Researching Crises

Insights from the Science-Policy Interface

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SAPEA
Science Advice for Policy by European Academies

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Evidence Review Report

- **Challenges addressed**
- **Process & Working Group**
- **Policy Options**

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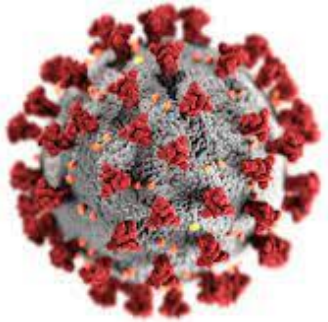
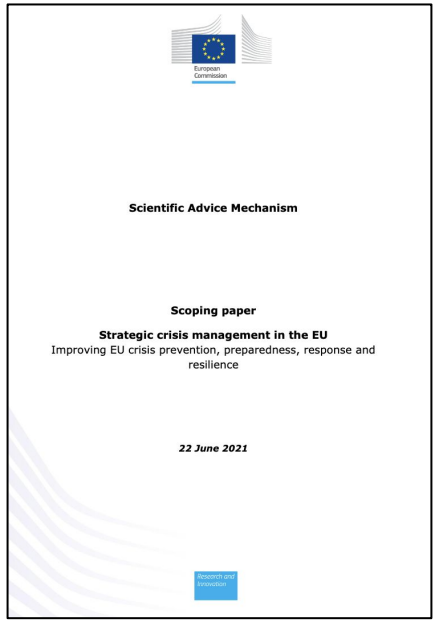
Scoping Paper – early 2021

*Based on a broad and **multidisciplinary** understanding, how can the **EU** improve its **strategic** crisis management?*





Working Group & Process

- Working Group established in summer 2021 to address the challenges of the scoping paper.
- Completed the Evidence Review Report in June 2022 based on scientific evidence in peer-reviewed & grey literature
- Separation of scientific evidence (based on peer reviewed literature and expert advice) from policy recommendations.

Premises

- Focus on the **strategic** level: decision- and policymakers who are responsible and accountable for the outcome of a crisis.
- Focus on the **EU**, respecting subsidiarity principle
- Focus on **general principles** that underlie *all hazards and crises*
- **Multi-disciplinary** approach to cover the impact of crises on different social, technological, economic, and environmental systems – and their interplay

