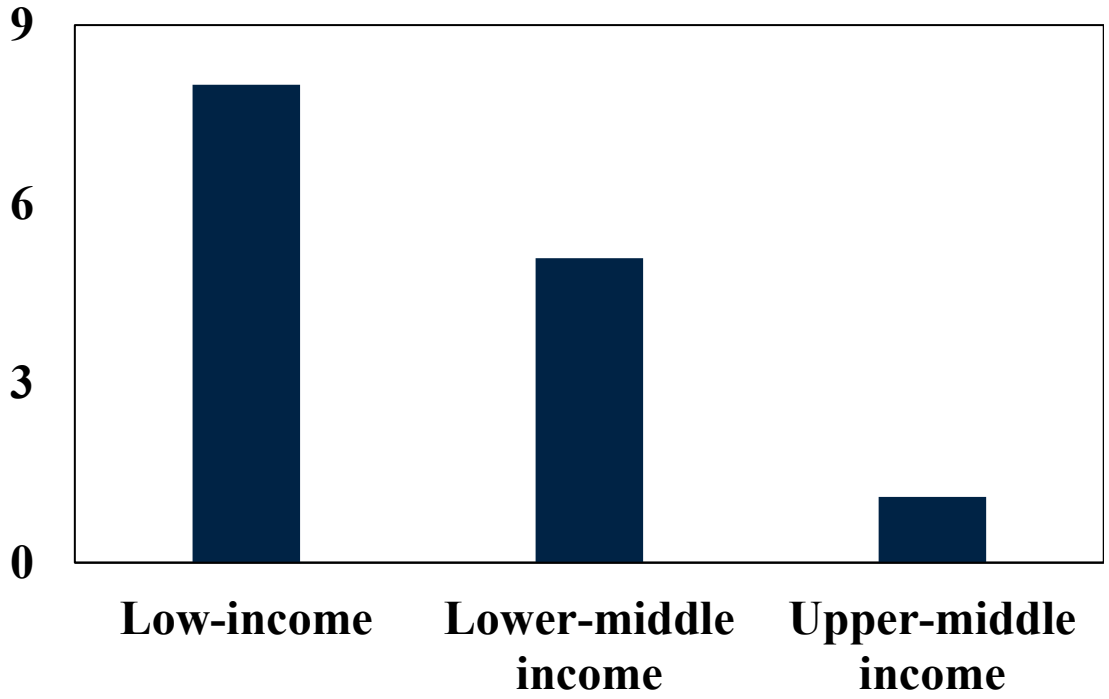
Costs of climate change are higher in poor countries

Costs of natural disasters
(Percent of GDP)



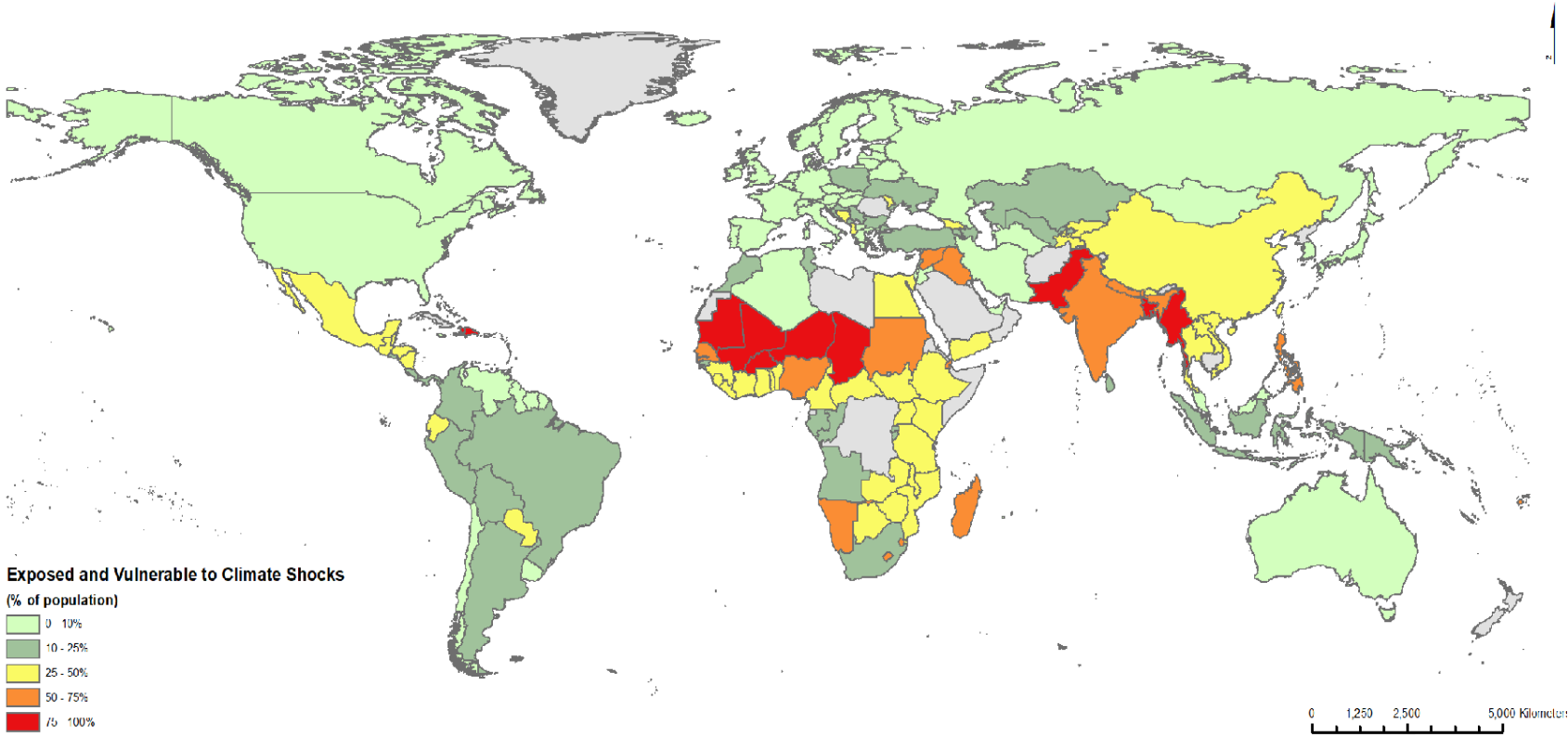
Investment needs for a resilient pathway, 2022-30
(Percent of GDP, per year)



Sources: EM-DAT (database); Notre Dame Global Adaptation Initiative; World Bank (2022); World Bank.

