

SEPTEMBER 2025

GLOBAL SYSTEMIC STRESSES: UNDERSTANDING THE DRIVERS OF POLYCRISIS

Authors

Michael Lawrence, Cascade Institute

Megan Shipman, Cascade Institute

Chris Collins, Cascade Institute



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Authors

Michael Lawrence, **Megan Shipman**, and **Chris Collins** are Fellows with the Cascade Institute's Polycrisis program.

Acknowledgments

Research support: Katherine Matos Meza. Editing: David Mitchell and Scott Janzwood

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Suggested citation: Lawrence, M., Shipman, M., and Collins, C. (2025). *Global Systemic Stresses: Understanding the drivers of polycrisis*. Version 1.0. Global Risk Institute. <https://cascadeinstitute.org/technical-paper/global-systemic-stresses>



Summary

The challenge: A growing number of annual risk reports inform financial actors' strategies and operations, but many of these reports have significant shortcomings that limit their utility: they mix discrete *events* and long-term *processes*; they conflate problems that *could* happen (risks) with problems that are happening (crises); and they struggle to elucidate the *causal interconnections* among the threats they highlight.

The Stress-Trigger-Crisis model: To address these shortcomings, the Cascade Institute's Stress-Trigger-Crisis model introduces a more rigorous and systemic approach that distinguishes between the slow-moving *stresses* that erode the resilience of global systems, on the one hand, and the fast-moving *trigger events* that tip a system out of equilibrium and into crisis, on the other. Stresses create vulnerabilities to systemic failure; trigger events turn those risks into active crises. But while triggers are largely random and unpredictable in the time and place of their occurrence, stresses develop over longer timescales and broader geographies. They can be tracked and modelled. And by mapping the ways in which common stresses affect multiple global systems, the Stress-Trigger-Crisis model reveals the underlying causal connections that can drive an inter-systemic polycrisis.

Starting from stress: This report therefore advances a *stress-focused* approach to systemic risk analysis to help the financial services sector understand and monitor the shifting resilience of critical global systems. A *global systemic stress* is a long-term (measured in years or decades), planetary-scale process by which a vulnerability develops, a contradiction sharpens, or pressures build in a global system or systems, thereby weakening the resilience of that system's existing equilibrium. Stresses thereby enable trigger events to push the system out of equilibrium and into crisis.

Fourteen global systemic stresses: Based on a survey of the risk reporting landscape, this report identifies 14 global systemic stresses that affect nine vital global systems: climate, ecology, food, energy, economy, infrastructure, health, social order and governance, and world order. The report identifies the key drivers and characteristics of each stress, then explains how they diminish the resilience of multiple global systems. The 14 stress profiles also highlight key indicators and data sources with which to gauge the shifting intensity of each stress over time. The table below lists the fourteen most significant global systemic stresses acting on global systems today.



Global systemic stress	Global systems affected
Climate heating: Anthropogenic greenhouse gas emissions are raising the planet's surface temperature, altering regional climates, and generating increasingly frequent and severe extreme weather events.	• Climate • Ecology • Health • Economy • Food • Infrastructure
Ecological degradation: Human activities—including resource extraction, agriculture, urbanization, and pollution—reduce biodiversity, propel mass extinction, and diminish vital ecosystem services around the world.	• Ecology • Climate • Food • Health
Toxicity: Industrial toxins, forever chemicals, and microplastics are rapidly accumulating in ecosystems and organisms worldwide, harming multiple aspects of human physiology.	• Ecology • Health • Food • Economy
Zoonotic disease transfer: Expanding contact between humans and animals increases humanity's exposure to novel pathogens and consequent vulnerability to pandemics.	• Health • Food • Ecology • Economy
Demographic divergence: Aging populations and declining workforces burden wealthy countries, while youthful populations facing poor economic prospects burden poorer countries, and rigid border regimes bolster both trends.	• Health • Economy • Social order and governance
Industrial food production: Food production is concentrated in a few plant and animal species, intensive industrial methods, national specializations, long-distance trade routes, and corporate ownership in ways that leave it vulnerable to crisis.	• Food • Climate • Ecology • Energy • Social order and governance
Changing energy supply: Geopolitical tensions, energy transition-driven political conflicts and technological hurdles, resource bottlenecks, and growing energy demand generate growing volatility in the global supply of energy.	• Energy • Climate • Ecology • Economy • Food • Infrastructure
Financial interconnectedness: The density, rapidity, and opacity of the financial transactions that integrate all sectors of the global economy enable contagion and create vulnerabilities to systemic failure.	• Economy • Social order and governance • Energy
Economic headwinds: The transition from global neoliberal integration to fragmentary geoeconomics, alongside mounting public and private debt and supply chain bottlenecks, constrains global economic growth today and into the future.	• Economy • Social order and governance • World order • Infrastructure • Health
Economic inequality: Growing inequalities of wealth and income jeopardize economic productivity and generate mounting political and social harms.	• Economy • Social order and governance • World order • Health

Global systemic stress	Global systems affected
Ideological fragmentation and polarization: The combination of social media and ideological conflict is overloading human cognitive capacities, eroding shared meaning, dividing people into antagonistic groups, and undermining cooperative action.	• Social order and governance • World order • Economy • Climate • Ecology • Health
Political-institutional decay: Distrust of institutions, frustration with political elites, and growing authoritarianism undermine governance and obstruct collective problem-solving.	• Social order and governance • World order • Economy • Climate
Geopolitical transition: World order is increasingly unstable due to the disjunction between its established, Western-led institutions and the shifting distribution of military, economic, and technological capabilities.	• World order • Social order and governance • Economy • Climate
Propagation of artificial intelligence: As AI's capabilities outpace its governance, it is increasingly disrupting all aspects of life through labour displacement, cybersecurity threats, misinformation, resource demands, and arms races.	• Infrastructure • Economy • World order • Social order and governance • Energy • Food



1. Introduction

The investment community relies on the global risk reporting landscape—the growing number of annual risk reports issued by influential financial, intergovernmental, and academic institutions—to supplement their own risk analyses and adjust their strategies to changing circumstances. But many of these reports have shortcomings that limit the foresight they provide: some reports mix singular, discrete events and long-term, ongoing processes; others conflate problems that *could* happen but have not yet occurred (risks) and problems that are presently unfolding (crises); and nearly all struggle to elucidate the causal interconnections among the threats they highlight. These shortcomings generate confusion, imprecision, and gaps that limit financial actors' ability to navigate the evolving risk landscape.

The Cascade Institute's Stress-Trigger-Crisis model provides a more rigorous framework with which to track global risks. It makes an important distinction between the slow-moving *stresses* that erode the resilience of global systems, and the fast-moving *trigger events* that tip a system out of its established equilibrium and into crisis.

Stresses create vulnerabilities to systemic failure, while triggers turn those risks into active crises. But where triggers (like the lightning strike that ignites a forest fire) are largely random and unpredictable in the time and place of their occurrence, stresses (like the multi-seasonal droughts that heighten the intensity and frequency of wildfires) develop over longer timescales and broader geographies. They can be tracked and modelled to reveal the fundamental drivers of crises and the causal connections among those drivers.

This report identifies and examines 14 global stresses affecting nine global systems (see Box 1) to help investors and risk analysts better anticipate and mitigate interconnected crises, whatever their triggers may be. It advocates a *stress-focused* approach to systemic risk analysis that can help the financial services sector understand and monitor the shifting resilience of critical global systems (see Box 1), thereby improving investment strategies and operational decision making.

Section 2 develops a clear, theoretically grounded definition of a global systemic stress as a *long-term, planetary-scale process that threatens the equilibrium of a global system*. Section 3 explores five *generic* system stresses—conditions that render all complex systems vulnerable to systemic crises. Section 4 then details the 14 most important *specific* global systemic stresses operating today based on a survey of global risk reports through the lens of the Stress-Trigger-Crisis model (see Appendix). The analysis demonstrates that each stress diminishes the resilience of multiple global systems, creating crucial interconnections among various systemic risks and global crises. This section also identifies key indicators with which to gauge the shifting intensity of each stress over time. The report's conclusion provides additional insights on stress-crisis interactions.