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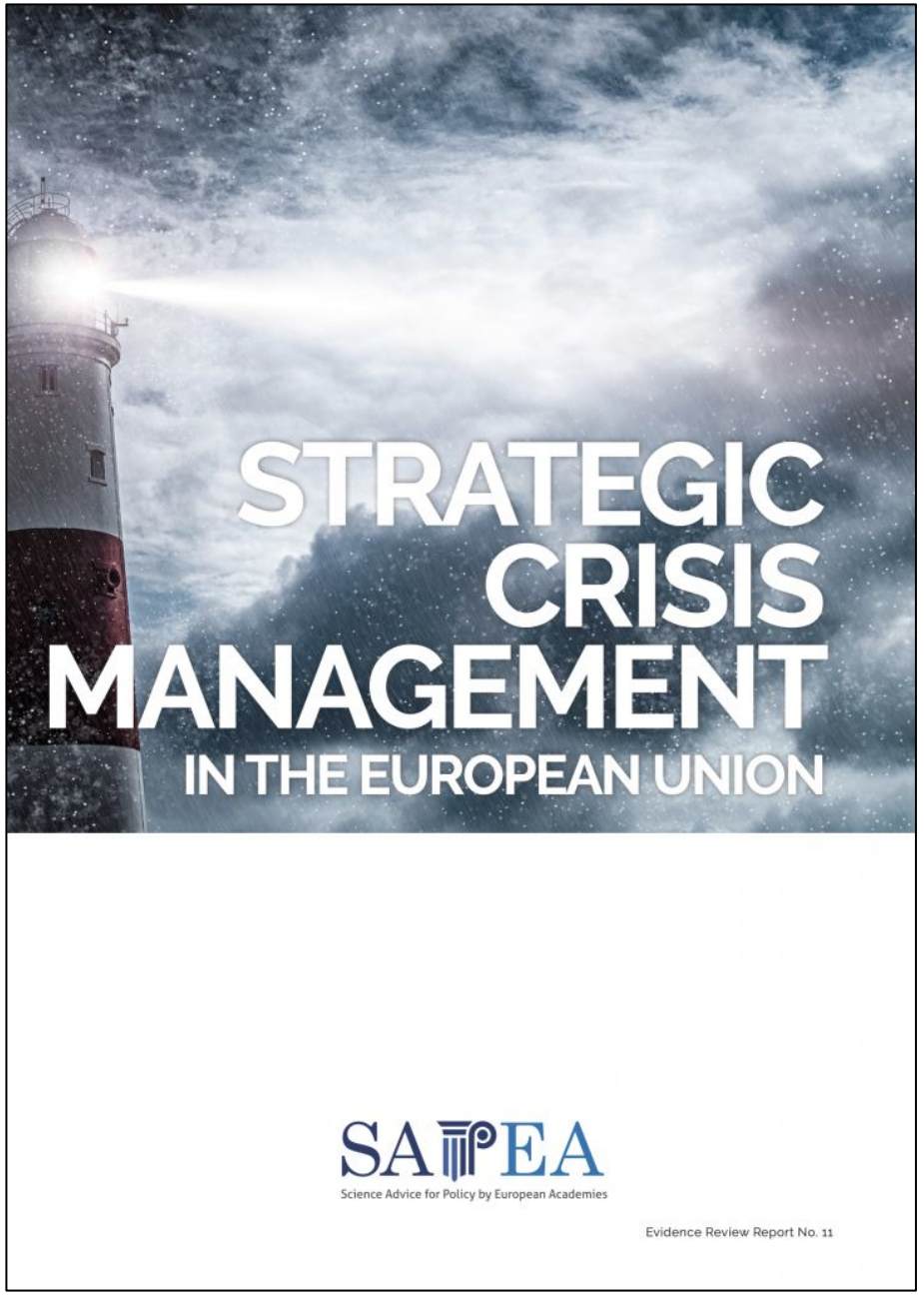
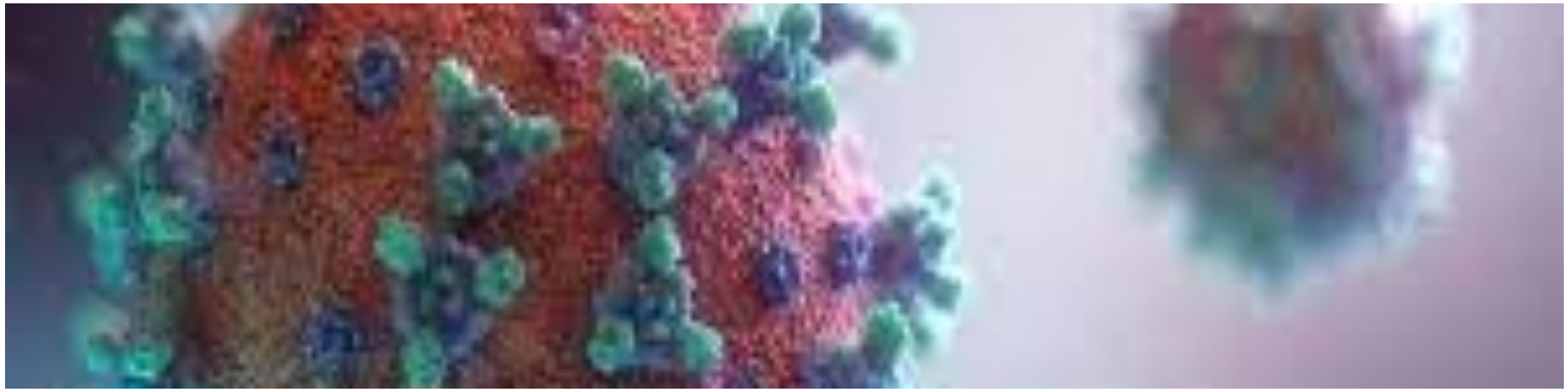


