



# A multi-scale scenario approach to understand and respond to cascading climate risks in the context of global food security

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# Background

- Global food insecurity & trade: key global climate risk\*
- Poorly understood
- Key uncertainty:

*Actor responses to initial climate impacts on the food system*

- Bigger driver than climate triggers in determining risk  
*e.g. export bans turn production shocks into food crises*

# Geopolitical tensions: the new reality

- Fragmentation, competition and conflict are increasing
- Food already a weapon in this geopolitical theatre: Russia
- Trade policy already an instrument of geopolitics: C-19, CBAM, ...

# Scenarios

- Suitable for exploring uncertainty space
- Multi-scale – connect:
  - Scale of decision-making (e.g. national); *with*
  - System scale (e.g. global commodity markets)
- Co-production potential with experts (or stakeholders)

# Our approach

1. Developing three global extensions of the regional rivalry scenario (SSP3 extensions)
2. Identifying policy responses by different cluster countries under each narrative
3. Exploring resulting cascading climate risks to different clusters, and globally
4. Understanding the interactions between policy responses & priorities for international cooperation





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## SSP3

*"A resurgent nationalism, concerns about competitiveness and security, and regional conflicts push countries to increasingly focus on domestic or, at most, regional issues. Policies shift over time to become increasingly oriented toward national and regional security issues. Countries focus on achieving energy and food security goals within their own regions at the expense of broader-based development..."*

O'Neill et al (2017) The Roads Ahead

<https://doi.org/10.1016/j.gloenvcha.2015.01.004>

# SSP3

- Twice today's conflict by 2100; 4-5x other SSPs (Hegre et al, 2016)
  - But: Where? Which blocs? What trade networks?
  - SSPs always meant to be “extended”: few studies have...
- Morphological analysis to develop 3x SSP3 extensions: **plausible alternative trajectories of future fragmentation**



# Drafts

## **Securitised supply chains (Wagner > Walmart)**

Commercialisation of the state, used to achieve trade objectives via deals and diplomacy. Neocolonial dynamics: but overlapping networks? Periphery: nothing to sell.