Poorer countries are more vulnerable

Poor countries have higher shares of population vulnerable to climate shocks

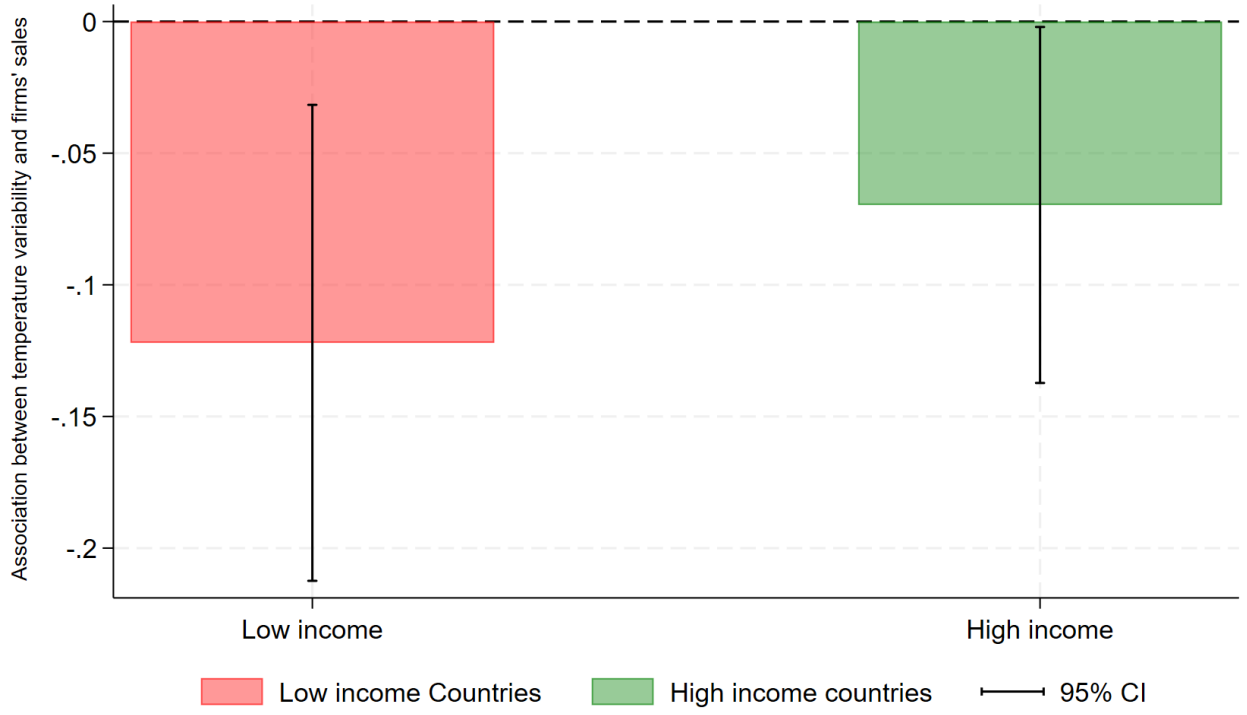


Sources: World Bank staff calculations based on data from Doan et al. (2023).

Firms in poorer countries are less resilient

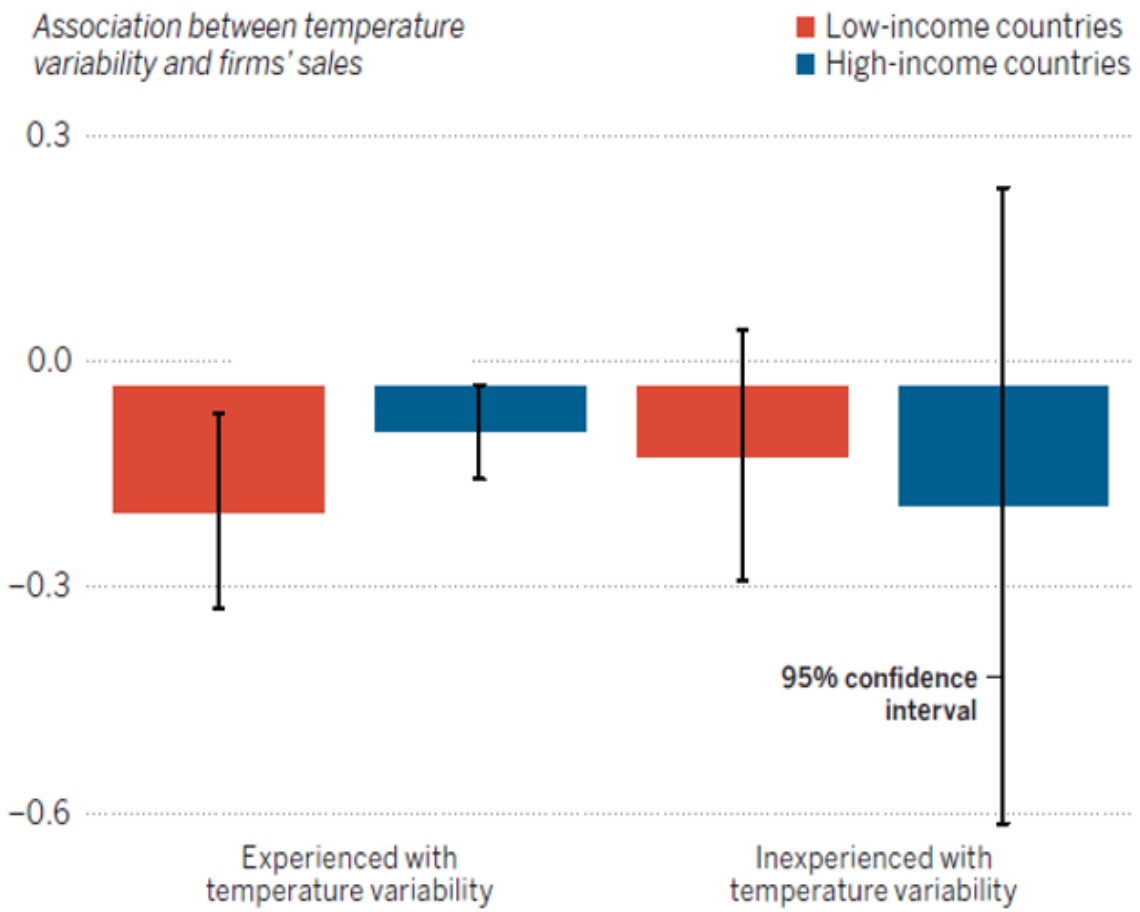
Data are from the universe of World Bank **Enterprise Surveys** conducted between 2010 and 2023, which cover 135 countries