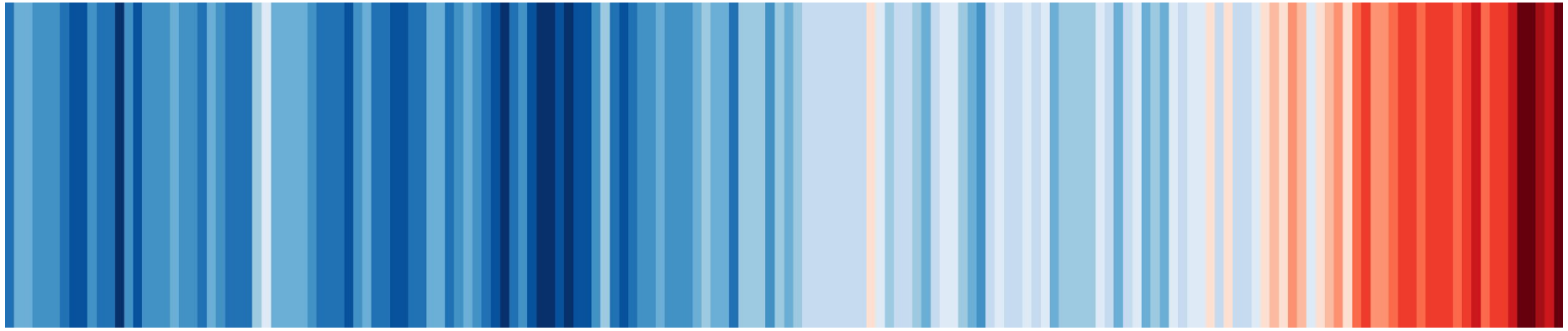
https://sapea.info/topic/crisis-management/

Complexity

+

Urgency





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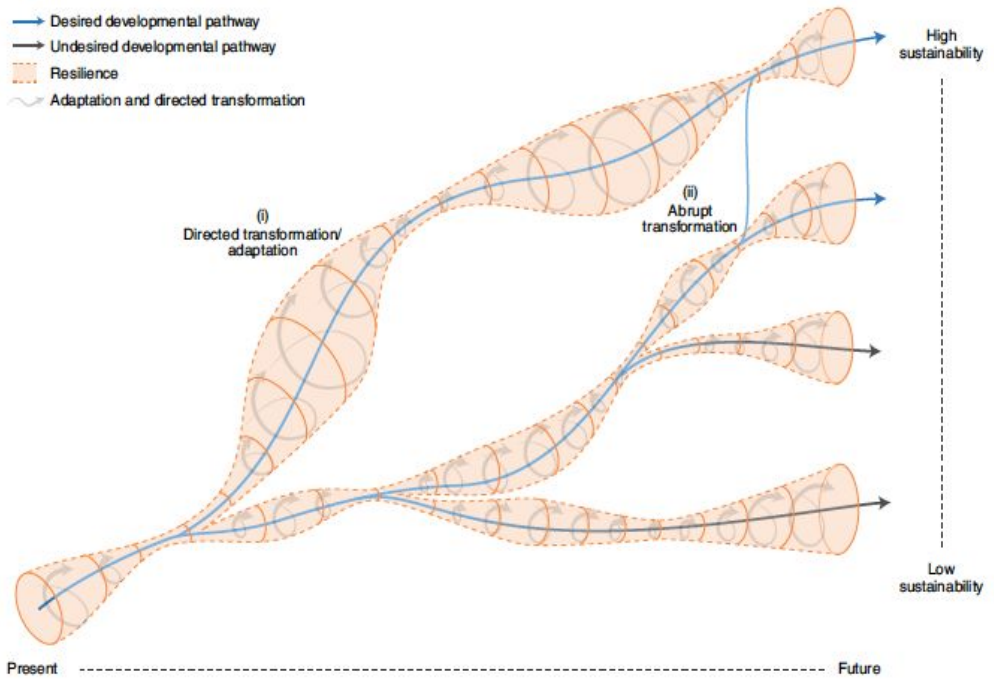
From Managing Crises to Poly-Crises & Perma-Crises