## **Resource clubs (Cold Wars 2.0)**

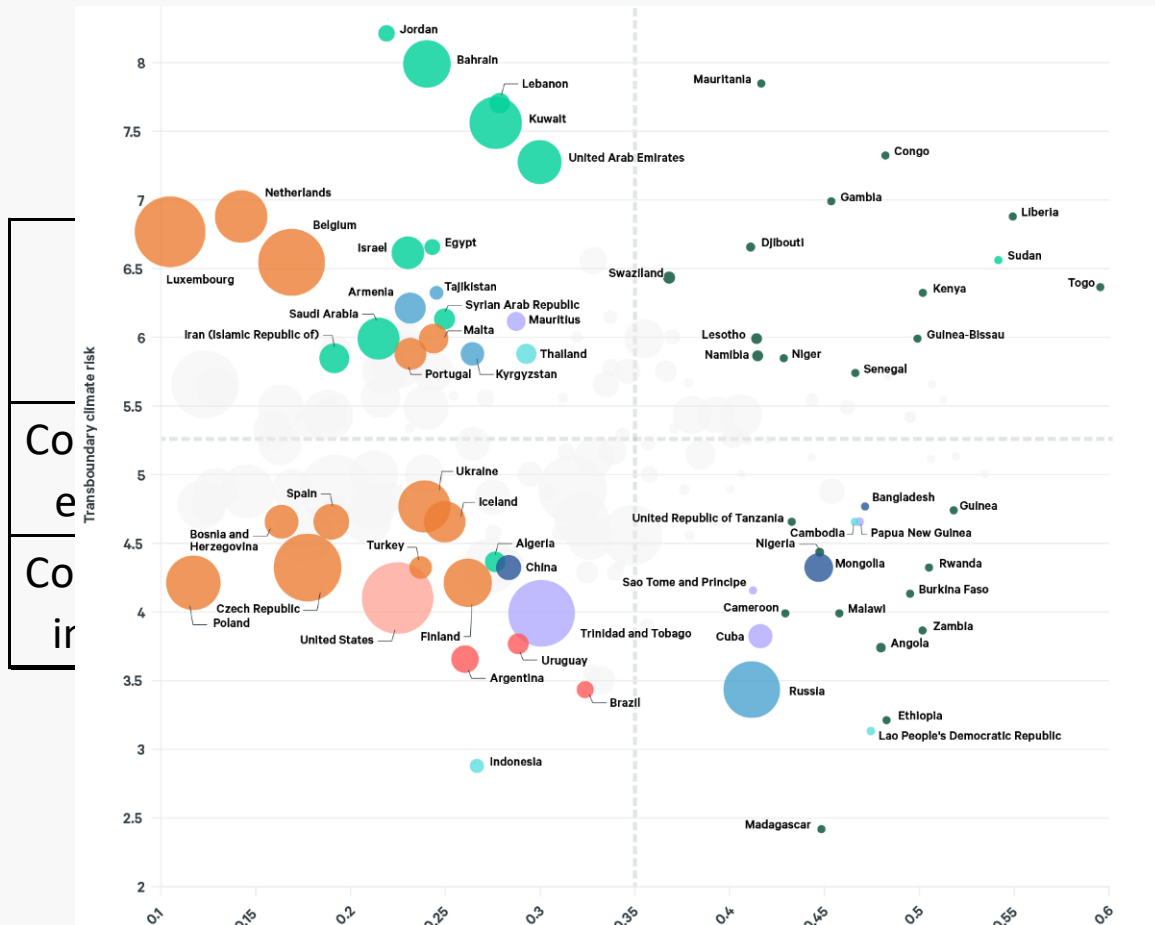
State power; exchange (resources, food, energy, minerals) within transnational blocs (interests: values & identity). Some do well. Periphery: clear “in or out” for each bloc.

## **Regional islands (Pot luck)**

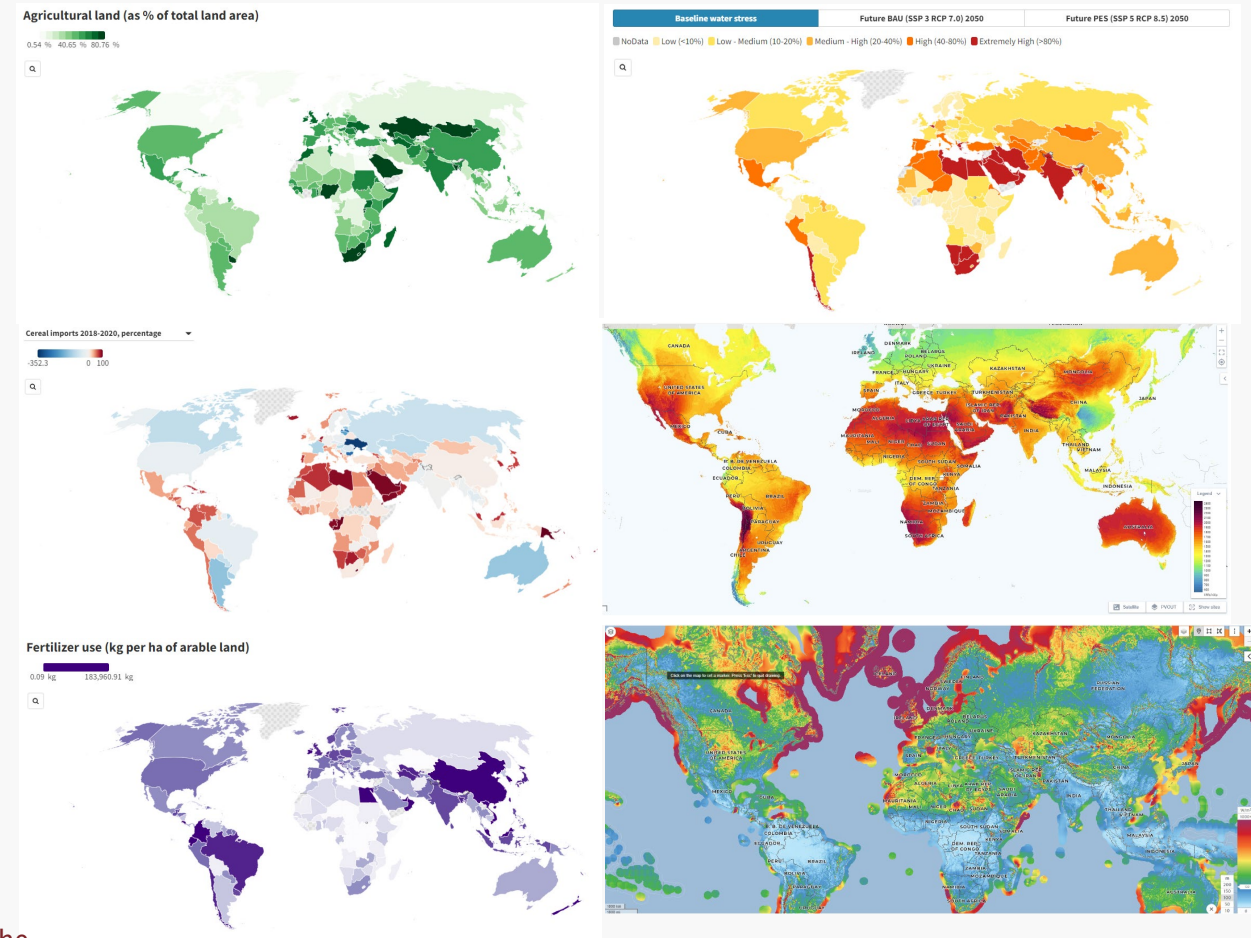
Laugh with your neighbours, cry with your neighbours. Regional territorial clusters exchange what they can produce. Variety of governance forms. Hermetically sealed. Periphery: nothing grows.

