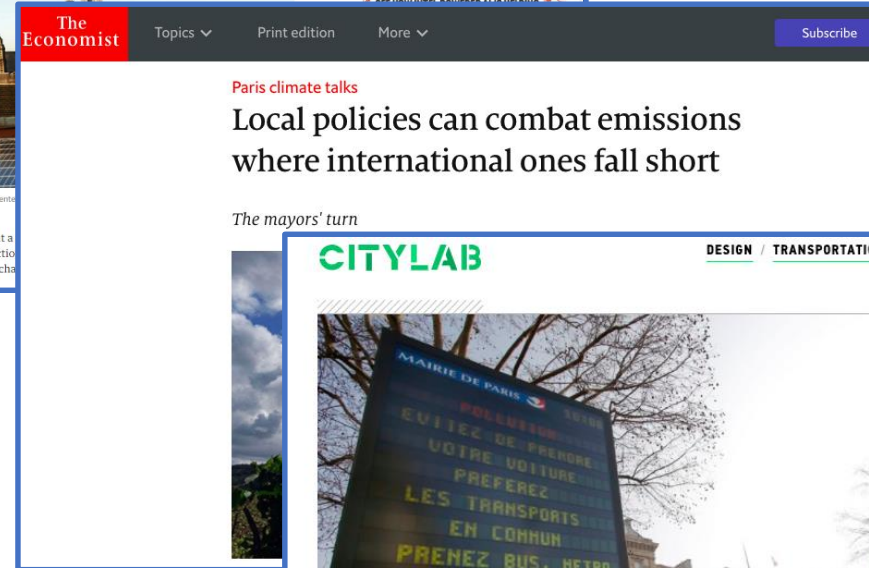
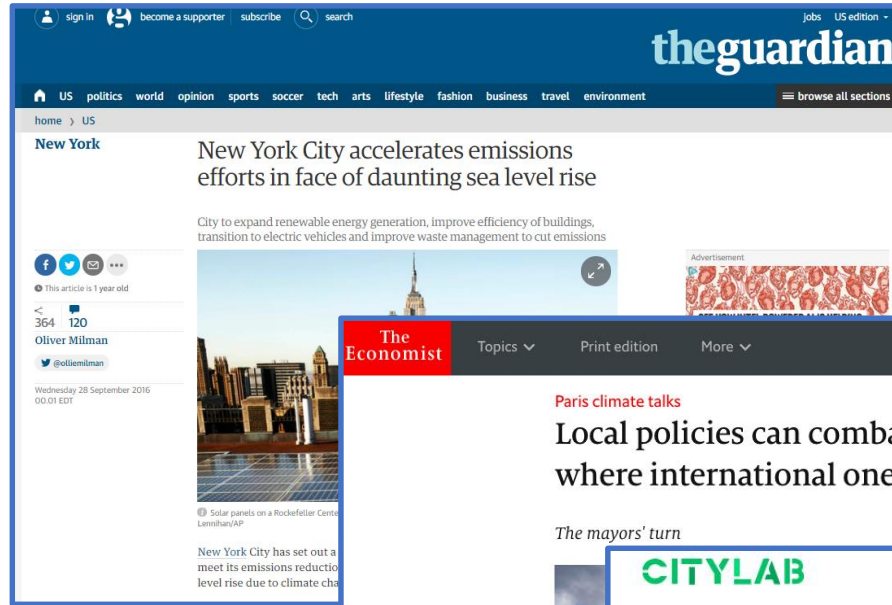


LOCAL DECISION MAKING UNDER DEEP UNCERTAINTY

2017 DMDU Workshop, Oxford Martin School
November 15, 2017

Mark Alan Hughes, PhD
Cornelia Colijn
Kleinman Center for Energy Policy
University of Pennsylvania

LOCAL DECISION MAKING (1)



Why Cities Are Key to Success at the Paris Climate Talks

LOCAL DECISION MAKING (2)