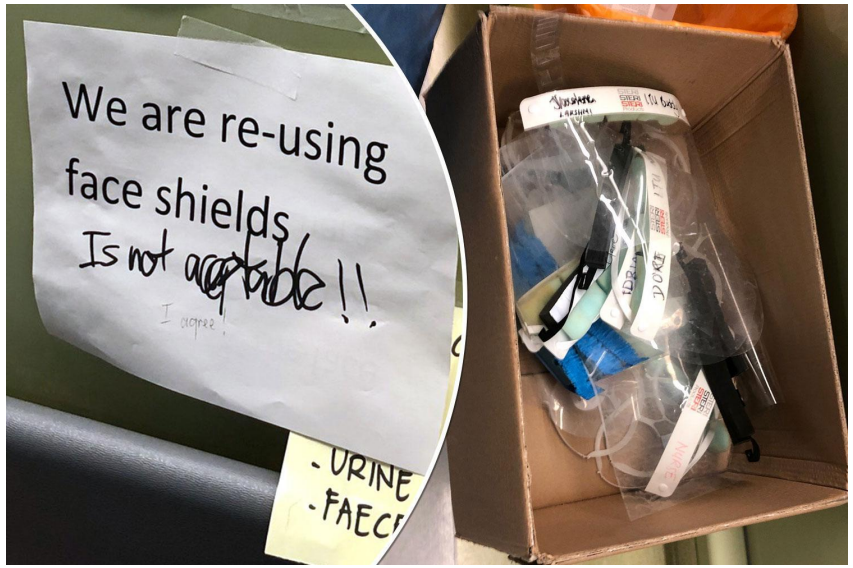
Crises are becoming the norm, not the exception

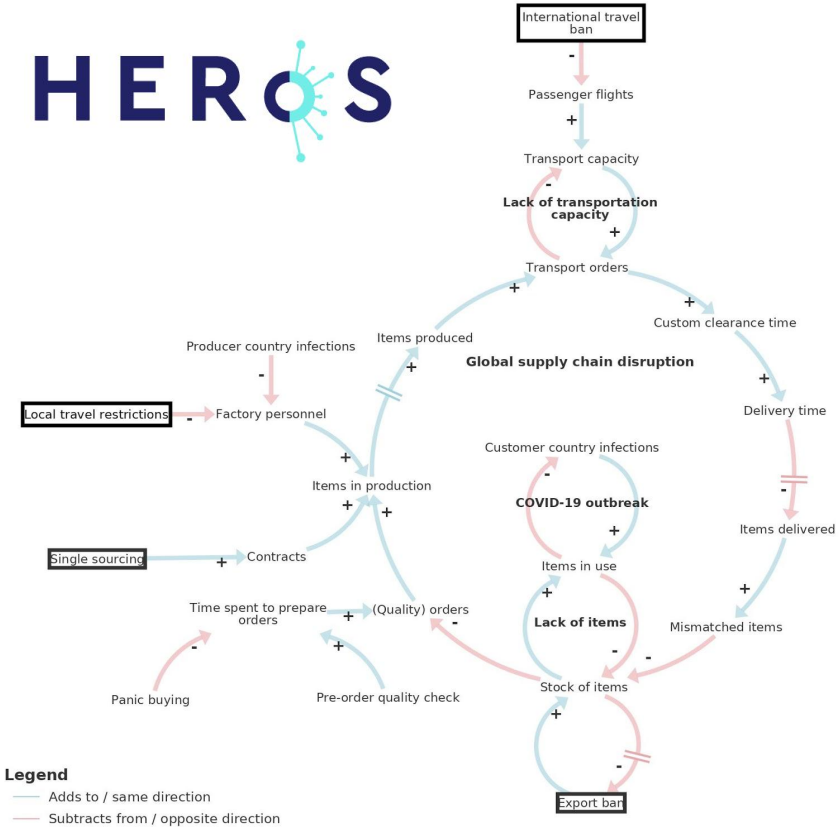
The way we manage crises shapes our society, on the long run.

