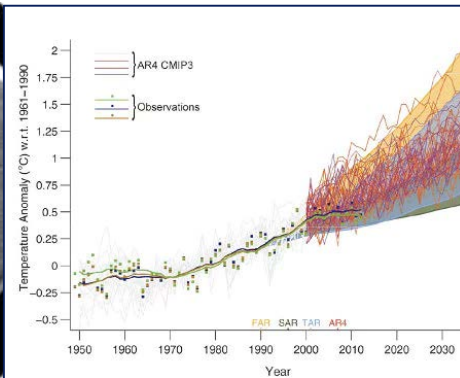
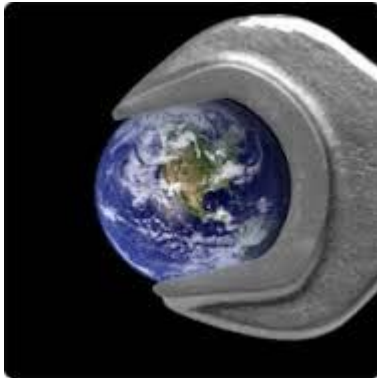


# FUTURE (IM)PERFECT: EVALUATIONS OF GEOENGINEERING SOLUTIONS TO CLIMATE CHANGE



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# Overview

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<b>Context</b>	Global governance as a challenge of collective (global) mobilization “Projective agency:” Ability to see future possibilities as real and actionable Different ways of projecting future states -> different mobilization capacity Coordination problem when a) lack of reality, b) divergent understandings
<b>Questions</b>	What alternative forms of projective agency are evoked in geoengineering? Do they correspond to efforts for or against geoengineering?
<b>Method</b>	Analysis of media discourse in 10 countries/regions Descriptive: (Unsupervised) topic modeling of thematic differences Content and sentiment analysis of alternative forms of projective agency Case comparison of political, regulatory and economic activity
<b>Conclusions</b>	Work in progress! Thematic differences across countries

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# Future Projections: Forecast, Fiction and Utopia

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## Representing the Future

- ~ Expectations and forecast: address the problem of future uncertainty through disciplined extrapolation of present knowledge into the future
  - present progressive tense: “the earth is warming”
- ~ Imaginations and fiction\*: addresses the problem of future reality by envisioning future states in concrete and vivid terms that are not constrained by the present
  - future perfect tense: “it will have led to droughts”

## Imaginariness: Projective Agency, Mobilization

- ~ Ability to imagine alternative futures that would otherwise be ignored
  - Extreme: utopias and dystopias, mundane: scenario planning
- ~ Sociology: Mobilize collective action (emotional reality + discretion to influence)
- ~ Psychology: Hinder action (lack a path to realization + discarded as too distant)

## Evaluations of Future Projections Mediate Mobilization Effect

- ~ Sentiment (positive – negative)
- ~ Basis (moral – pragmatic)

\* N.B.: We use ‘fiction’ in a neutral sense here, as “derived from imagination, not history or accomplished reality.”

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# Dimensions of Projected Futures

	<b>Possibilistic (plurality)</b>	<b>Probabilistic (singularity)</b>
<b>Assessment- driven (project out)</b>	e.g. precautionary principle	e.g. climate change forecasting
<b>Imagination- driven (project back)</b>	e.g. geo-engineering interventions	e.g. environmental dystopias

# Method

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## Research Approach

- ~ Map forms of future projection used in public discourse about geoengineering
- ~ Comparison between countries
- ~ Country-level mobilization for and against geoengineering solutions
- ~ Implications for coordinated global governance

## Data

- ~ Currently: print media corpus of 3089 articles, 1980-2016, 10 countries/regions
- ~ In the works: science and engineering discourse, interview and archival

## Analysis

- ~ Computational topic modeling of thematic differences (prelim.: 25 topic solution)
  - ~ Content and sentiment analysis of alternative forms of projective agency
  - ~ Case comparison of political, regulatory and economic activity
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# Example Themes: Actors and Impacts Represented

