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Cascading climate risks:
Towards adaptive and
resilient European Societies

Food-system consequences and responses in future trade-linked cross-border climate impacts

Insights from quantitative and qualitative research methodologies

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Background

- CASCADES WP3: Trade as a pathway for cascading climate impacts into Europe.
- Combined quantitative modelling and qualitative research (stakeholder interviews).
- **Today:** Summarises some of the work and key insights, with a focus on **FOOD SYSTEM** impacts.
- For full details please refer to the report.

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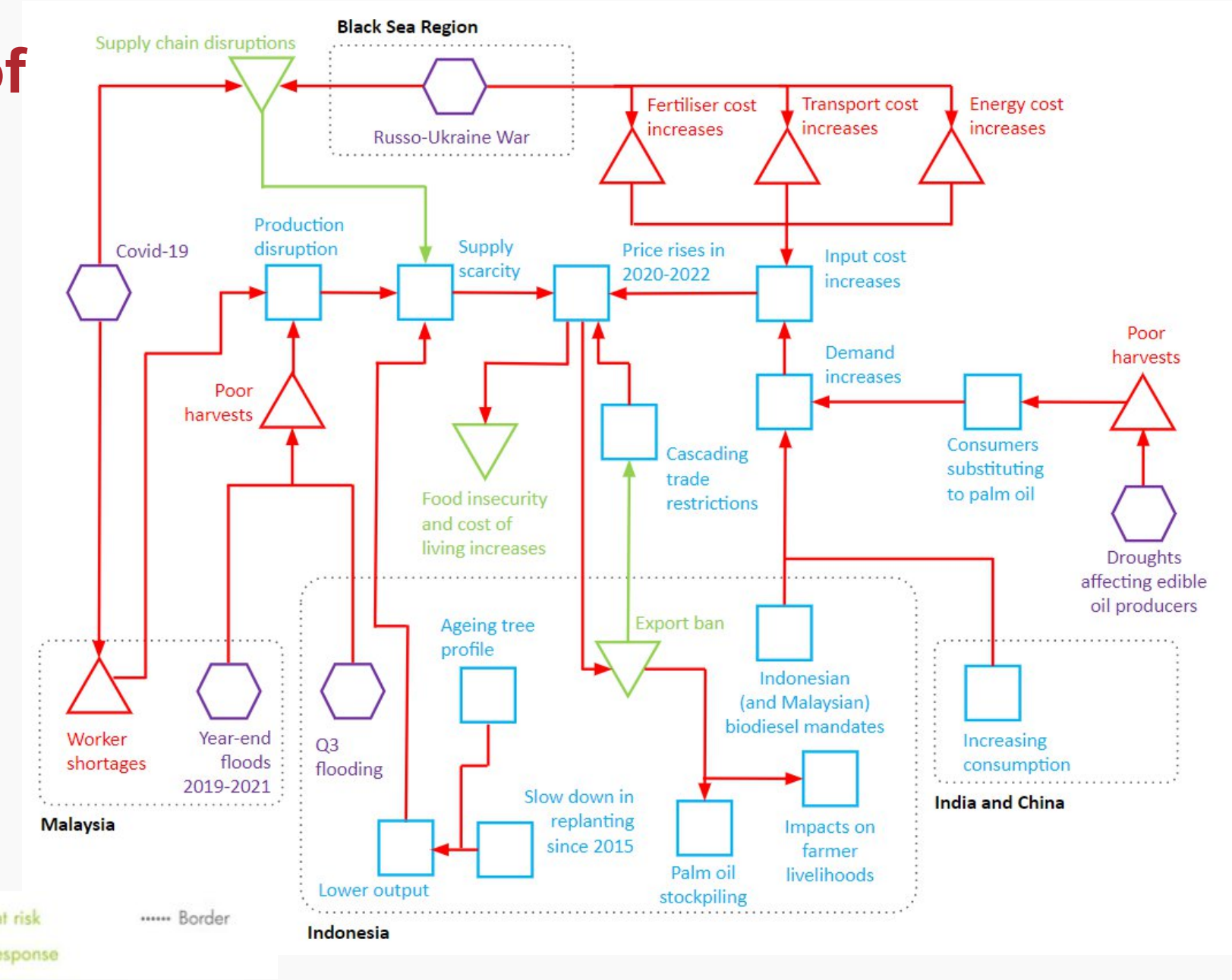
‘Current’ examples of shocks in the food system