*Crisis Management **is** Strategic Decision-Making.*



Path Dependency Despite Urgency





Sigala, I. F., Sirenko, M., Comes, T., & Kovács, G. (2022). Mitigating personal protective equipment (PPE) supply chain disruptions in pandemics–a system dynamics approach. *International Journal of Operations & Production Management*, *42*(13), 128-154.

GLOBAL CENTER ON ADAPTATION

The ‘new normal’: a world of multiple systemic shocks

Covid-19 has ushered in an era of multiple, intersecting systemic shocks, and one of its casualties has been our capacity to adapt and respond to escalating climate risks. Investment in climate adaptation fell in 2020, even as more than 50 million people were affected by a record number of floods, droughts, wildfires and storms[1]. The pandemic is eroding recent progress in building climate resilience, leaving countries and communities more vulnerable to future shocks. We must make up for lost ground and lost time by accelerating action on climate adaptation and resilience. Climate change did not stop because of Covid-19, and neither should the urgent task of preparing humanity to live with the multiple effects of a warming planet.

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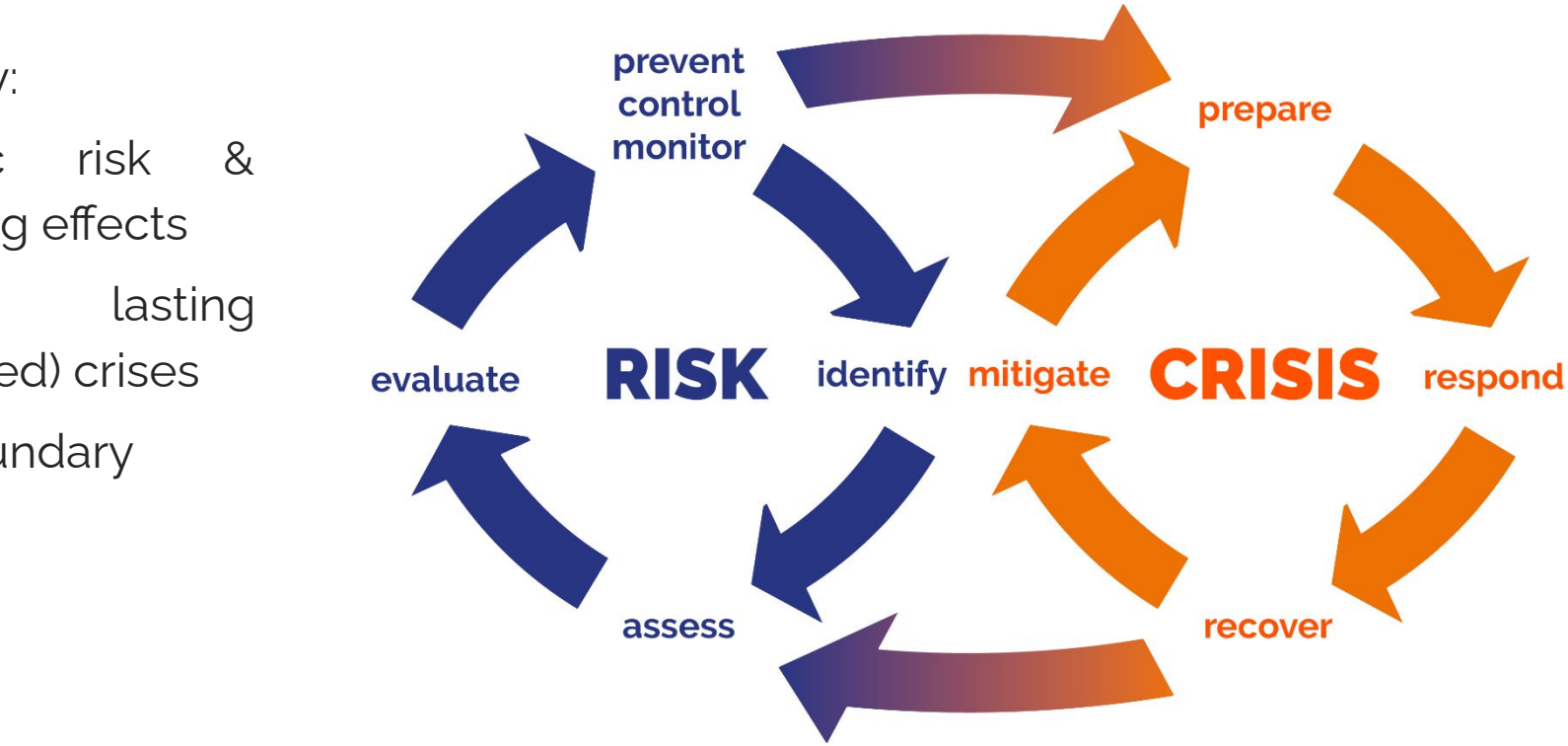
Integration of Risk & Crisis