Firms in poorer countries experience bigger declines in sales revenues due to higher temperature variability.



Entrepreneurs in poor countries are slow to learn

With learning, firms should experience smaller losses when exposed to the same shocks overtime.

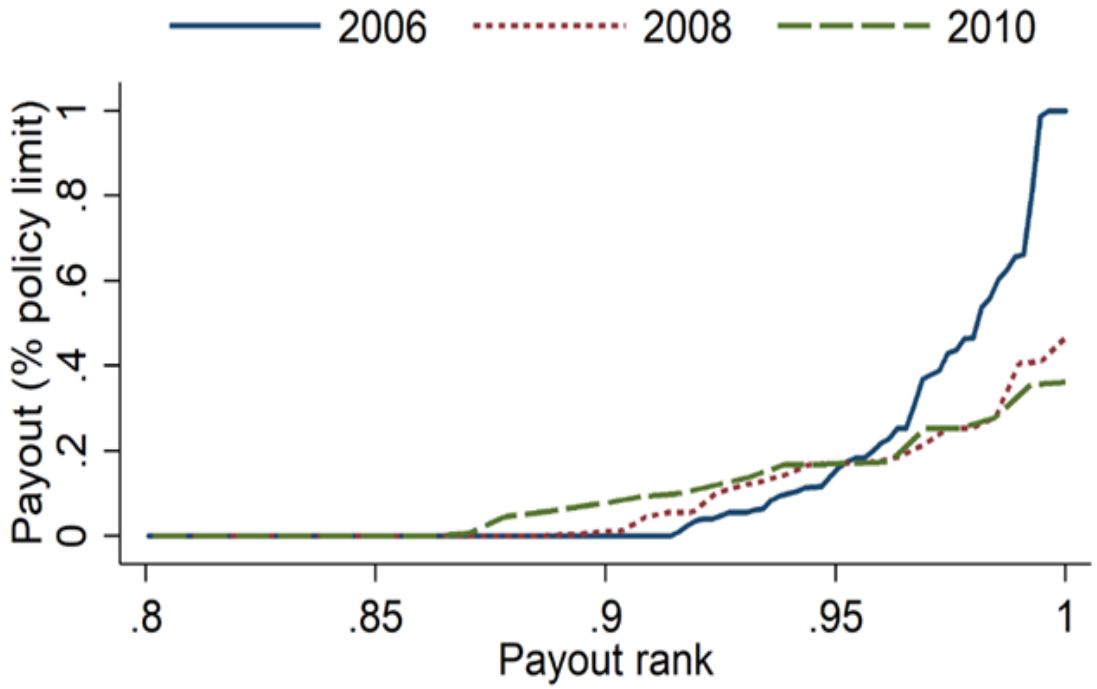


Insurance products for extreme events are disappearing

Insurance markets in India are moving away from covering extreme climate events.

- 2006 policy designed to primarily insure against extreme rainfall events, with payouts above the 92nd percentile.
- 2010 policy designed to pay out more regularly, providing income during periods of moderately deficient rainfall
- Farmers in 2010 value the 2006 policy most but only have the 2010 policy available.
- Insurance for extreme events not being offered

Policy payout distribution in India (rainfall data 1963-2009)



Source: Cole et al (2024)

Governments often make climate resilience harder

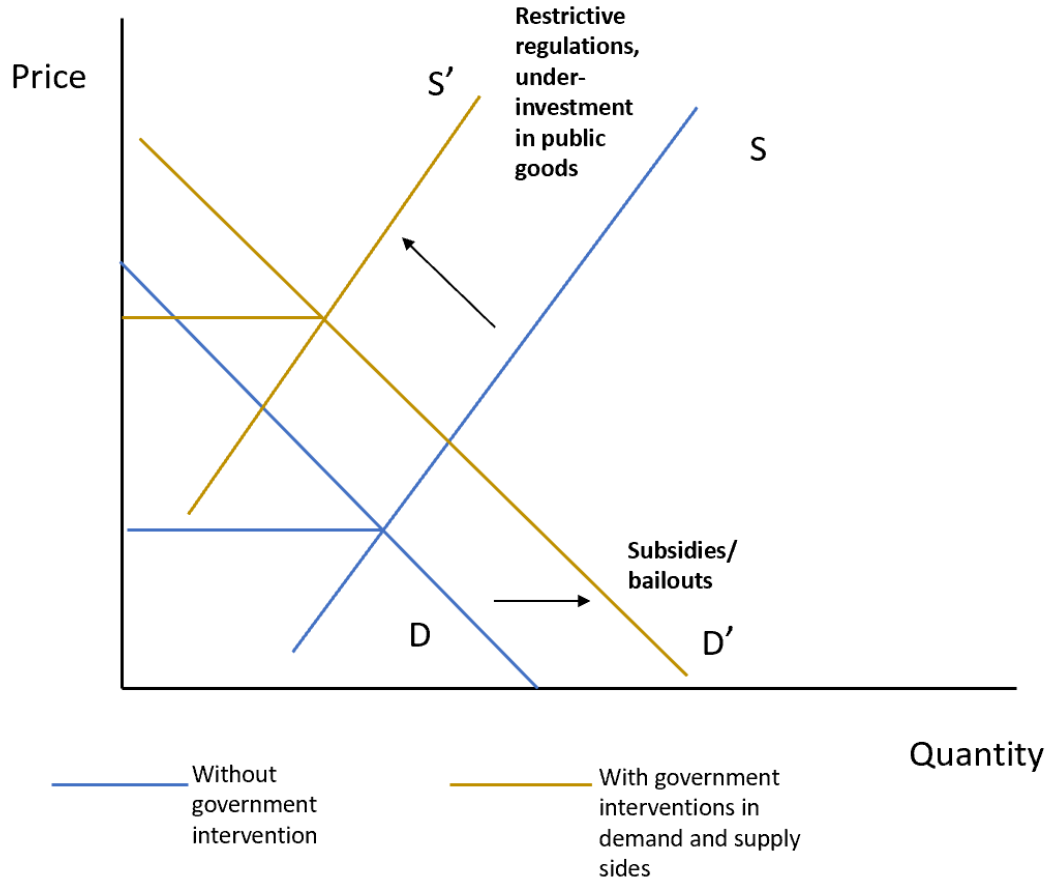
Government policies can make resilience tools unaffordable.