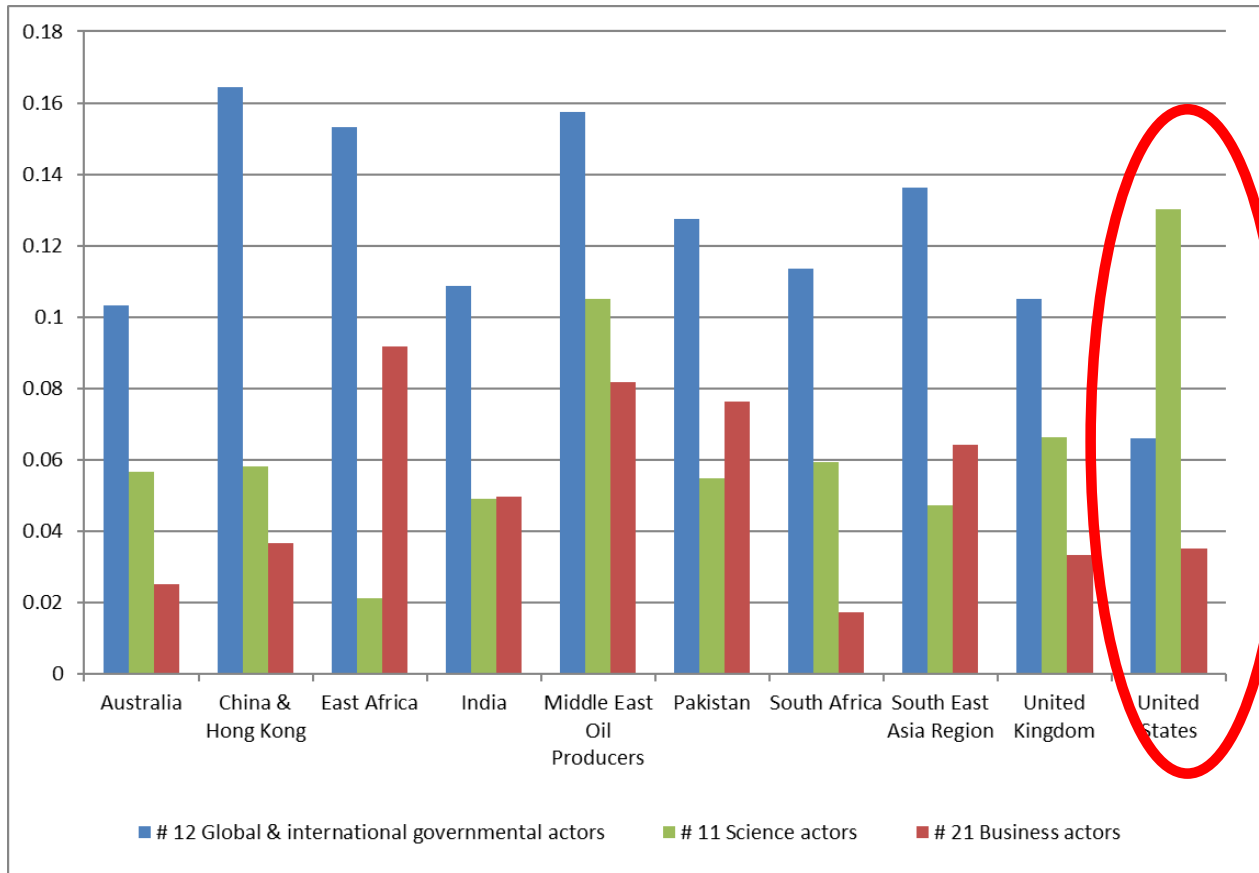
Output of 25 Topic Model Using LDA Algorithm: Topic Identifying Words\*

<b>Science actors</b>	<b>Inter-governmental</b>	<b>Business actors</b>	<b>Economic impacts</b>	<b>Planetary impacts</b>
research	global	business	energy	warming
university	world	company	economics	temperature
science	countries	group	rate	ice
engineering	international	services	estimates	sea
scientists	report	project	damages	anthropogenic
study	policy	executive	discount	greenhouse
professor	nations	investment	scc	rise
institute	energy	work	percent	surface
center	action	management	conservation	natural
technology	governments	industry	ecosystem	weather

\* Other topics omitted

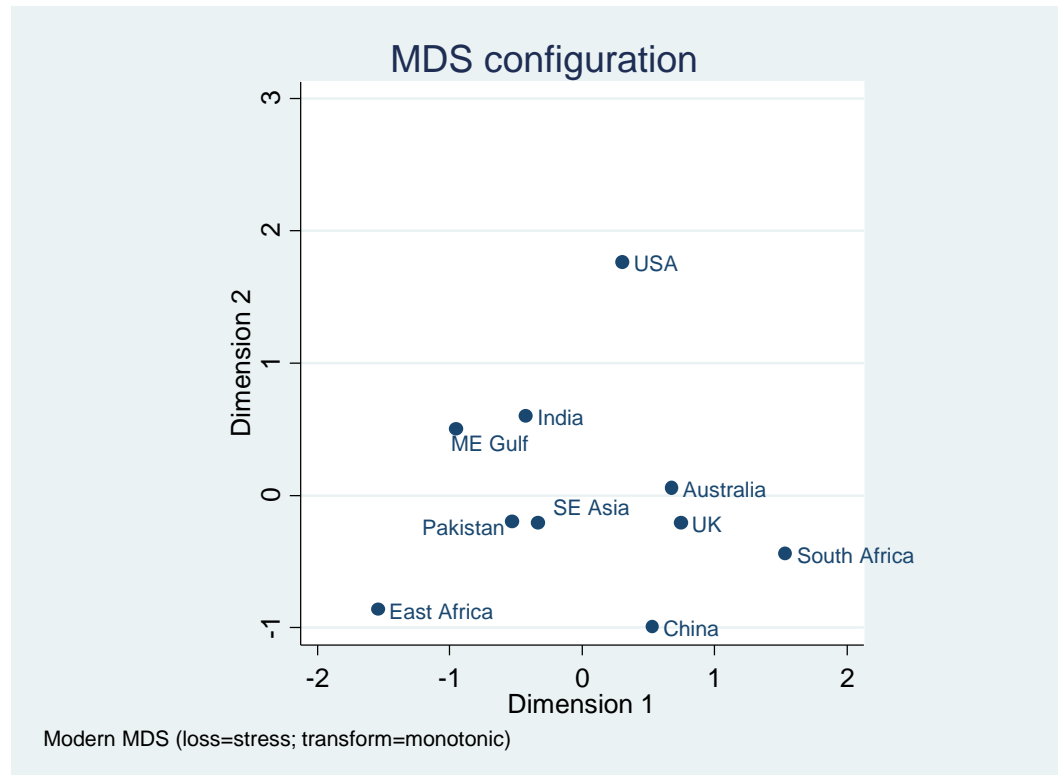
# Country Differences: The Actors In Geo-Engineering