Cascading cross-border impacts in the palm oil supply chain, following the conceptual framework of Carter et al. 2021.

Demonstrates potential for compound impacts over time, and the role of human causes and responses as determinants of outcomes.



Quantitative modelling and analysis

CMCC ICES model (Intertemporal Computable Equilibrium System). GDP and price effects in Europe from scenarios based on:

- Crop-yield projections derived from the PIK MAgPIE model.
- Parameterisation of restrictions on fuel and food availability inspired by the Ukraine crisis.
- Analysis of climate-linked disruptions to maritime chokepoints.

PIK TWIST model (Trade WIth STorage) prepared with ISIMIP to explore impacts of production-changes on price.

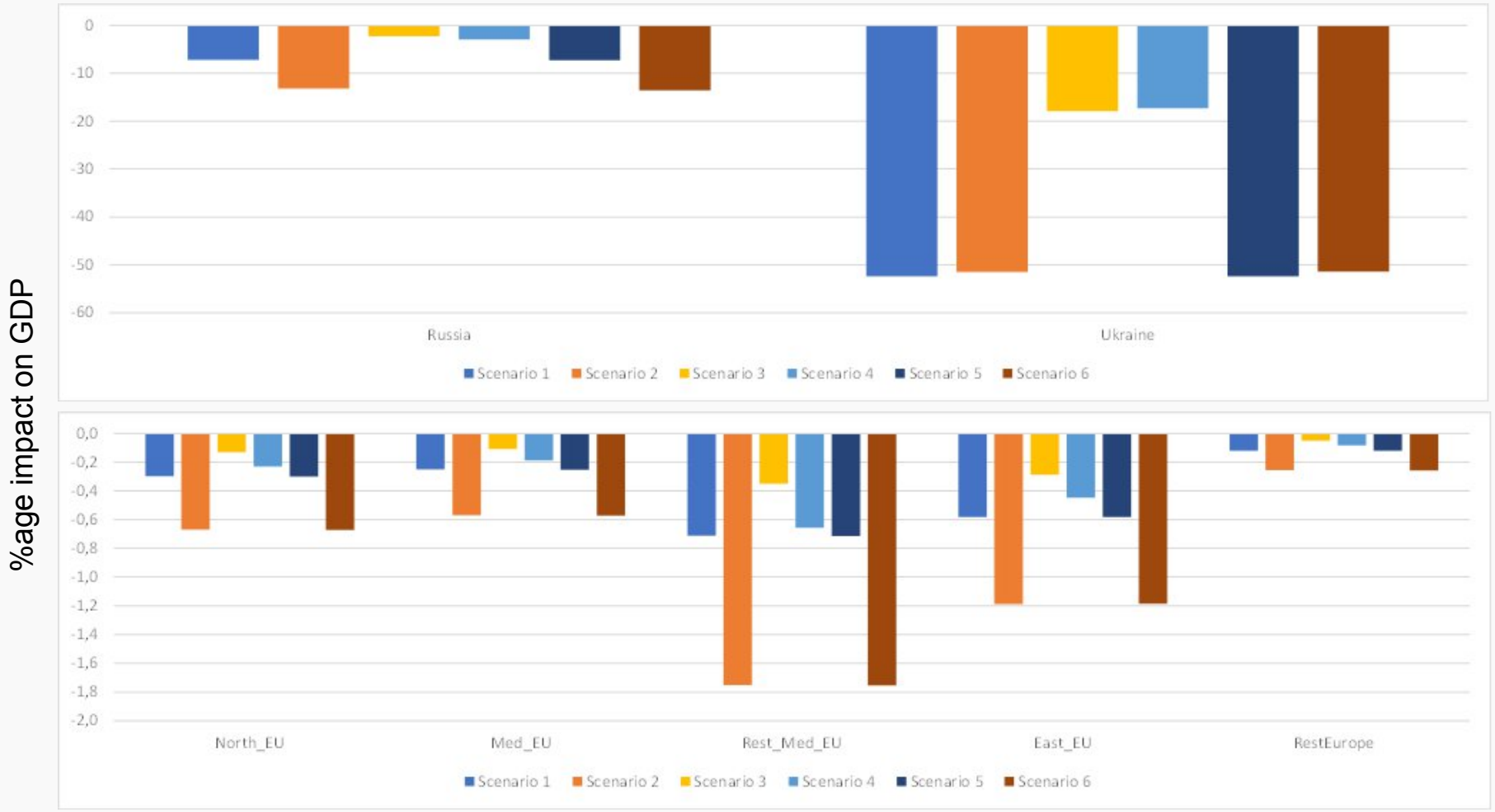
Analysis of sub-national impacts on production and logistics networks based on Trase (for the EU's soybean supply chain).