Insurance subsidies can lock people into climate vulnerable activities and places.

Social protection can act as a disincentive to migrate from climate vulnerable places.

Regulations and policies (e.g., land use), even when well-intended, can undermine longer term resilience actions.

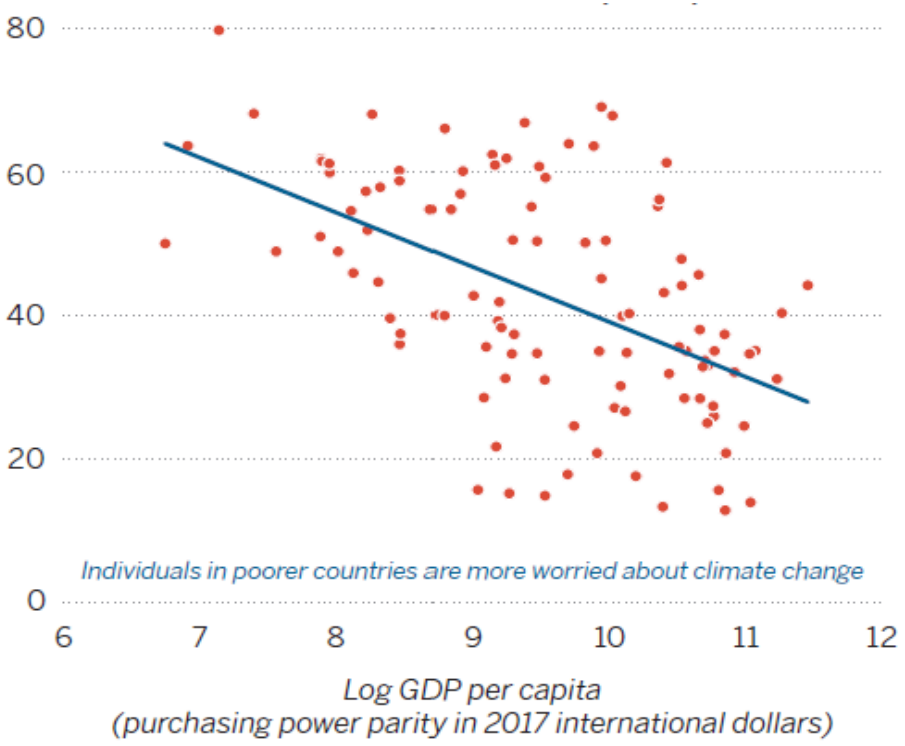
Regulations can restrict supply and subsidies can inflate demand, making resilience unaffordable



Uncertainty—not risk—prevents appropriate responses

The poor are more ambiguity-averse

Percent of respondents seriously worried about climate change
Climate attitude and GDP per capita



Source: Attitude data from Facebook climate attitude surveys, 2022, dataset, and GDP data from World Development Indicators.

Proportion favored lottery with known probability
Poorer countries are more ambiguity averse

Source: Ambiguity aversion data from Rieger et al. (2017),

Information converts uncertainty into risk

Individuals, markets, and policymakers tend to be ambiguity averse

Greater ambiguity aversion leads to overreaction to climate uncertainty, and a tendency to play it safe, lowering income growth

Poor people have greater incentives to build resilience but lack the means to do so