Increasingly:

- Systemic risk & cascading effects
- Long lasting (protracted) crises
- Transboundary crises



Policy Options - Coordinate

The need for coordination is uncontested. ***EU*** *may be expected to* ***harmonize response across:***

- Member states / regions
- Sectors
- Over time

Establish a board overseeing risk & crisis management as well as **cross-disciplinary and inclusive risk & crisis management taskforces,** situated *within the existing European institutions*

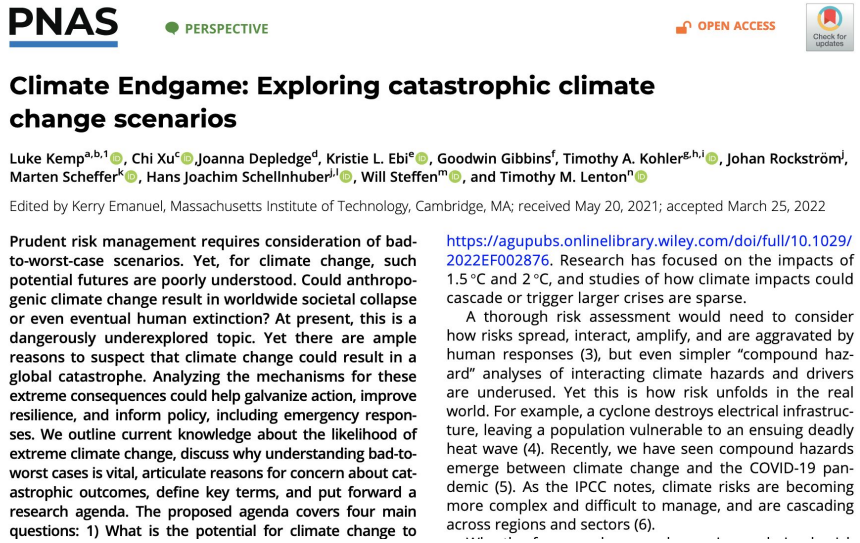
Policy Options - Communicate

Effective communication is critical for participation, trust and effective response.

Draw on EU's competence in risk & crisis communication. Establish an EU-wide **information and communication taskforce,** responding as soon as a potential crisis arises

Policy Options– Anticipate

Plethora of dashboards and portals. Need to (i) track the ***dynamic*** *evolution of a situation; and (ii)* ***integrate*** *the potential cascading effects across different sectors or geographic regions.*



PNAS PERSPECTIVE OPEN ACCESS

Climate Endgame: Exploring catastrophic climate change scenarios

Luke Kemp[a,b,1], Chi Xu[c], Joanna Depledge[d], Kristie L. Ebi[e], Goodwin Gibbins[f], Timothy A. Kohler[g,h,i], Johan Rockström[j], Marten Scheffer[k], Hans Joachim Schellnhuber[J,l], Will Steffen[m], and Timothy M. Lenton[n]