Box 1: Global systems

A *system* is a collection of elements whose dense interconnections bind them into a whole that features emergent properties (such as novel behaviours, evolution, collective action, and social structure). This report uses a schema of nine systems that are global in scale and provide the essential conditions for human life:

- Climate (a subsystem of the broader Earth system)
- Ecology (another subsystem of the broader Earth system)
- Economy (including finance as a subsystem)
- Infrastructure (the built environment, including channels of transportation and communication)
- Social order and governance (the common features of national regime types)
- World order (including geopolitics, international security, and global governance)
- Health
- Food
- Energy

2. Defining global systemic stresses

In the Cascade Institute's Stress-Trigger-Crisis model of crisis causation (see Lawrence, Homer-Dixon, et al., 2024; Lawrence, Shipman, et al., 2024), one or more fast-moving trigger events interact with one or more slow-moving stresses to push a system into crisis. *Stresses* are the pressures, contradictions, and vulnerabilities that accumulate over years to decades and weaken the resilience of a system—its ability to recover from, and adapt to, shocks and perturbations. By weakening the stabilizing feedback that maintain a system's established equilibrium, stresses create *systemic risks*—potential pathways by which problems in one part of a system could spread throughout the system and disrupt its overall functioning. *Triggers* are the proximate, often stochastic, events that unfold in seconds to weeks, activate systemic vulnerabilities, and push a system beyond its ability to recover

Stresses and triggers create a distinctly *systemic* form of crisis by forcing a system from its established equilibrium—a familiar range of properties, functions, and behaviours—into a state of disequilibrium that is volatile, unpredictable, and harmful. The system may remain in a tumultuous state of disequilibrium for a while, but the crisis ends when the system returns to equilibrium—either the one that preceded the crisis, or a new equilibrium with its own distinctive set of properties, functions, and behaviours.

The Stress-Trigger-Crisis model aptly describes the COVID-19 pandemic. The trigger was the leap of the SARS CoV-2 virus to humans and its rapid spread among them. But the virus could only become the global pandemic it did because it interacted with several systemic stresses, including the widening zones of contact and viral transmission between humans and animals; the speed at which global transportation networks can spread a virus; and the poor condition of many healthcare facilities.

The interaction between the trigger and stresses pushed healthcare systems far outside their normal equilibrium, as indicated by a rapid surge of death and illness; social distancing measures that drastically disrupted everyday life; and emergency “warp speed” efforts to develop a vaccine. The crisis could have pushed the global health system into an equilibrium of sustained collapse, or into a new equilibrium marked by much higher pandemic preparedness, but the end of the pandemic has instead returned health systems to the status quo ex ante, only with even greater stresses (such as health worker burnout and vaccine misinformation) that increase the risk of another pandemic crisis.

It is quite natural to focus on the proximate triggers of a crisis, but such *trigger fixation* (Lawrence & Homer-Dixon, 2023) distracts attention from the deeper causes that ensure a crisis persists or recurs. Trigger events only become trigger events because accumulated stresses have eroded a system's resilience. So long as stresses continue to worsen, one trigger event or another will



almost inevitably come along to create a crisis. Even worse, trigger fixation can help our leaders shirk their responsibility to address the root causes of crises.¹

It is, therefore, critical to understand the gradual and often hidden processes that render humanity's critical systems vulnerable to trigger events. Because global systemic stresses are long-term trends spanning broad geographical scales, we can track and model their intensity, identify their impacts on systems' resilience, and thereby anticipate crises, even if we cannot predict the time and place at which a crisis will erupt.

Systemic stresses may take three broad forms:

- ◆ **Pressures** are forces that accumulate over time and then are suddenly released, like the tectonic stresses that produce earthquakes. For example, the longstanding grievance of systemic racism in the United States erupted as the nationwide Black Lives Matter protests following the trigger event of George Floyd's murder by Minneapolis police officers. The flip side of growing pressure—depletion—is also a form of stress, but involves the exhaustion of a beneficial factor, such as arable land lost to desertification, rather than the buildup of a harmful one.
- ◆ **Contradictions** are conflicting forces or self-undermining processes within a system, such as the tendency of unregulated markets to produce “external” costs—like pollution and extreme economic inequality— that threaten the social and environmental stability upon which those markets depend.
- ◆ **Vulnerabilities** are the potential pathways to systemic failure that a system develops as it grows more complex. For example, the dense connections between global financial actors and the homogeneity of their financial instruments undermined the resilience of the global financial system by creating the possibility of cascading failure that became the 2007–2009 global financial crisis.

In the context of the Stress-Trigger-Crisis model, at least four key features qualify a particular phenomenon as a *global systemic stress*:

1. *Systemic processes*: Rather than discrete events (such as the burst of an asset bubble), stresses involve processes—series of events and chains of cause and effect that occur within complex, co-evolving systems (such as deepening financial interconnectedness across multiple markets and sectors).
2. *Systemic impacts*: Stresses demonstrably weaken a system's ability to recover from shocks (that is, its resilience), generating behaviours outside of its normal range, as indicated by the increasing difficulty (time and expense) of that system's recovery.

¹ In 2023, for example, amidst Canada's worst wildfire season on record, several leaders simply blamed the fires on lightning strikes and unattended campfires and refused to consider the stresses that made the fires so unprecedentedly devastating (Lawrence & Homer-Dixon, 2023). As the United Nations Environmental Programme (2022, p. 6) explains, “Lightning strikes and human carelessness have always—and will always —spark uncontrolled blazes, but anthropogenic climate change, land-use change, and poor land and forest management mean wildfires are more often encountering the fuel and weather conditions conducive to becoming destructive.” Wildfires are, consequently, burning longer, hotter, and in unexpected places as a result of those stresses.

3. *Long temporal extent:* Stresses operate over years or decades.
4. *Global spatial extent:* To be considered global, stresses must span multiple continents and/or affect most of humanity.

Stresses generally originate in one global system where their impacts are most directly evident, but they affect other global systems as well, sometimes in non-obvious ways. A crisis in one system may coincide or interact with a crisis in another because those systems share a common stress. In this way, stress analysis helps reveal the causal interconnections among global crises.

Given these considerations, a global systemic stress is *a long-term (measured in years or decades), planetary-scale process by which a vulnerability develops, a contradiction sharpens, or pressures build in a global system or systems, weakening the resilience of its existing equilibrium.* A worsening systemic stress makes it much easier for trigger events to push a system out of equilibrium and into crisis.

3. Generic system stresses

Researchers in the field of complex systems science have identified several broad processes that can weaken the resilience of any complex adaptive system, including the nine global systems considered in this report. These generic stresses (or *meta-stresses*) are most visible in the global food, economy, and energy systems.

- ◆ **Homogenization:** When the elements (units, agents, etc.) of a system all closely resemble one another, they may be uniformly impervious to some disturbances but altogether vulnerable to others. An entire monocrop may be immune to some pests and pathogens, but fatally vulnerable to others. Heterogeneity counters this stress by preserving diverse responses to shocks that enable some elements to endure where others fail.
- ◆ **Hyper-connection:** Dense interconnection among system elements supports learning, experimentation, and innovation. Beyond a certain limit, however, interconnectivity exceeds the ability of system elements to process the volume and pace of flows, creating a vulnerability to system overload and cascading failure. The global financial crisis aptly revealed the dangers of hyperconnectivity when a localized crisis in the U.S. sub-prime mortgage market nearly collapsed the global banking system. Redundant connections, buffer capacity, and firebreaks help alleviate the vulnerabilities of hyperconnectivity.
- ◆ **Concentration:** The concentration of network flows, resources, functionalities, or decision-making into major hubs creates unique forms of vulnerability. Corporate monopolies, for example, limit options available to consumers, stymie innovations, create supply bottlenecks, and raise prices, all to the detriment of the system's overall performance. A shock to a major hub can disable the entire network. More diversified and distributed network connections can help limit network concentration.
- ◆ **Growth and scaling:** Systems often face diminishing marginal returns on growth, where additional elements generate greater demands than resources with which to meet those demands, thereby straining the whole system. Hierarchies, for example, accommodate growth by adding managerial layers. Past a certain scale, however, they become overloaded and cannot process the flows of information and resources required for overall coordination. They then either collapse into smaller organizations or restructure into decentralized, self-organizing arrangements (Bar-Yam, 1997, pp. 782-825). To avoid failures, growing organizations must anticipate the strains of expansion and adapt their structures accordingly.
- ◆ **Dispersion of power:** The scope of individual agency in human social systems has broadened significantly, and with it the power of small numbers of people to disrupt societies. The diffusion of power from large-scale organizations (such as governments) to a broader multitude of actors creates new pressures and vulnerabilities for all global systems. Consequently, organizations must monitor a wider range of threats across multiple scales within their day-to-day operations.