Rethinking Resilience

Incomes, followed by information, insurance, infrastructure, and interventions

Ambiguity Aversion

Information

to convert uncertainty into risk

Market Development

Insurance

markets must be strengthened or created

Climate Adaptation

Infrastructure

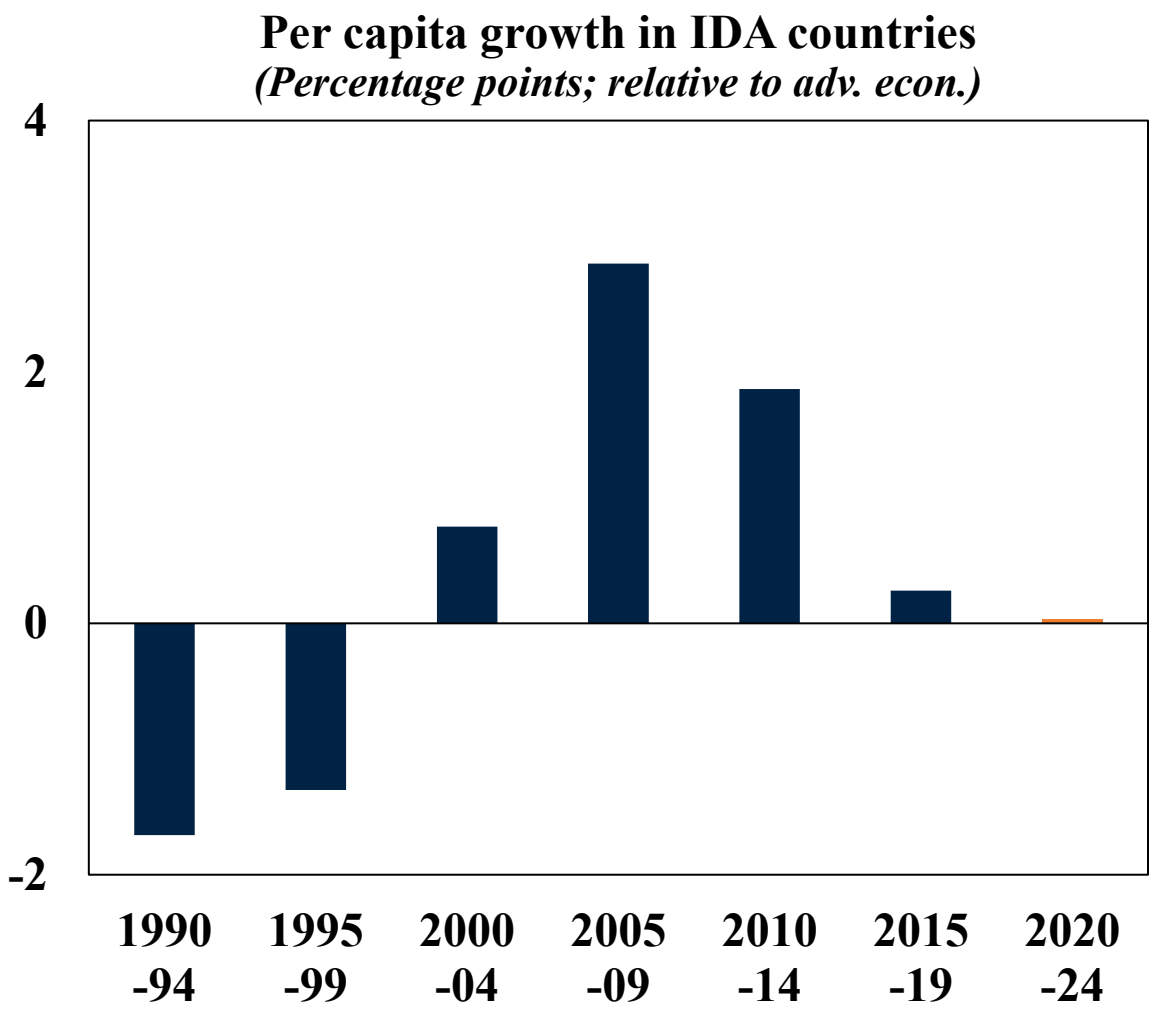
public investment to limit loss when extreme events occur

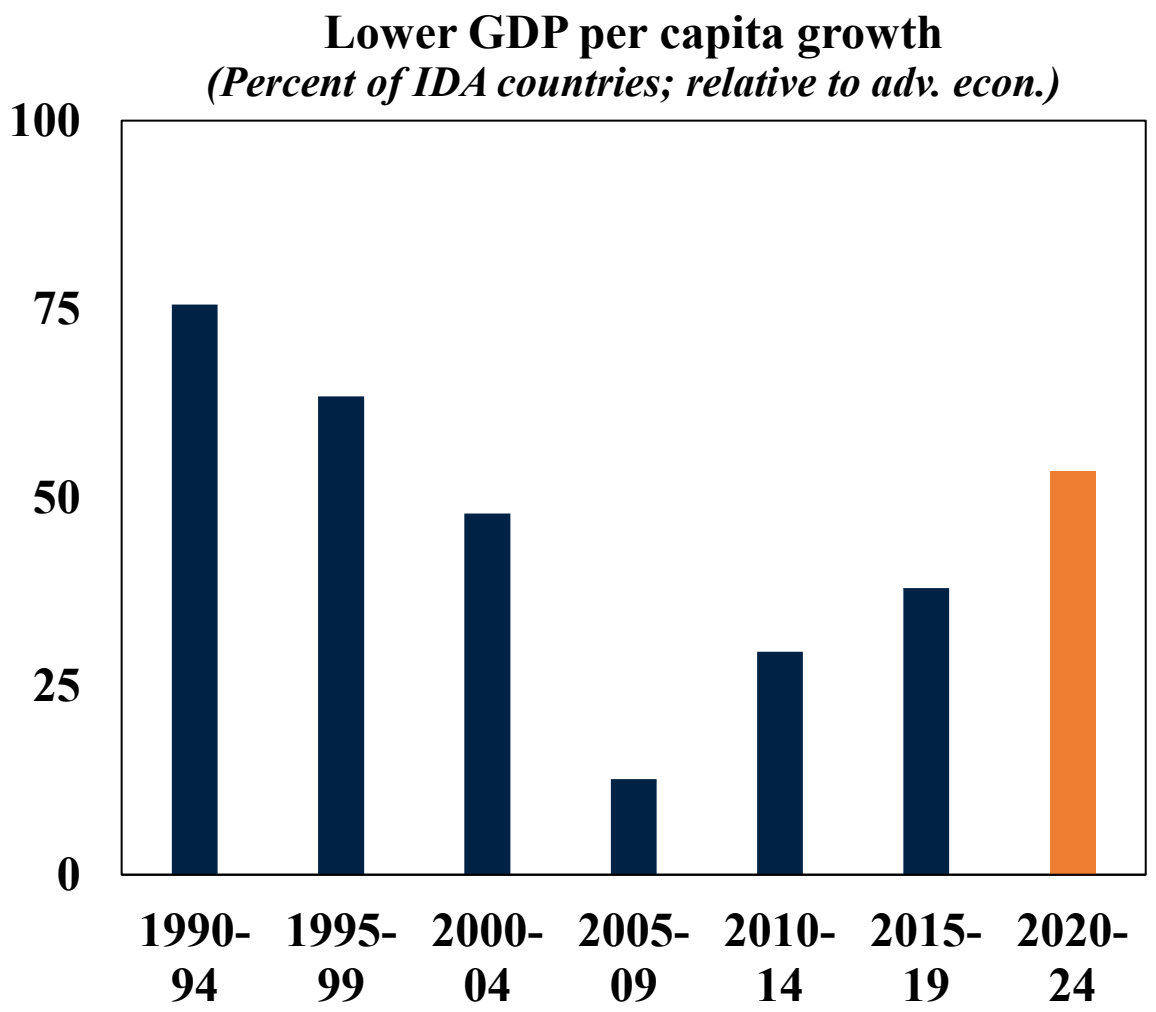
Social Protection

Interventions

can create moral hazard and reduce resilience

1. Income growth





Sources: World Bank; World Population Prospects Database (UN).
Note: IDA = IDA-eligible countries. GDP aggregates are calculated using real U.S. dollar GDP weights at average 2010-19 prices and market exchange rates. Left Panel. Average annual change in GDP per capita growth in IDA countries relative to advanced economies over the non-overlapping 5-year periods. Right panel. Average share of IDA countries with GDP per capita growth lower than in advanced economies over the non-overlapping 5-year periods.