## Intergovernmental – Scientific Community - Business



# Country Clustering Based on Topic Similarity

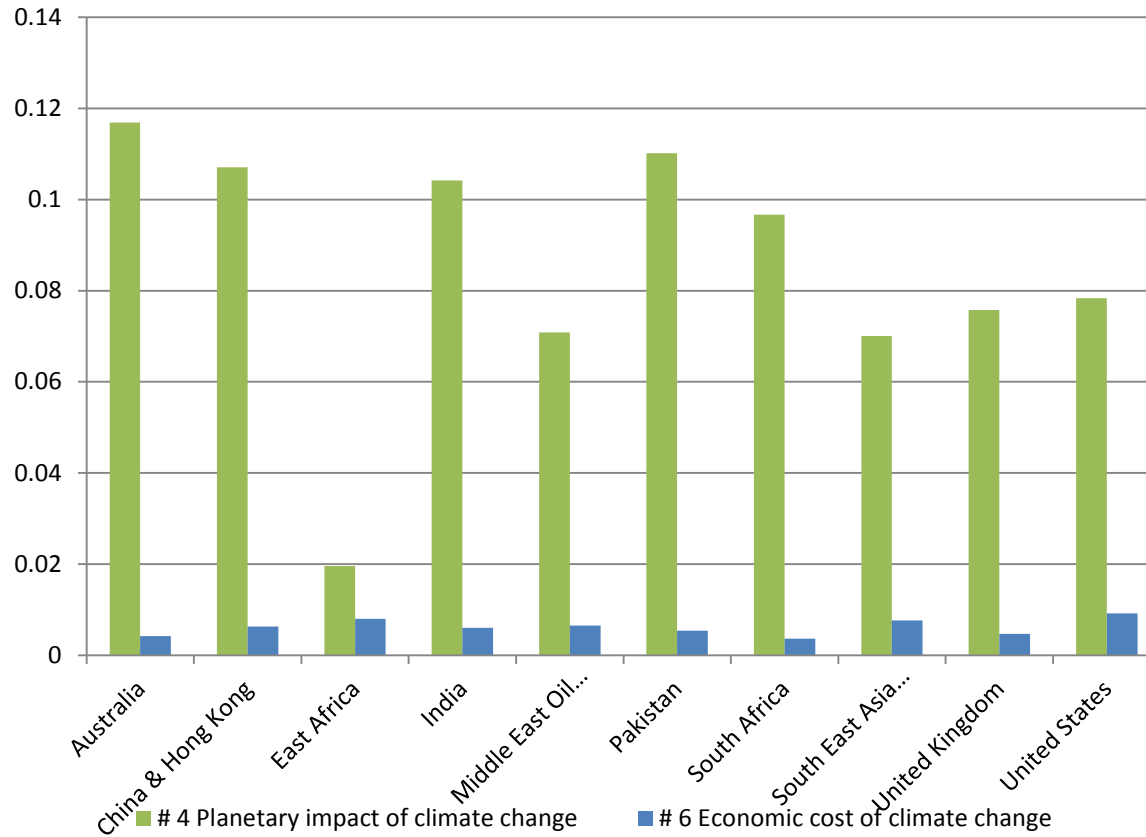
## Overall Similarity Among 10 Countries/Regions, Using 13 Topics





# Country Differences: Climate Change Impacts

## Planetary - Economic



# Implications For Global Mobilization

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## **Global Solutions Are Hampered By Divergent Local Understandings**

- ~ The overall discourse is quite variable among countries
- ~ The United States is distinct in several ways: Geoengineering is treated as a scientific rather than a political question, absence of state actors in representations of geoengineering

## **Precautionary Principle As The Guiding Rule?**

- ~ Mentioned in about 1% of articles (a grand total of 34 out of 3089)
  - ~ Limited discussion of economic cost of climate change compared to planetary
  - ~ Negative sentiment toward geoengineering equally on moral and practical grounds
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