Example results

Impact of Ukraine crisis on GDP under different scenario ‘extremes’ modelled with CMCC ICES model.

Impacts vary across European regions.

Are mostly marginal, especially compared to impacts in Ukraine (and Russia)



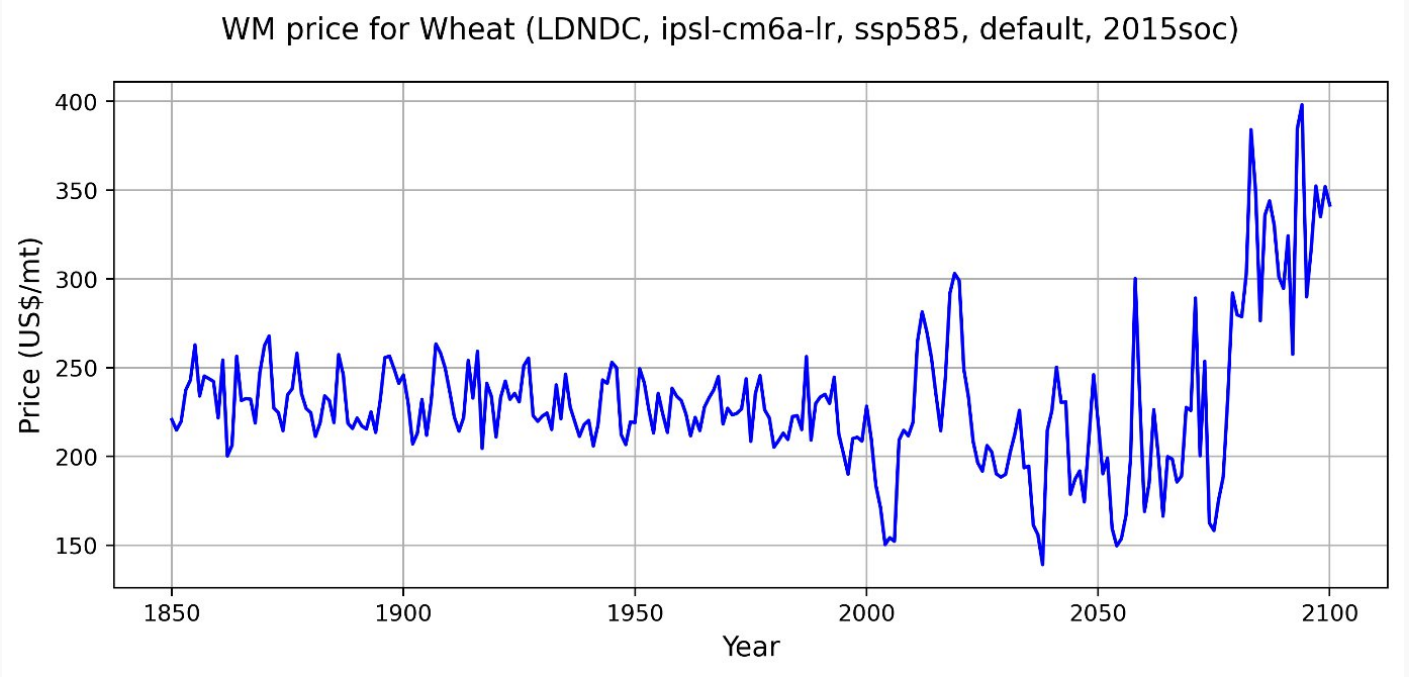
Example results

TWIST model out showing future wheat price projections from one ISIMIP model combination.

This scenario projects both increased price variability and increase mean price.

ISIMIP3b-linked outputs appear to show more ‘extreme’ outcomes compared to ISIMIP2b (but dependent on the crop model).

Overall, multiple models show the potential for increased price variability.



Qualitative research

a) Perceptions of overseas and trade-mediated climate-linked impact, and associated assessment of threat, linked to EU food security (price and/or supply) risk;

b) Responses and mitigation mechanisms already in use to address cross-border risk;

c) How policies and the practices of actors in the supply chain, mitigates or exacerbates risk.

Focus on EU-side (and UK) food-system linked stakeholders.

17 semi-structured interviews of 1 hour conducted, and inductive coding to cluster into ‘thematic’ areas.

Category	Type of organisation	Number of participants
Public Sector	EU/UK policy body (e.g. government department, agency)	3
	Multilateral body	3
Private Sector	Retailer	2
	Food Service	2
	Federation	2
	Consultancy	2
	Finance	1
Non-Profits	Policy think tank	1
	Finance think tank	1

Results

Shocks & vulnerabilities:

- Ukraine and Covid are a “wake up call”. Early concern about lack of contingency options but latterly more consensus on relative resilience. Resultant awareness of potential climate impacts higher.
- EU’s self-reliance and purchasing power an asset for resilience.
- Fresh fruit & vegetables and oilseeds are points of vulnerability, but mixed perspectives about how vulnerable.