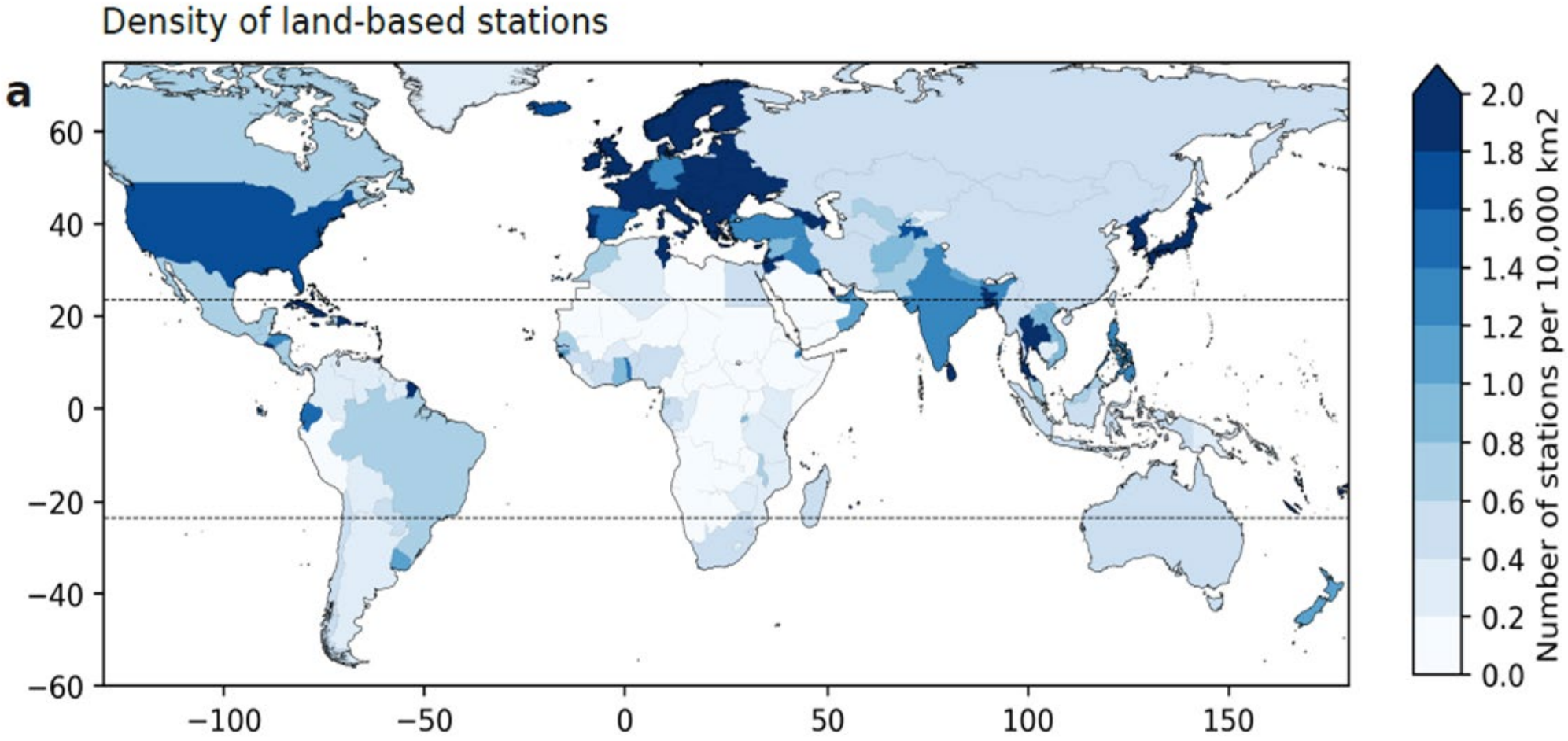
2. Information

Early warning systems have high benefit-cost ratios

Medium to longer term climate monitoring are as important as EWS

Data and skills for forecasting, and systems for real time dissemination

The poorest countries have fewer weather stations

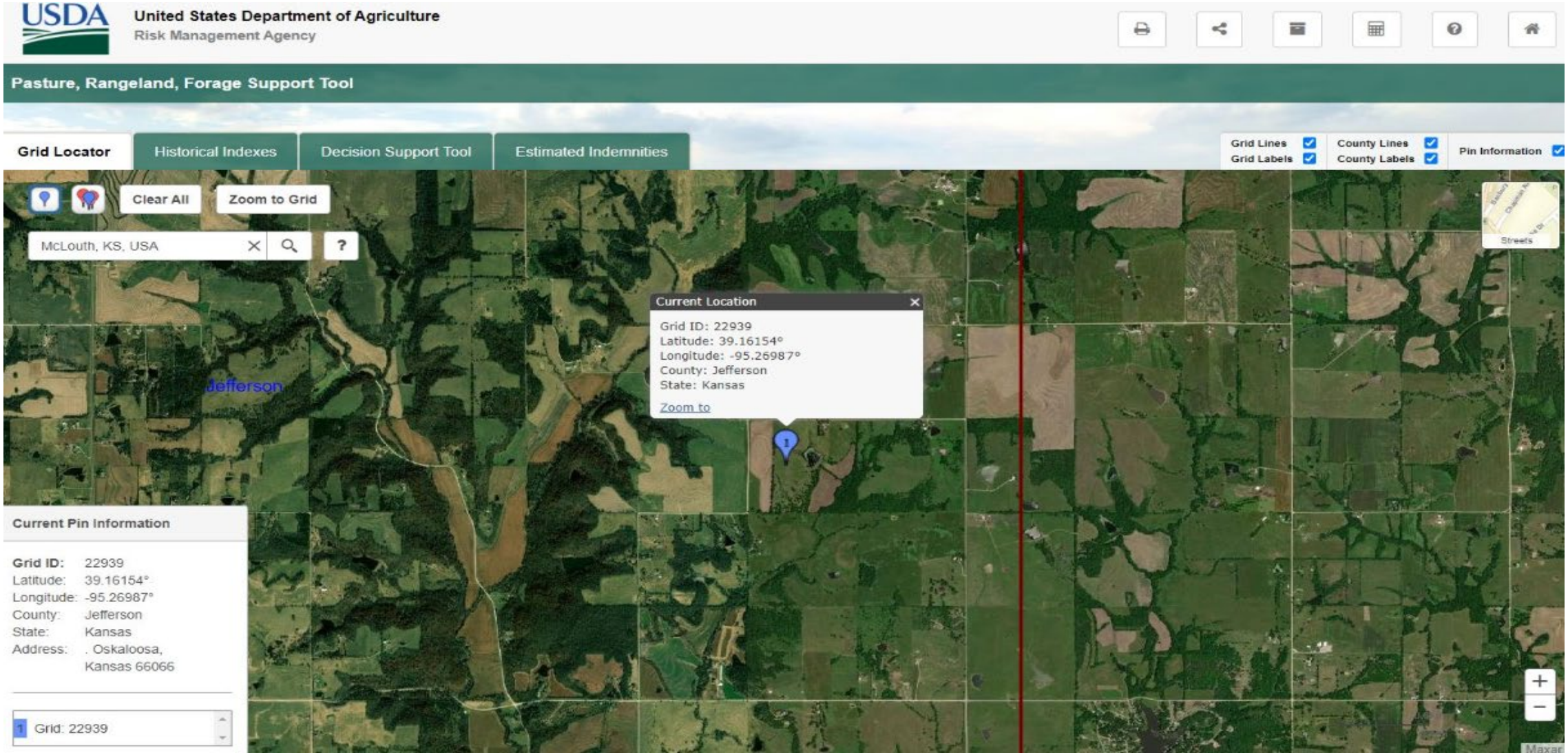


Source: Linsenmeier and Shrader 2023.

3. Insurance

- Leverage the information and data revolution
- Expand digital finance model to increase financial inclusion