Systems that feature heterogeneous units and limited connectivity (modularity) tend to change in gradual, linear ways when faced with shocks and disturbances. They can adapt and compensate for losses. Systems that are homogenous and densely interconnected (such as the global financial system in the run-up to the global financial crisis), however, tend to experience discontinuous, non-linear change, such as collapse (Scheffer et al., 2012). Standardization (homogeneity) and precision transfers (high connectivity) maximize a system's efficiency of production but narrow the range of variability in which it can function (Walker et al., 2023). Such systems struggle to adapt to new and unexpected circumstances. And interconnection among networks that are resilient on their own can create cascading failures, such as the major blackout that spread across Italy in September 2003 (Buldyrev et al., 2010).

4. Global systemic stresses

Beyond these generic stresses, the world faces many more specific stresses that afflict multiple global systems. This section analyzes what we have identified as the 14 most significant global systemic stresses acting today. It is based on a survey of the global risk reporting literature (summarized in the Appendix) using the Stress-Trigger- Crisis model as a lens to identify those issues that meet the definition of a global systemic stress (as presented in Section 2), and whose present and foreseeable impacts are most threatening to one or more global systems (see Box 1 for the schema of nine global systems employed here).

Each of the following subsections provides a clear description of a global systemic stress, identifies its detrimental effects on the resilience of multiple global systems, then suggests key indicators and data sources with which to chart its changing severity through time.

1. Climate heating

Anthropogenic greenhouse gas emissions are increasing the Earth's energy imbalance and raising its average surface temperatures. The year 2024 was the hottest on record, with an annual average temperature 1.54°C above pre-industrial levels (WMO, 2024), and climate heating is accelerating from an average rate of 0.18°C per decade from 1970-2010 to a post-2010 average of 0.27°C per decade (J. E. Hansen et al., 2023). Present climate policies put the climate on a warming trajectory to 2.5-2.9°C above pre-industrial temperatures by the end of the 21st century (Climate Action Tracker, 2024).

Climate heating is a pressure on the Earth system that is already altering regional climate patterns and generating more frequent and severe extreme weather events, including major storms, droughts, wildfires, floods, heatwaves, and cold snaps. It has also raised average sea levels by 20 cm between 1901-2018 (IPCC, 2023), and the rate of sea level rise has doubled over the last three decades to nearly 5 cm per year (WMO, 2024b). Average sea level will rise a projected 0.5 to 1 m by 2100, depending on emissions (IPCC, 2023). Most worryingly, the Earth system features several tipping elements that, at a certain threshold of warming, may “flip” to a different set of behaviours that would dramatically shift the planet's climate and ecological systems in an irreversible manner (Armstrong McKay et al., 2022; Lenton et al., 2019).

Climate heating and its direct climatological impacts put considerable pressure on several global systems:

- ◆ **Ecology:** Climate heating pushes ecosystems out of the conditions under which they evolved, putting them at risk of rapid transformation and even collapse.
- ◆ **Health:** Higher temperatures stress the basic physiological functions of the human body, creating health problems, limiting productivity (particularly that of outdoor labour), and threatening 70 percent of the global workforce (WEF, 2024). Extreme weather events put additional pressures on population health. For example, smoke from wildfires damages respiratory systems, while flooding accelerates the spread of disease.

- ◆ **Economy:** Climate change stresses the global economy by creating direct losses, by increasing debt, by disrupting supply chains, and by stretching the bounds of insurability. By one estimate, climate change will reduce global incomes by 19 percent over the next quarter-century regardless of future emission choices, due to already occurring climate alterations (Kotz et al., 2024). Climate heating also impedes poverty reduction and worsens inequality. Half of humanity is responsible for just 12 percent of greenhouse gas emissions but is exposed to 75 percent of income losses due to climate shocks (UNDESA, 2025).
- ◆ **Food:** Changes in average seasonal temperatures strain agricultural productivity, while extreme weather events will increasingly disrupt food production processes, from planting to harvesting to distribution. Climate change will also create scarcities of water and arable land in many places, and worsen the vulnerability of global food production to the threat of multiple simultaneous breadbasket failures (Gaupp et al., 2020; Janetos et al., 2017).
- ◆ **Infrastructure:** Extreme weather threatens basic infrastructure, from energy production and transmission lines to transportation routes to communications networks. Most of the world's megacities lie on ocean coasts facing rising sea levels, increasingly frequent and severe storms, and recurrent flooding. The rate of infrastructural decay and the costs of maintenance and repair will increase. The year 2024 saw \$320 billion in losses due to natural catastrophes, of which only \$140 billion was insured, making it the third- highest year ever for insured losses (Munich RE, 2025).

Key indicators and data sources:

- The [Intergovernmental Panel on Climate Change](#) (see: IPCC, 2023) and the [World Meteorological Organization](#) (see: WMO, 2024) provide the most authoritative reporting on climate change and its impacts.
- The Global Climate Observing System (GCOS) tracks [Essential Climate Variables](#), the International Monetary Fund (IMF) maintains a [Climate Change Indicators Dashboard](#), and the European Commission with Copernicus host similar [Climate Indicators](#).
- The [Global Carbon Atlas](#) tracks greenhouse gas emissions and budgets, and [Our World in Data](#) provides interactive graphs on several aspects of climate change.
- [Climate Action Tracker](#), [Global Carbon Budget](#), and the United Nations Environmental Programme's [Emissions Gap reports](#) track progress and shortfalls in climate action.
- The [International Disaster Database](#) (EM-DAT) tracks natural and technological hazards and disasters around the world, and [Barclays Investment Bank](#) tracks the economic costs of extreme weather.
- The [Global Tipping Points report](#) identifies 25 tipping elements in the Earth system.

2. Ecological degradation

Human activities—particularly resource extraction, agriculture, urbanization, and pollution—disrupt ecosystems around the world. These pressures diminish biodiversity, increase extinction rates, threaten keystone species, alter crucial flows of resources, and introduce new species and substances. Over 47,000 of the 170,000 species yet assessed for population levels are at risk of extinction (IUCN, 2025), in what some fear will become the Earth’s sixth mass extinction event (Barnosky et al., 2011). Cattle now make up most of the world’s mammal biomass (420 megatonnes), followed by humans themselves (390 megatonnes), then various other domesticated animals, whereas wild mammals make up only 60 megatonnes (Greenspoon et al., 2023).

By disrupting biophysical networks, human activities disintegrate—and sometimes even collapse—complex ecosystems. Like tipping elements in the Earth system (see climate heating stress), stressed ecosystems can undergo critical transitions in which their basic structures and behaviours shift in ways that are very difficult to reverse, as when forests become grasslands or coral reefs swiftly die. Ecological degradation thereby reduces or terminates key ecosystem services that are vital to other global systems, such as water purification, nutrient cycling, soil retention, and carbon sequestration.

Ecological degradation has significant knock-on effects on other global systems:

- ◆ **Climate:** Ecological degradation can release additional greenhouse gases as biomass disintegrates and ecologies undergo critical transitions. Scientists are increasingly concerned, for example, that climate heating will flip parts of the Amazon rainforest into grasslands, turning a carbon sink into a carbon source, and driving further climate heating.
- ◆ **Food:** Agriculture depends on many ecosystem services, such as pollination. Reduction of those services places pressure on food production because they can only be partially—and often expensively—replaced by artificial practices (Nyström et al., 2019). Ecological degradation, sometimes at an abrupt tipping point, can turn arable land into desert or decimate key food sources, such as fish stocks. Impacts in the food system will have further knock-on effects for the economic system (such as food shortages and price spikes), which can then threaten political stability.
- ◆ **Health:** By encroaching on once isolated ecosystems and altering conditions in others, humans are now more likely to encounter unfamiliar animal species and novel pathogens, escalating the risk of new pandemics (see the zoonotic disease transfer stress).

Key indicators and data sources:

- The [Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services \(IPBES\)](#) publishes wide-ranging reports on the state of the world’s ecosystems.
- The [Planetary Health Check](#) and the nine [planetary boundaries](#) assess pressures on ecosystems worldwide.
- The [Regime Shifts Database](#) documents numerous critical transitions in socio-ecological systems, particularly those that diminish ecosystem services and reduce human well-being.