States, Cities Stepping Up for the Paris Agreement

inside
climate
news

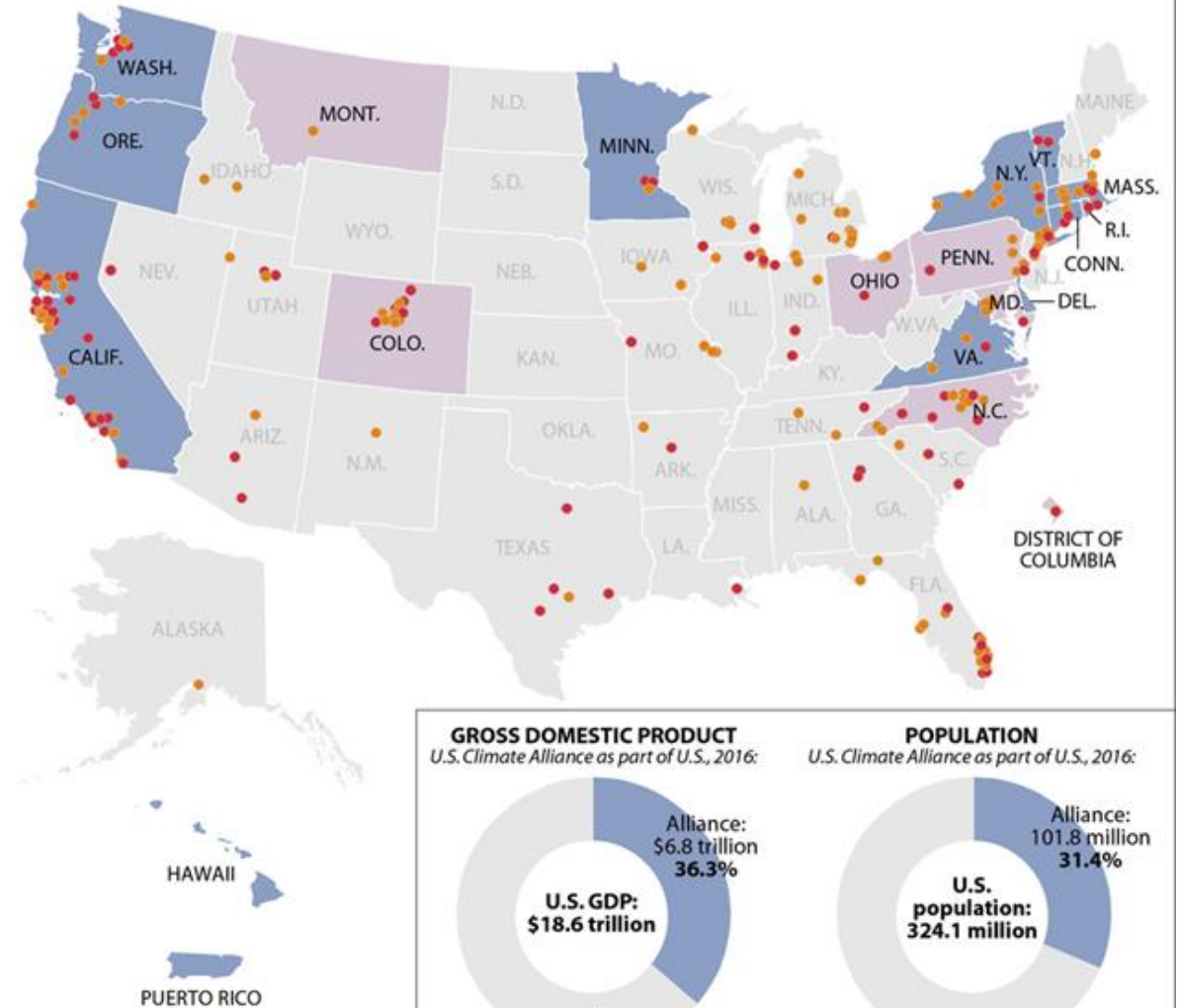
In the wake of President Trump's decision to pull the U.S. out of the Paris climate agreement, states and cities began announcing that they would still fulfill America's Paris climate commitment. They include members of the U.S. Climate Alliance and Mayors National Climate Action Agenda.

UNITED STATES CLIMATE ALLIANCE

■ Current members ■ Governing officials expressing support

MAYORS NATIONAL CLIMATE ACTION AGENDA

● Partnering cities (non-members)