- Use digital finance model to reduce transaction costs
  - Universal IDs for properties and locations
  - Develop data platform for readily usable weather and climate trends, and hazards data, real time crop health information from satellite data;
  - Use existing extension networks or information sent by customers to cross validate with local information.

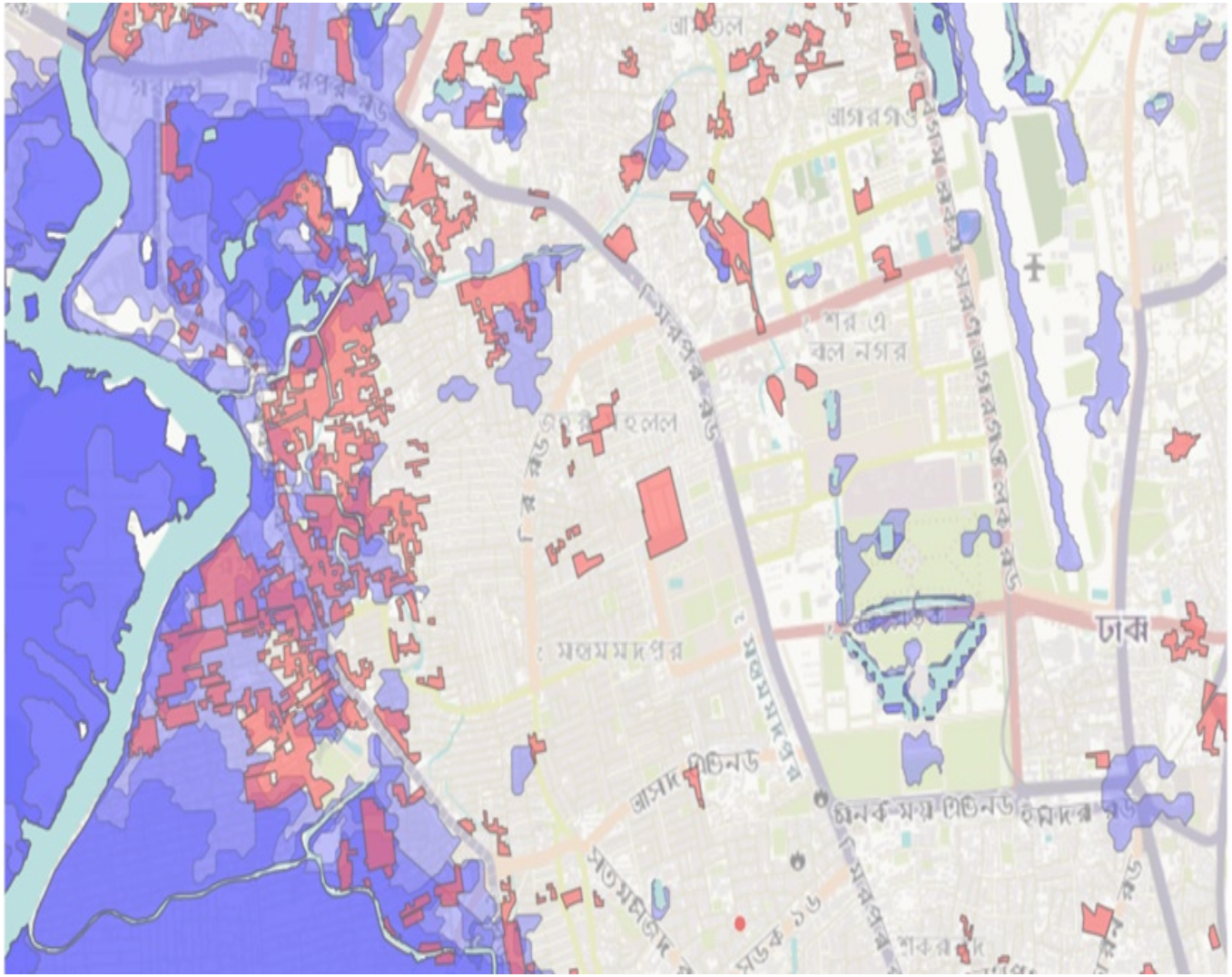
USDA crop insurance program—a success story