- The International Union for Conservation of Nature's [Red List](#) provides species-by-species extinction risk assessments, and the World Wildlife Fund publishes the [Living Planet Report](#) tracking the decline of wildlife populations.
- The Food and Agriculture Organization (FAO) monitors [forest health](#) worldwide, and the United Nations Educational, Scientific, and Cultural Organization (UNESCO) monitors [ocean health](#) worldwide.

3. Toxicity

Toxic industrial chemicals such as fluoropolymers (including PFAs and Teflon), lead, mercury, glyphosate (a widely used herbicide), and fluorocarbons, as well as microplastics and phthalates (a group of chemicals in many plastics) are putting immense pressure on ecological and health systems, with relatively unknown long-term consequences. These chemicals are so difficult to break down that scientists cannot yet determine the half-life of some, suggesting that contamination will persist indefinitely (Altman, 2019). They are present in food (Cox et al., 2019), soil, air (Li et al., 2020), infrastructure (Yu, 2025), and water (Bernstien, 2025; Cox et al., 2019), so humans, animals, and plants inevitably consume, inhale, and absorb them.

Some of these “forever chemicals” are now ubiquitous in human blood and are passed on to babies in utero and through breast milk (Altman, 2019), affecting gene expression for generations (Dutta et al., 2020). They disrupt the endocrine system and have been linked to fertility issues (Endocrine Society, n.d.), as well as lung and colon cancer (Chartres et al., 2024). Industrial chemicals affect the metabolic system in ways that promote obesity, create inflammation, and cause irritable bowel syndrome (Agrawal et al., 2024). They are toxic to the immune system and accumulate in the brain, potentially leading to Alzheimer’s disease (Nihart et al., 2025) and Parkinson’s disease (Dorsey & Bloem, 2024). And industrial chemicals disrupt fetal and infant development, causing cognitive impairments, abnormalities, and developmental delays (Altman, 2019).

Finally, forever chemicals and pesticides can destroy ecosystems by reducing and eliminating populations of keystone species, such as pollinators, decomposers, or common prey. As the foundations of an ecosystem disappear, a cascading ecosystem collapse may follow.

Toxicity stresses several global systems in addition to health and ecosystems:

- ◆ **Food:** These toxic chemicals strain food production, and the food system perpetuates these chemicals (through insecticides and plastic packaging, for example). Toxins evaporate and return to the soil as rain or are spread across fields in fertilizer, harming microbes and plant growing conditions. Direct consumption of these plants or of animals that eat these plants then transfers chemicals and microplastics to human bodies. These chemicals also enter the water cycle, where they destroy river and ocean ecosystems and contaminate drinking water and marine food sources.
- ◆ **Economy:** Economic estimates show that productivity losses and health impacts from toxic exposure will have long-term downstream economic consequences (Larsen & Sánchez-Triana, 2023), as will population decline from toxicity-induced fertility decline (Grantham,

2025). Companies are coming under increased scrutiny for polluting and for obfuscating the environmental and health effects of toxic byproducts, leading to a growing number of multi-billion-dollar lawsuits (e.g., Salter, 2024).

Key indicators and data sources:

- The Canadian Broadcasting Corporation collates a map of forever chemical [contamination sites](#) in Canada, and the Canadian government keeps an inventory of [pollutant releases](#).
- The World Environment Situation Room and United Nations Environment Programme (UNEP) maintains a [global pollution map](#) that includes some forever chemicals and plastic pollution. UNEP also publishes a [Global Mercury Assessment](#), and the Stockholm Convention on Persistent Organic Pollutants mandates global and regional [monitoring reports](#).
- The European Commission's [Information Platform for Chemical Monitoring](#) publishes chemical data on the environment, food, air, and biomonitoring across contributing European countries.
- The U.S. Center for Disease Control releases an annual biomonitoring of environmental chemical [exposure report](#) with an associated dataset.

4. Zoonotic disease transfer

Zoonotic disease transfer refers to the transmission of novel pathogens (bacteria, viruses, and parasites) from animals to humans. Zoonotic spillover generates most pandemics, including the Black Death, the 1918 Spanish Flu, HIV, and COVID-19. Current public health threats originating from zoonotic transfers include HIV and COVID-19, as well as Ebola virus, Hantaviruses, Hendra virus, Mpox, Nipah virus, Rabies, Leptospirosis, Lyme disease, certain parasitic diseases, and some fungal diseases.

Zones of contact and vulnerabilities to zoonotic spillover are increasing in several ways. Climate heating and ecological degradation drive many unfamiliar species into novel encounters with humans. Humans are encroaching (through urbanization and land use change, and especially deforestation and agriculture) into the habitats of many unfamiliar species. Intensive (“factory”) farming methods (including dense habitation and the heavy use of antibiotics) accelerate the mutation of pathogens, often increasing their zoonotic potential, virulence, and antimicrobial resistance in spaces with frequent human contact. People traffic and consume (directly or indirectly via other food sources) wild and unfamiliar animals. And the density and rapidity of global travel and trade can spread a novel pathogen faster than public health systems can respond, creating a critical vulnerability to pandemics (Bhatia et al., 2024; Carlson et al., 2022; Tazerji et al., 2022).

As zoonotic transfer increases, human immune systems are increasingly exposed to new diseases to which they’ve developed no immunity. Healthcare facilities worldwide are, consequently, vulnerable to rapid—and sometimes overwhelming—influxes of novel infections while under additional pressure from growing antimicrobial resistance.



In addition to its impacts on global health, zoonotic disease transfer stresses several other global systems:

- ◆ **Food:** The proximity of humans and animals in factory farms creates a significant vulnerability to zoonotic transfer. Risks of disease outbreaks sometimes require mass culling, threatening the supply of meat, eggs, and dairy products and putting economic pressure on the food industry. Pandemics also disrupt labour-intensive food production.
- ◆ **Ecosystems:** New zones of zoonotic transfer can also introduce new pathogens to animals and plants, which can then disrupt ecosystems (through blight or species loss, for example). Pesticides used to counter this threat to agriculture also put pressure on ecosystems.
- ◆ **Economy:** New pathogens threaten a healthy workforce. When they escalate into a pandemic (or potential pandemic), they disrupt supply chains and may require extraordinary measures (such as lockdowns and quarantines) that interrupt economic activity (including travel and trade) and require emergency financial support.

Key indicators and data sources:

- The [International Society for Infectious Diseases](#) (ProMed) tracks emerging infectious diseases, [AVAC](#) monitors emerging pandemics, and the [World Health Organization](#) monitors current health emergencies around the world.
- [HealthMap](#) geographically maps current disease outbreaks worldwide, while the [Global Health Security Index](#) maps countries' preparedness for epidemics and pandemics.
- [Epiwatch](#) and [BlueDot](#) use AI to monitor and predict disease spread.
- The Food and Agricultural Organization's [EMPRES-i Global Animal Disease Tracking System](#) and the [World Organization for Animal Health](#) monitor disease in wildlife worldwide.
- The [Institute for Health Metrics and Evaluation](#) tracks the global burden of disease.

5. Demographic divergence

The human population continues to grow from its present 8.2 billion people towards its projected peak of 10.3 billion in the mid-2080s (UNDESA, 2024), putting additional demands on all global systems. Population growth, however, is highly uneven. Low fertility, social factors like education and access to birth control, longer life expectancies, and restricted immigration generate a shrinking, aging population—and a declining workforce—in many wealthier countries. In poorer countries, meanwhile, high fertility, lower life expectancies, and limited emigration options foster growing, youthful populations and expanding workforces.

International migration has increased from 150 million (representing 2.8 percent of the world population) in 2000 to 281 million (3.6 percent of the world population) in 2020 (IOM, 2024). But the increasing rigidity of national borders in the Global North maintains a contradiction between where labour is growing and where it is most needed (Goldstone & Diamond, 2020).