Data as of June 5, 2017

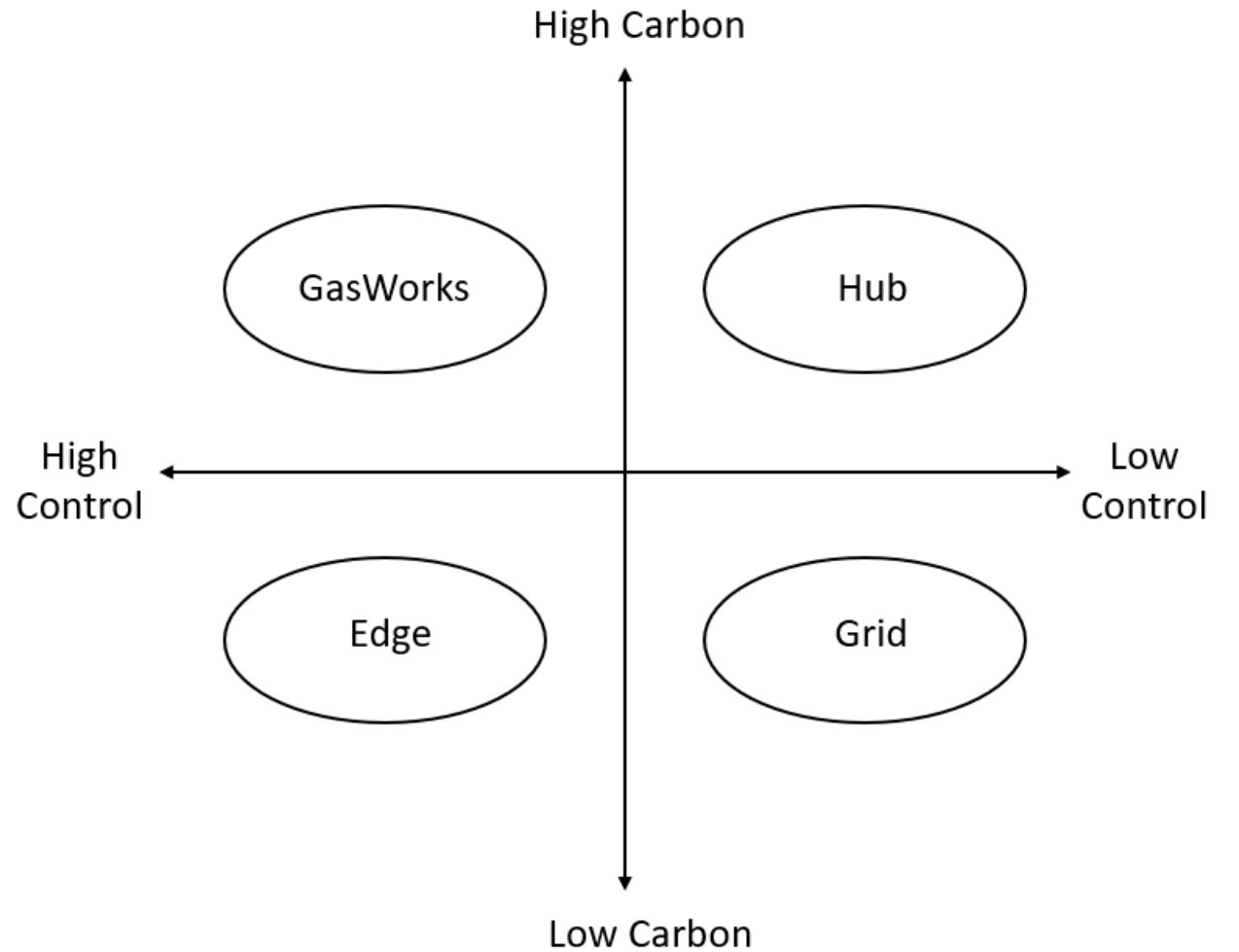
Research by GEORGINA GUSTIN / InsideClimate News

PAUL HORN / InsideClimate News

LOCAL DECISION MAKING (3)

- Brutal logic: Nearly all the benefits of climate change mitigation by cities and states occur outside their borders: 100% of the costs and something much less than 100% of the benefits (and the inverse is true of climate change adaptation).
- Cruel irony: Subnational governments will under-invest in mitigation compared to adaptation or, more generally, compared to policies driven by local net benefits. To the extent that these reduce emissions as a co-benefit (rather than as the organizing goal), selfish strategies are likely to produce more reductions than 80x50 strategies!