SSP3 driver-state combinations	xSSP3.a securitised supply chain	xSSP3.b resource clubs	xSSP3.c regional islands
<b>national governments dominating governance spaces *</b>	State and state apparatus and mercenaries	State, with limited engagement from private sector	State, with limited engagement from regional institutions
<b>Weak global institutions-*</b>	Weak global institutions with limited influence	Evolving global institutions, mediating necessary exchange cross regions	Regional institutions with varying influence in different regions
<b>Policy orientation; towards security *</b>	Commercialisation of security, securitising supply chain through state mercenaries	Securitising access to resources and club membership	Close security oriented inward-looking policies within the boundaries of region
<b>Weak multilateralist and transnational cooperation</b>	Limited across certain regions	Limited across certain regions (resource alliances)	Limited only within regions and certain localities (geographical alliances)
<b>Slow economy growth *</b>	Slow but varied within regions	Slow but varied between clubs	Slow but varied across islands
<b>Diverse economic paradigm</b>	Continuity of historical economic trends	Breaking economic path dependencies	Breaking economic path dependencies
<b>Strongly constrained international trade</b>	Securitised supply routes, cross-regional	Limited supply routes, regional (within remotely connected regions)	Territorial supply routes (within the geographical boundaries of the region)
<b>High population growth in some regions, and low in others *</b>	High	High in some regions, and low in others	High
<b>Constrained migration</b>	Low	Low	Low
<b>Slow technology development *</b>	Low	Slow	Slow
<b>Reactive environmental protection *</b>	Reactive	Reactive	reactive