Edited by Kerry Emanuel, Massachusetts Institute of Technology, Cambridge, MA; received May 20, 2021; accepted March 25, 2022

Prudent risk management requires consideration of bad-to-worst-case scenarios. Yet, for climate change, such potential futures are poorly understood. Could anthropogenic climate change result in worldwide societal collapse or even eventual human extinction? At present, this is a dangerously underexplored topic. Yet there are ample reasons to suspect that climate change could result in a global catastrophe. Analyzing the mechanisms for these extreme consequences could help galvanize action, improve resilience, and inform policy, including emergency responses. We outline current knowledge about the likelihood of extreme climate change, discuss why understanding bad-to-worst cases is vital, articulate reasons for concern about catastrophic outcomes, define key terms, and put forward a research agenda. The proposed agenda covers four main questions: 1) What is the potential for climate change to

https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2022EF002876. Research has focused on the impacts of 1.5 °C and 2 °C, and studies of how climate impacts could cascade or trigger larger crises are sparse.

A thorough risk assessment would need to consider how risks spread, interact, amplify, and are aggravated by human responses (3), but even simpler "compound hazard" analyses of interacting climate hazards and drivers are underused. Yet this is how risk unfolds in the real world. For example, a cyclone destroys electrical infrastructure, leaving a population vulnerable to an ensuing deadly heat wave (4). Recently, we have seen compound hazards emerge between climate change and the COVID-19 pandemic (5). As the IPCC notes, climate risks are becoming more complex and difficult to manage, and are cascading across regions and sectors (6).

Develop an **EU wide dynamic risk radar methodology** and monitoring protocol. **Connect strategic foresight** and improved Intelligence to concrete scenario and contingency planning for **decision support**.

Policy Options – Harmonize

Information is key to tailored, effective and efficient response. Yet, data landscape is scattered, member states have different protocols & standards.

Develop **harmonised and responsible standards for data preparedness** and secure data sharing

FIGURE 3: TASK-TO-TOOL FRAMEWORK

The scenario below shows a draft "task-to-tool" match framework focusing on post-event data needed to respond to a natural disaster. When a task-to-tool framework is developed, the data to be collected could be categorized into three broad areas: baseline data (currently defined under the Common Operational Datasets guidance), initial impact data and dynamically evolving data. Aggregate datasets, commonly used in humanitarian response, fall under the three areas and special care should be taken with these due the risk of accidentally uncovering personal or demographic identifiable information. The end goal of a task-to-tool framework is to help determine the information points, their purpose and tools to acquire data, so that responders can build evidence to make informed decisions about the actual needs of affected communities and people.

Sources: Raymond and Harrity[15] and IASC Information Management Working Group[16]

INFORMATION REQUIREMENT	PURPOSE	SAMPLE TOOLS AND TACTICS
• The number and severity of damaged structures	• Triage of most affected communities to prioritise needs assessments by ground teams	• Composite index to estimate severity ranking[17] • Analyse high-resolution satellite imagery
• Locations of critical infrastructure, such as schools and hospitals, and main roadways leading to most affected areas	• Updated, relevant maps for guiding ground teams conducting needs assessments in most affected areas	• Common Operational Datasets on Humanitarian Data Exchange • Deploy crowd mapping platforms
• Responders and capacities in-country	• Know which agencies/responders are present on the ground, and the capacities/expertise of staff to support response and coordination efforts	• Humanitarian ID[18]
• Media tracking and translation	• Understand the evolution of local conditions post-disaster and have access to local information	• Establish a reporting cycle with local Information Management Officers • Deploy Digital Humanitarian Network

Policy Options & Research Opportunities

- **Coordinate** across countries & sectors. Set standards and protocols
- **Communicate** via dedicated capacity
- **Integrate** cascades, welfare, distributive effects & outliers into risk & crisis management standards
- **Practice** for strategic decision-making and integration of bottom-up efforts; set standards for evaluation
- **Anticipate** systemic risks via a integrated new monitoring tool connected to strategic decisions
- **Harmonize** data standards & principles

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