LOCAL DECISION MAKING in PHILADELPHIA

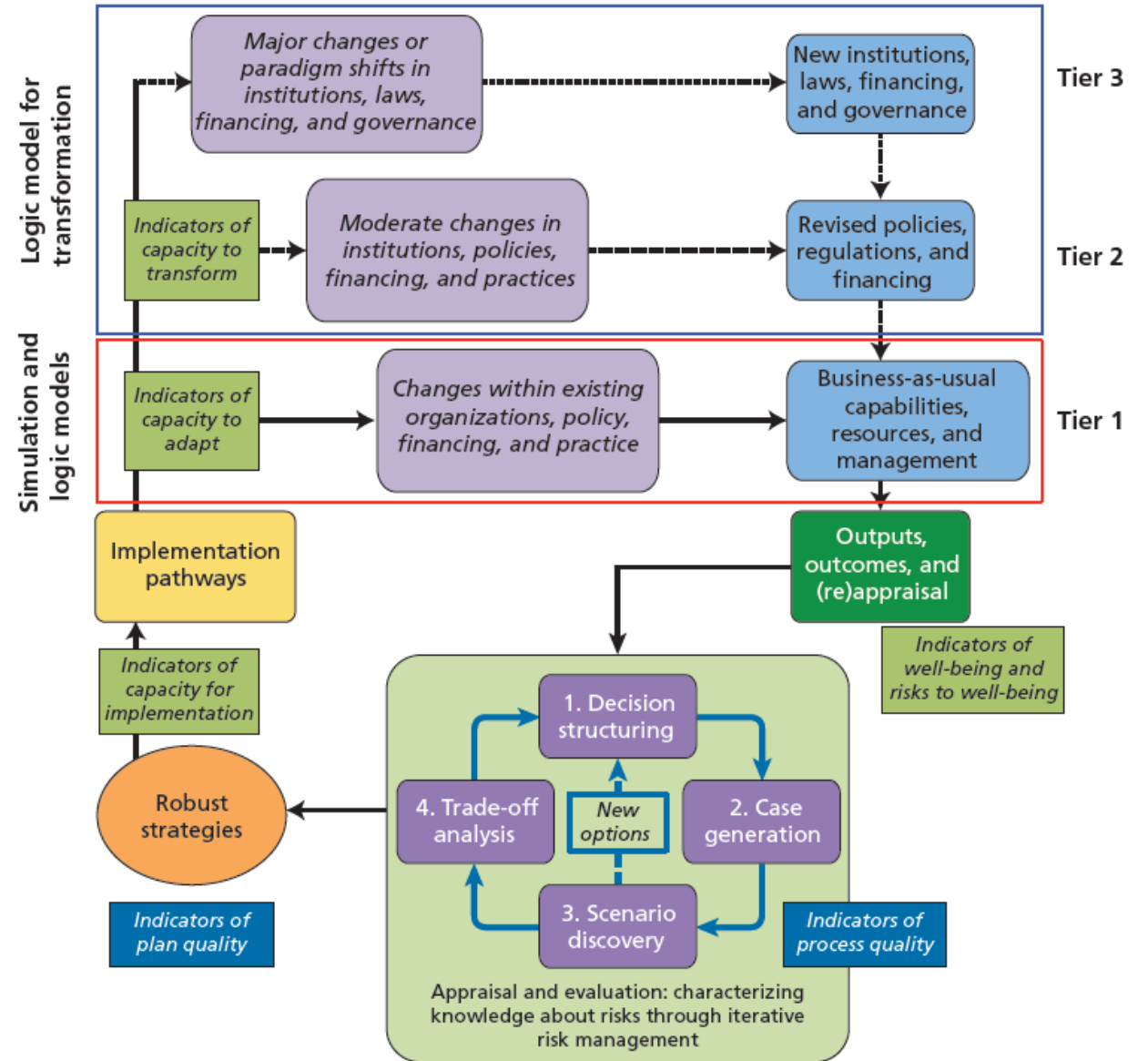


LOCAL DEEP UNCERTAINTY

- **PRICE TAKER**
 - Commodity prices
 - EV charging interaction with density
- **POLICY TAKER**
 - National carbon pricing
 - State jurisdiction over building codes
- **POLLUTION TAKER**
 - Temperature, precipitation, sea level
 - Place attachment

ROBUSTNESS
in
LOCAL
DECISION MAKING
under
DEEP UNCERTAINTY
in
PHILADELPHIA ENERGY

Figure S.2
Enhanced Iterative Risk Management Process with Indicators



Knopman, Debra, and Robert J. Lempert. *Urban Responses to Climate Change: Framework for Decisionmaking and Supporting Indicators*. Report. Santa Monica, CA: RAND Corporation, 2016.