These divergent trends put different sorts of pressures on global systems:

- ◆ **Health:** Aging populations require more extensive care and are more susceptible to injury and disease. They place greater demands on healthcare systems that are already strained, and those demands will likely increase with additional climate heating (due to more extreme heat events, for example). Informal migration places additional pressure on health systems when it bypasses disease monitoring efforts and traverses dangerous routes.
- ◆ **Economy:** In wealthy countries, aging populations increase the costs of healthcare, welfare services, and pensions, placing greater financial pressure on governments and on declining workforces. Higher dependency ratios also create labour shortages that immigration cannot fill due to growing xenophobia. And the international segregation of countries with growing labour demand from those with growing labour supply represents a major inefficiency in the global economy. Expanding immigration to reduce the discrepancy, however, risks draining talent from poorer countries and thereby stunting their economic growth.
- ◆ **Social order and governance:** A youth bulge should provide poorer countries with a “demographic dividend,” but this expanding workforce often finds scant economic prospects due to poor investment, education, health, and infrastructure. Many youth are accordingly disenfranchised and aggrieved, and some turn to illicit activities, armed groups, and/or migration. Immigration—especially when poorly managed—can strain receiving societies and stoke nationalist, anti-immigration politics that worsen the political-institutional degradation stress (see below).² And when young workers are forced to support an aging population while they themselves face bleak economic prospects, the intergenerational unfairness can strain social cohesion.

Key indicators and data sources:

- The Population Division of the United Nations Department of Economic and Social Affairs (UNDESA) publishes its [Population Prospects](#) report every few years. It also maintains [databases](#) on international migrant stocks, international migrant flows, and other demographic indicators.
- The World Economic Forum’s [Global Risks Report 2025](#) features a section on “super-aging societies” (pp. 60–65), and UNDESA’s [World Social Report 2023](#) focuses on “Leaving no one behind in an aging world.”
- The International Organization for Migration (IOM) publishes its [World Migration Report](#) every few years, the Organisation for Economic Cooperation and Development (OECD) maintains several [Databases on Migration](#), and the United Nations Refugee Agency (UNHCR) hosts the [Refugee Data Finder](#).

² Though increasing migration can strain government administration, public services, and border controls, it is crucial to emphasize that migration is generally a net economic benefit for receiving societies—and, via remittances, to sending societies (IOM, 2024); it is rather the political reaction to migration—often based on misinformation and misperceptions—that puts stress on social order and governance.

6. Industrial food production

Global industrial food production is highly concentrated in several ways that create systemic vulnerabilities. First, humans cultivate only one-hundredth of the planet's edible plant species, while just three species—rice, maize, and wheat—account for 60 percent of humanity's caloric intake (Willett et al., 2019). The worldwide homogeneity of monocrops, inputs, and production methods helps maximize efficiency and yields, but reduces the global food system's adaptability to shifting conditions and opens vulnerabilities to contagious shocks, such as blights and multiple breadbasket failures (Carpenter et al., 2015; Gaupp et al., 2020; Walker et al., 2023).

Second, extensive trade within the global food system encourages countries to specialize in the foods they can produce most efficiently and import foods produced more efficiently elsewhere. Trade can increase the resilience of the food system, but it leaves about 85 percent of countries with low or marginal food self sufficiency (Puma et al., 2015). These countries are, consequently, vulnerable to food trade disruptions, shortages, and price increases (affecting both food imports and food production inputs). And specialization does not just create vulnerability for import-dependent countries; it creates systemic risks for the entire global food system (Suweis et al., 2015; Tu et al., 2019). Worsening these risks, the global food system relies on a small number of long-distance transportation routes that are vulnerable to disruption (at "chokepoints") but difficult to substitute (Bailey & Wellesley, 2017).

Finally, a few multinational corporations own and operate much of global food production at all stages, including its inputs, land, processing, commodity trading, and retail. These companies disproportionately influence prices, production practices, and the future development of the global food system (Clapp, 2018, 2023; Clapp & Isakson, 2018). This oligopoly creates pressure by pursuing short-term profitability rather than long-term sustainability, while deprioritizing the social and environmental impacts of food production and opposing more ecologically balanced, community-based, non-industrial food production (such as agroecology). And food corporations' deep integration into global financial networks leaves the global food system especially vulnerable to financial volatility.

The global food system is also vulnerable to disruption because of its deeply entrenched fossil fuel dependence (for planting and harvesting, fishing and livestock rearing, the manufacture of agrochemicals and equipment, and global supply chains of inputs and products). This fossil fuel dependence undermines the ecological and climatic conditions on which food production fundamentally depends.

The concentration of global industrial food production puts stress on other global systems:

- ◆ **Climate:** Food production generates 30 percent of all greenhouse gas emissions, including carbon dioxide from land use change, heavy machinery, and transportation, as well as methane and nitrous oxide from production processes (Willett et al., 2019).
- ◆ **Ecology:** Food production is a major cause of ecological degradation. Agriculture now encompasses 40 percent of the Earth's surface (Willett et al., 2019) in which producers put significant pressure on local ecologies by simplifying the landscape (by reducing biodiversity, modifying terrain, and controlling conditions) and by replacing ecosystem

services with artificial inputs (such as artificial fertilizers, herbicides, and mechanized irrigation) (Nyström et al., 2019). These inputs overload the ecosystem with nitrogen, phosphorous, and toxic chemicals (see the toxicity stress above), while agriculture can also produce scarcities of freshwater.

- ◆ **Energy:** Industrial food production continues to depend on fossil fuels to produce and transport food products, and to manufacture key inputs, including heavy machinery, fertilizers, and pesticides. Alternative energy sources cannot yet substitute for fossil fuels in these functions at an industrial scale, so the food system maintains high demand for fossil fuels and presents significant abatement challenges to the clean energy transition (Smil, 2022).
- ◆ **Social order and governance:** High food prices and food shortages—critical features of a broader cost-of-living crisis—are recurring grievances that undermine trust in institutions and sometimes fuel political upheaval (Soffiantini, 2020).

Key indicators and data sources:

- The World Food Programme (WFP) publishes annual [Global Outlook](#) reports and maintains an [interactive map](#) of food security around the world.
- The [High-Level Panel of Experts on Food Security and Nutrition](#) (HLPE-FSN) provides the United Nations with scientific reporting on many issues of food production.
- The Food and Agriculture Organization (FAO) publishes a series of annual [State of the World](#) reports on various aspects of the global food system, maintains an interactive [Hunger Map](#), and hosts the [FAOSTAT](#) database of food production statistics.
- The Organisation for Economic Cooperation and Development (OECD) and the FAO have published a decadal [Agricultural Outlook](#).
- The International Food Policy Research Institute maintains a [Food and Fertilizer Export Restrictions Tracker](#).

7. Changing energy supply

In the global energy system, governments, businesses, and civil society pursue three goals that sometimes align and at other times conflict: achieving *reliable* energy that is free from supply disruptions; exploiting *profitable* energy that drives economic growth and serves industry stakeholders; and expanding *clean* energy that reduces the climatic and ecological harms of fossil fuels. These goals both stem from and create several major stresses in the global energy system, including geopolitical tensions, political conflict over the energy transition, and energy demand growth.

Recent geopolitical developments have exposed major vulnerabilities in the global energy system: Russia leverages its vast oil and gas exports to bolster its invasion of Ukraine, China

cultivates an advantageous geoeconomic position by dominating clean energy manufacturing, and war in the Middle East destabilizes energy prices everywhere. More fundamentally, production of both fossil fuels and clean energy technology are highly concentrated in their location and the number of actors that control them. And energy supply chains and distribution networks involve a small number of chokepoints (such as the Suez Canal and Strait of Hormuz) that are increasingly vulnerable to extreme weather events and political instability (IEA, 2024).

Given these growing disruptions, energy security is now a core objective of most states (Currie, 2025). As governments attempt to produce more energy domestically and diversify energy sources, they put additional stress on the global energy system by reconfiguring supply chains, destabilizing energy markets, and reversing earlier policies. These impacts can also introduce new vulnerabilities into the global energy supply and intensify geopolitical and geoeconomic tensions (Bordoff & O'Sullivan, 2023).

Within states, conflicts among stakeholders implicated in the transition from fossil fuels to clean energy put additional pressure on the energy system. Fossil fuels account for over 80 percent of the world's primary energy consumption and remain entrenched in transportation, infrastructure, agriculture, and industry, where clean energy alternatives are not available at scale for many crucial processes (Smil, 2022). Fossil fuel companies defend their incumbency through extensive government lobbying, widespread misinformation campaigns, and access to \$6-7 trillion in global subsidies (direct and indirect, to producers and consumers) (IMF, n.d.). And major recent investments to expand liquefied natural gas export infrastructure and lock in long-term contracts will keep international gas prices low and slow the transition to cleaner sources (IEA, 2024).