# Country Types

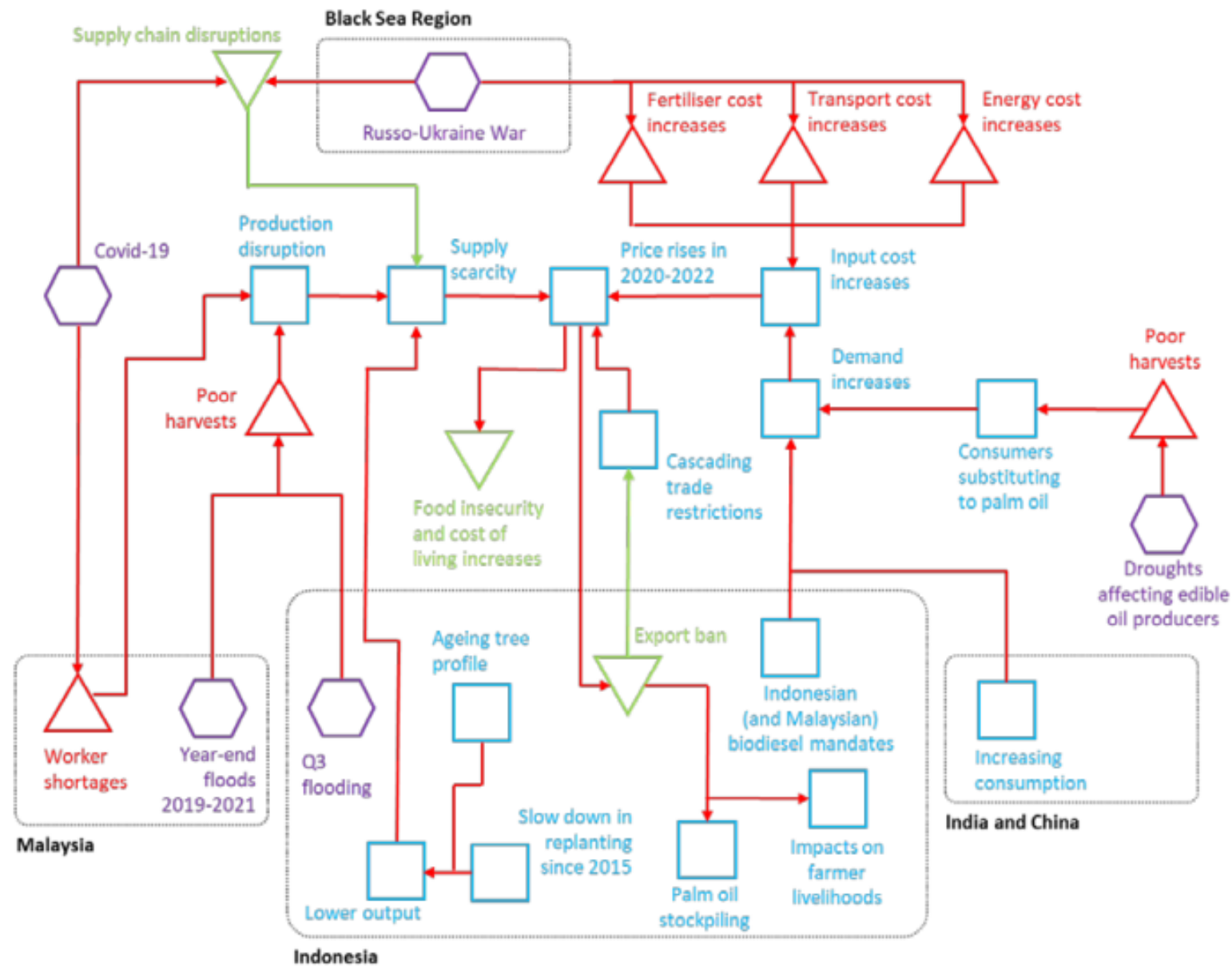


Tackling cascading climate risk to meet global adaptation challenge: which countries have the interest, capacity and responsibility to act? - SEI



<https://public.flourish.studio/story/2031949/>





**Figure 15.** Illustration of impacts to palm oil prices and supply resulting from a confluence of climatic-, Covid-19- and Russia-Ukraine conflict-linked impacts, including the introduction of Indonesian trade restrictions.



# MISTRA GEOPOLITICS

*Navigating towards a secure and sustainable future*





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# Thank you

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