Source: USDA

4. Infrastructure

- Investment in risk reduction is needed for climate vulnerable areas
- They should be based on rigorous cost-benefit analysis
- This requires considering potential disincentives for people's resilience behavior



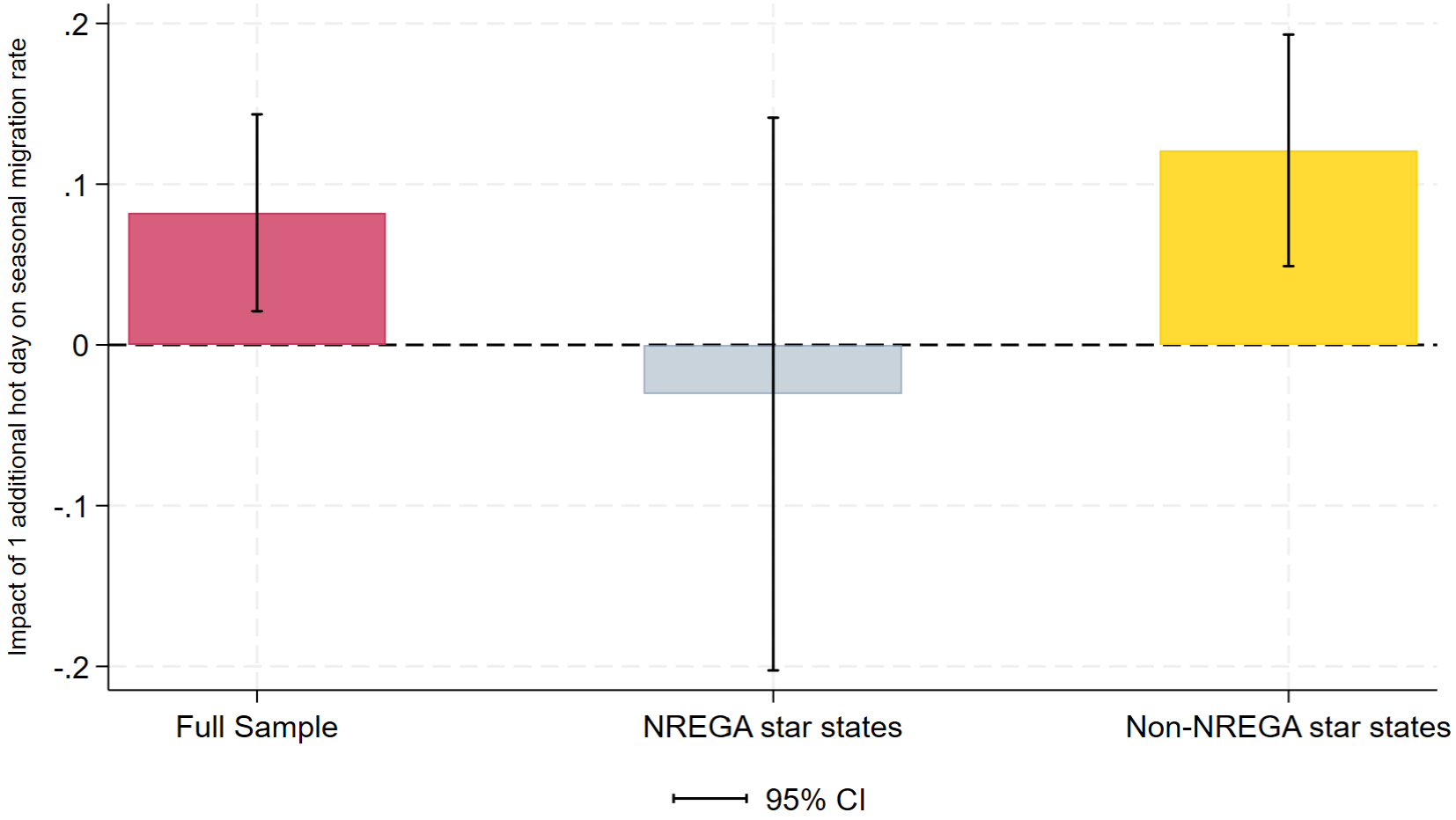
5. Interventions: Social protection and subsidies

Social protection and subsidies should be:

- Designed to have individuals bear some of the loss
- Made contingent on behavior good for climate resilience
- Targeted whenever feasible
- Portable wherever possible
- Timely and temporary

Government programs often *reduce* resilience

More generous benefits can greatly reduce seasonal migration from heat shocks



Source: Kochhar et al. (2024), a background paper for this report.

Bundle and layer to improve effectiveness

	Individuals	Markets	Governments
Frequent but low impact events	Information		
Less frequent but larger events	Information and Insurance	Information and Insurance	Information, Insurance, Infrastructure, and Intervention (Social Protection)
Rare but extreme events	Information, Insurance and Interventions		Interventions (e.g., disaster assistance) – building on the other Is

Rethinking resilience

The current approach emphasizes public action

- Public interventions to help the poor deal with climate shocks
- Public investments to make infrastructure more resilient to shocks

The correct approach would enable private responses

- Higher household incomes make people more resilient to shocks
- Availability of reliable information allows them to respond rationally
- Insurance markets are the most effective instrument to cushion climate shocks

Resilience need to be rethought

- Resilience = (Mostly) Economic Development + (Some) Climate Adaptation
- Current approach: Government interventions, public infrastructure, insurance subsidies, politicized information, and income growth—in this order
- Correct priorities: **income, information, insurance, infrastructure, interventions—*in that order***