Meanwhile, clean energy sources increasingly challenge fossil fuel dominance. They also benefit from subsidies, lobbying, and government industrial policies, but even more so from a surge of investment that reached \$2 billion in 2024—more than double the money spent on new oil, gas, and coal supplies—enabling a rapid expansion of wind and solar installations and electrical generation at cost-parity with fossil fuels (IEA, 2024). But the energy transition faces bottlenecks of crucial inputs (such as copper, cobalt, nickel, lithium, graphite, and rare earth elements) and growing capital scarcity (Currie, 2025).

Conflicting interests, competing investments, and differing characteristics of fossil fuels versus clean energy technologies put pressure on the global energy system. They pull its development in different directions and leave its future uncertain, especially amidst political upheavals, international instability, and policy reorientations.

Finally, energy demand continues to increase worldwide, putting additional pressure on the energy system. Data centres, light industrial consumption, electric vehicles, and cooling are accelerating global electricity demand. Clean energy production has not kept pace, as fossil fuels supply more than half of current demand increase (IEA, 2025), but clean energy tech has the potential to fully supply increasing demand by 2030 (IEA, 2024).

These pressures facing an energy system in transition also stress other global systems:

- ◆ **Climate:** Fossil fuels remain the primary source of the greenhouse gas emissions stressing the climate system. The pace and extent of the clean energy transition is thus a crucial determinant of the future of the climate heating stress.

- ◆ **Ecology:** Energy production contributes to ecological degradation through environmentally destructive processes like bitumen refining, oil spills, and mining for critical minerals in ecologically sensitive (and often conflict-affected) areas.
- ◆ **Economy:** Uncertainty and disruption to energy supplies strain economic production. As in the food system, corporate concentration and deep financialization of the fossil fuel industry create vulnerability and volatility in financial markets far beyond the energy system. And the potential stranding of fossil fuel assets poses a major systemic risk to finance, with recent estimates suggesting fossil fuel reserves could face devaluation up to US\$17 trillion by 2040 due to climate policies, technological advancements, and market shifts (T. A. Hansen, 2022).
- ◆ **Food:** Industrial food production requires immense amounts of energy. Energy supply disruptions can stress food production, particularly by raising the cost of fertilizers, herbicides, machinery, and transportation.
- ◆ **Infrastructure:** The global energy system depends heavily on infrastructure. Fossil fuel production requires expansive refineries, pipelines, and liquefied natural gas facilities, and the industry must decommission old and obsolete sites. The rapid growth of clean energy production also puts pressure on infrastructure as it modernizes and expands electrical grids, particularly to accommodate battery storage and intermittency balancing.

Key indicators and data sources:

- The International Energy Agency (IEA) publishes annual [Global Energy Review](#) and [World Energy Outlook](#) reports.
- The IEA and the [International Energy Forum](#) also publish thematic reports and host data and analyses of the global energy system.
- The Statistics Division of the United Nations Department of Economic and Social Affairs maintains monthly and yearly [energy statistics](#), analyzed in regular publications.
- [Our World in Data](#) provides interactive graphs on many aspects of the global energy system.
- The [International Renewable Energy Agency](#) supports countries in their transition to clean energy with publications, educational tools, and data.
- The think tanks [Global Energy Monitor](#), the [Transition Accelerator](#), [Ember](#), and [The Economics of Energy Innovation and System Transition](#) analyze and support various aspects of the clean energy transition.
- [Oilprice.com](#) provides live tracking of fossil fuel prices and the [Oil Price Information Service](#) provides data and analysis of all aspects of the fossil fuel industry.

8. Financial interconnectedness

Over the past six decades, a proliferation of financial actors has woven a densely interconnected financial network across international borders. Increasingly diverse and complicated instruments such as derivatives, futures, and swaps facilitate the “financialization of everything,” integrating energy, food, mortgages, consumer debt, and many other activities into a single financial system. This interconnectedness boosts efficiency and liquidity, but it leaves the financial system deeply vulnerable to contagion and cascading failure (Goldin & Mariathasan, 2016; Goldin & Vogel, 2010; Kara et al., 2015). A shock in one sector, such as an oil price spike, can ripple through derivatives markets and impact food, housing, and energy through speculative trading by shared investor portfolios.

Financial interconnectedness amplifies shocks and systemic risks in several ways. First, financial integration across sectors, coupled with the density and rapidity of financial transactions, spreads the contagion of a financial shock from one area to disparate segments of the global economy. Irrational herd psychology accelerates disruptions through bank runs, arbitrage failures, asset devaluations, lending freezes, and forced liquidations across markets (Claessens & Kose, 2013).

Second, interconnection incentivizes risk-taking behaviour by financial actors perceived to be “too interconnected to fail,” who count on government interventions to bail them out of crisis to avert even greater catastrophe (Altinoglu & Stiglitz, 2023).

Finally, over the last decade, non-bank financial intermediaries (NBFIs) such as mutual funds, hedge funds, and private equity firms have rapidly expanded their influence in financial networks yet remain under-regulated, highly leveraged, and non-transparent (Aquilina et al., 2024; IMF, 2025). Contagion, moral hazard, and non-bank financial intermediaries amplify the interconnectedness and consequent vulnerabilities of global finance.

Beyond its economic impacts, financial interconnectedness also stresses other global systems:

- ◆ **Social order and governance:** Financial turbulence undermines livelihoods and economic activity in ways that often require increased social spending and economic stimulus measures to bolster demand, support vulnerable populations, spur job creation, and avoid economic downturns. Bailouts of “too-big-to-fail” financial institutions may mitigate the economic fallout of a financial crisis but also raise critical issues of fairness and moral hazard while increasing public debt. These impacts can weaken the social contract and stoke populist anger at elites.
- ◆ **Energy:** The transition to clean energy often entails high up-front costs (with long-term savings) that require deliberate financing. Consequently, clean energy projects are vulnerable to financial shocks and downturns, such as interest rate hikes. Shocks in other markets or sectors can create energy price shocks and supply shortages, while disruptions to energy supplies can create wide-ranging financial volatility. (Financial interconnectedness creates similar stresses on the global food system). Finally, financial instability can stymie investments in climate change adaptation and put pressure on the insurance industry, which is crucial for risk mitigation against climate-related disasters.

Key indicators and data sources:

- The International Monetary Fund (IMF) publishes the semi-annual *Global Financial Stability Report* and *Fiscal Monitor*.
- The Bank for International Settlements publishes an *Annual Economic Report* and a *Quarterly Review*.
- The U.S. Office of Financial Research maintains a daily *Financial Stress Index*, the European Systemic Risk Board maintains a *Risk Dashboard* on the European financial system, and the European Central Bank regularly publishes a *Financial Stability Review*.
- The Bank of Canada publishes an annual *Financial Stability Report*, annual and quarterly *Financial Reports*, and a quarterly report on *Indicators of Financial Vulnerabilities*.
- Scholars (Nguyen et al., 2022) have recently developed a *comprehensive database of financial crises*.

9. Economic headwinds

Several trends constrain economic activity and push the global economy towards a sustained downturn that could include low economic growth, high unemployment, and poor consumer confidence.³ Most profoundly, the global economy is transitioning from a pro-market (“neoliberal”) paradigm that pursued maximal economic efficiency through global integration to a geoeconomic paradigm organized along geopolitical fault lines, where states subordinate economic policy to political and security objectives (Blyth, 2025; Tett, 2025). Within this new paradigm, trade and investment restrictions are proliferating, trade agreements are declining, and global trade growth remains stagnant (Kose & Mulabdic, 2024; WTO, 2024). Currencies, supply chains, technology, trade and capital flows, migration, and information networks—the basic components of the global economy—are increasingly weaponized to augment national power and influence (Collins & Pohl, 2025).

The economic fragmentation generated by this new paradigm restricts economic growth in several ways. Most crucially, it disrupts global trade and investment flows, forgoes the efficiencies of a global economy of scale, raises costs, slows technological diffusion, and forces governments and firms to repeatedly adjust to a shifting geopolitical context.