- Price rises rather than shortages (aside from a few commodities).
- Climate transition risk highlighted as a concern.

Results

Preparedness & responses:

- Some felt Europe was ‘ahead of the game’ (esp. internationally) but preparedness varies.
- Lack of concrete action plans and implementation.
- Europe can “buy its way out of the problem” and some may even benefit from international shocks.
- Some feeling of ‘complacency’ (we don’t know if future shocks will be like past ones).
- Responses rely on international cooperation, which is currently challenging and may degrade further.

Results

Proposals & policy needs:

- More ‘systems’ thinking, and associated capacity.
- Supply chain diversification and ‘just in case’ supply chains (but counter-arguments to this).
- Stronger regulation to ‘level the playing field’ (but counter-arguments also).
- More multilateral activity (e.g. WTO, OECD) and emphasis on the role of (and improvements to) ODA provision.

Summary of insights

Perceptions vary & uncertainty is high - highlights importance of common frameworks to build consensus and a precautionary approach.

Data availability, transparency and knowledge-transfer - awareness of impacts exists, but lack of full visibility over trade and food systems, and lack of concrete ‘action plans’.

Perception that EU not at ‘high risk’ but there are still threats - implications on low-income households and certain sectors, adaptation planning still needed. Historical examples provide useful insight - but may lull us into false sense of security. May require legislation, but burdensome policy may be problematic.

Unforeseen (political) reactions may be important - role of ‘soft power’ and importance of trust-building within and across international institutions.

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Thanks for listening!

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