Alongside this new geoeconomic paradigm, high and rising public and private debt puts additional pressure on economic activity by limiting investment into productive ventures. High debt levels also create vulnerability to major defaults and reduce the ability of many indebted governments and firms to respond to exogenous shocks. Global public debt is currently estimated at US\$100 trillion and climbing, on track for a 100 percent global debt-to- GDP ratio by the end of the decade (IMF, 2024). Developing countries, which account for one-third of global

³ CitiGPS helps distinguish the financial interconnectedness stress from the economic headwinds stress: “In a global financial crisis, we refer to the potential of a systematically important institution (or several) or a financial market breaking down, whereas for a global economic crisis, we refer to a global downturn in the level of activity in, and the state of, the global economy” (CitiGPS & Cambridge Centre for Risk Studies, 2021, p. 25).

public debt, are often caught in a debt trap where interest payments preclude the investments that would enable those countries to pay their debts. Over three billion people live in countries that spend more on debt interest than on education or health (UNCTAD, 2024).

Finally, supply chains face many bottlenecks and chokepoints that create vulnerabilities to supply chain disruptions and shortages of critical products, such as semiconductors. Climate heating exacerbates such disruptions (as when drought recently limited traffic through the Panama Canal), as do geopolitical tensions (as when attacks by Houthi rebels diverted shipping from the Red Sea).

Together, these economic headwinds stress several global systems in addition to the global economy:

- ◆ **Social order and governance:** As economic headwinds generate inflation, interest rate hikes, and trade disruptions, they threaten people's quality of life and prospects. This economic hardship can translate into anti-government and anti-social actions (Cohen & Nicas, 2024). It can also fuel support for the very sorts of nationalist-protectionist policies that worsen hardship, while stoking political-institutional decay and ideological fragmentation and polarization (see below). Stagnant economic activity also limits the fiscal resources available to governments, while raising demands for public services (such as employment insurance). And indebted governments face a trilemma of contradictory pressures to continue spending on crucial national priorities, raise taxes amidst major opposition to tax hikes, and maintain macroeconomic stability (Gaspar, 2024).
- ◆ **World order:** The rise of geoeconomics both indicates and exacerbates geopolitical tensions (see the geopolitical transition stress). It promotes a zero-sum paradigm in which anyone's gain is everyone else's loss, fuelling grievances and retaliatory spirals while undercutting economic cooperation. Governments are focused not only on their absolute well-being, but especially on their relative well-being in comparison to other countries as the imperatives of rivalry eclipse those of shared gains (Matoo et al., 2024).
- ◆ **Infrastructure:** Low growth and mounting debt impede investments in critical infrastructure and social programs (such as training and education). The consequent infrastructural decay then limits the prospects for economic growth and recovery from economic shocks. Economic headwinds also divert investments from climate finance and adaptation, the need for which will only increase.
- ◆ **Health:** As with infrastructure, economic headwinds obstruct key investments in health (and other social programs, such as education), further impeding economic growth and creating vulnerabilities to pandemics.

Key indicators and data sources:

- The International Monetary Fund (IMF) semi-annually publishes the [World Economic Outlook](#) and [Fiscal Monitor](#).
- The Federal Reserve Bank of New York manages a [Supply Chain Pressure Index](#).

- The World Bank Group publishes the *Global Economic Prospects* report, quarterly *Trade Watch* updates, and hosts *Trade Policy and Fragmentation Visualization Tools*.
- The World Trade Organization (WTO) publishes an annual *World Trade Report*, an annual *Global Trade Outlook*, an annual *Overview of Global Trade Developments*, and a semi-annual *Global Trade Alert* that tracks trade and industrial policies worldwide.
- Barclay's Investment Bank publishes quarterly *Global Outlook* reports.
- The WTO and the United Nations Conference on Trade and Development (UNCTAD) publish a *World Tariff Profiles* report, and *Global Trade Alert* maintains a database of trade and industrial policies.
- UNCTAD publishes annual *A World of Debt* reports and related *data*, and the United Nations Development Programme manages a *Debt in Developing Countries* data portal.
- Economists at Stanford and Northwestern universities maintain an *Economic Policy Uncertainty Index* tracking various indices by country.

10. Economic inequality

Global income inequality (among humanity as a whole) has declined from its peak in 1988 (at a Gini coefficient of 69.4) to its lowest levels in a century (at a Gini coefficient around 60) (Milanovic, 2023). Yet, since 1990, within- country income inequality has increased in countries encompassing two-thirds of the world's population, including most high-income countries, many middle-income countries, China, and India. More recently, the COVID-19 pandemic's unequal impacts reversed a decades-long trend towards economic convergence between countries (UNDESA, 2025). The world's richest one percent now owns more wealth than 95 percent of the global population—over 6.9 billion people (Oxfam International, 2024). Inequality places pressure on the global economy by fostering monopolies and oligopolies, weakening governments, and undermining the social stability on which the global economy ultimately depends. Global economic stagnation (see the economic headwinds stress) will likely increase inequality further in the near future (Georgieva, 2024).

Economic inequality fuels political inequality, as corporations and wealthy individuals leverage lobbying, political donations, and media campaigns to shape policies that protect and expand their wealth, often at the expense of the broader population (Oxfam International, 2024). Such efforts create a vicious cycle of dispossession, where economic and political power reinforce each other. They also facilitate “elite capture,” in which privileged groups disproportionately control or appropriate resources, power, or opportunities intended for the broader population.

Furthermore, decades of free market policies have weakened governments, reduced tax rates, and privatized services, hindering efforts to address social and economic inequality. Rent-seeking behaviour, where powerful entities exploit monopolies or regulatory loopholes to extract wealth without contributing value, further entrenches this divide. Despite rising labour

productivity, the labour share of income has declined since the 1980s (UNDESA, 2025). Climate change, conflict, and current technological trends exacerbate inequality within and between nations, though well-designed policies could harness technology to reduce disparities (ibid.).

In addition to the global economy, economic inequality puts stress on several other global systems:

- ◆ **Social order and governance:** People tend to see inequality as the failure of their government to fairly and equally serve all citizens rather than narrow interests. In this way, inequality undermines the social contract, erodes trust in institutions, generates political backlash, and stokes social tensions, especially when it intersects with other social cleavages, such as ethnicity, nationality, gender, disability, age, and health (Cohen & Nicas, 2024; UNDESA, 2025). Inequality also undermines trust among individuals and groups by widening their social separation, impeding empathy, and deepening existing ideological divides (UNDESA, 2025; see the ideological fragmentation and polarization stress below).
- ◆ **World order:** As in domestic politics, ultrawealthy individuals and corporations use their immense influence in multilateral processes to impede solutions on such challenges as tax reform, vaccine access, international debt, energy transition, and climate change when those solutions conflict with their interests (Oxfam International, 2024). The deepening divide between those who benefit from, and those who bear the costs of, global problems, alongside power imbalances between the two, constitutes a significant pressure on world order. World order also faces a sharpening contradiction between the incentives for international migration fostered by international inequality and the hardening of borders against migrants (as captured in the demographic divergence stress above).
- ◆ **Health:** Unequal access to healthcare, medicines, and medical breakthroughs increases global vulnerability to new pandemics and prolongs existing ones (by enabling the emergence and spread of new variants, for example). Pandemic preparedness is a global public good but remains gravely compromised by inequality (as well as recent cuts to global health funding), leaving everyone at risk (Oxfam International, 2024).

Key indicators and data sources:

- The [World Inequality Lab](#) regularly reports on different facets of global inequality and hosts the [World Inequality Database](#).
- The World Bank Group hosts the [Poverty and Inequality Platform](#) and maintains a database on [World Panel Income Distribution](#).
- The World Population Review tracks [social mobility by country](#).
- The UN Department of Economic and Social Affairs publishes the annual [World Social Report](#).
- The International Labour Organization maintains a database of [labour statistics](#).

11. Ideological fragmentation and polarization

The combination of attention-seeking social media technologies with deepening ideological conflict is overloading human cognitive capacities, eroding shared meaning, and dividing people into antagonistic groups. Social media algorithms steer users towards like minded people and into isolated “truth bubbles,” each with its own distinct notions of reality, fact, and expertise that are largely incommensurable with those of other bubbles (Cascade Institute, 2025). These groups do not merely disagree; they perceive members of other groups to be hostile, illegitimate, dishonest, threatening, and immoral enemies—a phenomenon known as *affective polarization* (UNDESA, 2025). Polarization has increased precipitously worldwide since the 2000s (Willis Towers Watson, 2025). Today, less than 30 percent of people think most people can be trusted (according to the seventh wave of the World Values Survey), limiting cooperation and discouraging civic engagement (UNDESA, 2025).

Ideological fragmentation and polarization put considerable pressure on societies’ ability to cooperate and solve problems. Distrust of scientific knowledge and institutional authority grows alongside the rampant spread of misinformation. When citizens can no longer tell truth from falsehood and communicate constructively, they cease to exchange ideas and learn from one another, and they lose the ability to imagine and implement solutions.

Ideological fragmentation and polarization put pressure on several global systems:

- ◆ **Social order and governance:** Ideological fragmentation and polarization impede compromise, paralyze policymaking, undermine trust in institutions, create openings for radical agendas, and make it much more difficult for leaders to govern effectively. This stress erodes the public’s sense of common purpose and shared destiny while increasing social tensions. In democracies, polarization historically tends to follow an economic crisis or corruption scandal that discredits political leaders and institutions. Deepening polarization then supports the rise of populist movements and promotes political violence (Willis Towers Watson, 2025).
- ◆ **World order:** Ideological fragmentation and polarization often impact international relations and issues of global concern. Just as this stress can hamper effective policy at home, so too can it impede multilateral cooperation abroad at a time when it is most needed.
- ◆ **Economy:** Ideological fragmentation and polarization put pressure on the global economy by slowing and misdirecting policy responses to shifting conditions. Fragmentation and polarization may promote widely divergent economic policies based on conflicting ideologies rather than economic rationales. They may also produce sharp vacillations in the policy orientation of successive administrations. These dynamics jeopardize economic efficiencies and forgo joint gains. They may even worsen the economic conditions that drive ideological fragmentation and polarization.
- ◆ **Climate:** Climate change is a prominent flashpoint for fragmented and polarized ideological camps, many of whom promote climate change denial and other misinformation that impedes global action against the climate heating stress.
- ◆ **Ecology:** Environmentalism is another ideological flashpoint where fragmentation and



polarization involve strong opposition to environmental regulation, undermining the protection and rehabilitation of vulnerable ecologies worldwide.

- ◆ **Health:** Vaccines and public health measures have also been a focus of ideological fragmentation and polarization in ways that put pressure on health systems and increase vulnerabilities to new pandemics (see the zoonotic transfer stress above).

Key indicators and data sources:

- The [World Values Survey](#) conducts a worldwide poll on political (and other) attitudes and is presently conducting its eighth wave survey (2024-2026).
- IPSOS conducts numerous [Global Opinion Polls](#) and publishes annual [Global Trends reports](#) that assess popular views on issues implicated in ideological fragmentation and polarization.
- Prominent regional public opinion polls include [Afrobarometer](#), [Arab Barometer](#), [Asian Barometer](#), [Eurobarometer](#), and [Latinobarómetro](#), alongside the [Global Barometer Surveys](#).
- Willis Towers Watson's most recent [Political Risk Index](#) assesses political polarization around the world.
- Varieties of Democracy (V-Dem) runs a [Digital Society Project](#) that tracks the intersections between the internet and politics using 31 indicators, and the Reuters Institute publishes an annual [Digital News Report](#) on how people in different countries engage with various news media.

12. Political-institutional decay

National political regimes around the world are diminishingly able (and increasingly unwilling) to address collective problems, whether at home or in global systems. Public dissatisfaction with governing elites and declining trust in government institutions—sometimes fuelled by foreign interference and disinformation—each constitute both a driver and an indicator of the decay. The rapid increase of political polarization (see the ideological fragmentation and polarization stress) is another such driver, which fosters policymaking paralysis and uncertainty (WTW, 2025). Today, 57 percent of people believe their country is in decline and 56 percent feel their society is broken (IPSOS, 2025). These trends put increasing pressure on the ability of governments to make and implement decisions.

The accelerating turn towards authoritarian and populist politics also drives political-institutional decay. Over the last decade, far more countries are moving towards greater autocracy (42 countries encompassing 35 percent of the world's population) than towards democracy (18 countries, encompassing 5 percent of the world's population) (V-Dem Institute, 2024). Authoritarianism tends to degrade governance by weakening the rule of law, violating citizens' rights, and dismantling checks and balances on power. It promotes arbitrary rule (often by decree or under a state of emergency) and opens vulnerabilities to institutional capture and radical political agendas.

More fundamentally, authoritarian regimes have trouble solving collective problems because their top priority is to maintain the political exclusions on which their power is based, sidelining other problems while forfeiting the problem-solving abilities of excluded populations. They also tend to create new problems, like economic crises or spirals of revolt and repression. Worldwide, autocratization, along with other drivers of political-institutional decay, ultimately reduces the ability and willingness of governments to maintain global systems and address global challenges.

Beyond social order and governance, political-institutional decay puts stress on several other global systems:

- ◆ **World order:** Governments and publics around the world are increasingly focusing their resources inward, eschewing multilateral cooperation while adopting zero-sum thinking at a particularly tumultuous moment in geopolitics (see the geopolitical transition stress below). This trend creates a basic *contradiction* between the global nature of problems and the nationalist impulse of responses.
- ◆ **Economy:** Political-institutional decay often involves nationalist economic policies that create economic problems (such as inflation and trade disruptions) that further entrench populist authoritarian leaders. Arbitrary, unpredictable, and capricious policy changes make for a bad global business environment, hampering investment and growth.
- ◆ **Climate:** Climate heating requires urgent international cooperation but is increasingly ignored, due in part to trends of political-institutional decay that themselves may be exacerbated by climate change (Millward-Hopkins, 2022). Diminishing investments in global health are another worrisome consequence of this stress.

Key indicators and data sources:

- The [Uppsala Conflict Data Program](#) maintains databases on state-based conflict, non-state conflict, one-sided violence, and violent political protest; the [Correlates of War Project](#) also tracks intra-state war and non-state war; the [Small Arms Survey](#) tracks violent deaths of all kinds; and [Armed Conflict Location and Event Data](#) (ACLED) collects data on violence and protest around the world.
- The Carnegie Endowment for International Peace maintains the [Global Protest Tracker](#) and Amnesty International maintains an [Interactive Protest Map](#).
- Freedom House's [Freedom in the World](#) reports assess political rights and civil liberties; the [Berggruen Governance Index](#) tracks state capacity, democratic accountability, and public goods provision; and the World Bank hosts a database of [Worldwide Governance Indicators](#).
- [Varieties of Democracy](#) (V-Dem) and the Center for Systemic Peace's [Polity Project](#) track the number of democracies and autocracies in the world, and the Economist Intelligence Unit's [Democracy Index](#) rates the state of democracy worldwide.
- The [Center for Systemic Peace](#) maintains datasets on regime characteristics (Polity5), state fragility/failure, major episodes of political violence, and membership in international organizations.

- Transparency International's [Corruption Perceptions Index](#) ranks countries worldwide by levels of corruption.
- The Fund for Peace's [Fragile States Index](#) tracks countries' susceptibility to violent conflict, while its [State Resilience Index](#) tracks various state capacities.

13. Geopolitical transition

The world order is presently transitioning from an American-led unipolar order (sometimes called the *Pax Americana*, or the Liberal International Order) towards some form of multipolarity whose core features have yet to be defined. In what scholars term a “hegemonic transition” (Gilpin, 1981) or “power cycle” (Organski, 1958), there is a growing contradiction between the established international institutional order and the distribution of military, economic, and technological capabilities among states. Great powers new and old decry their unfair place in the world order and contest its basic rules, institutions, and leadership (Menon, 2022). Geopolitical fragmentation is at Cold War levels, with countries realigning themselves to a rapidly shifting geopolitical environment (Institute for Economics & Peace [IEP], 2025). Throughout modern history, such power transitions have more often than not involved a devastating war (Allison, 2017) and the present geopolitical transition poses a significant risk of catastrophic nuclear war.

The interim is a time of great uncertainty, instability, and conflict, straining global governance, international security, and multilateral cooperation. The foundational post-World-War-Two prohibition of international aggression no longer holds (Hathaway & Shapiro, 2025). Armed conflicts are growing in number, intensity, lethality, and external involvement, while peacebuilding capacities continue to deteriorate (IEP, 2025). Multilateral cooperation is in decline and core institutions (such as the UN Security Council and the World Trade Organization) are increasingly sidelined (WEF, 2025a). World order thus faces considerable pressure on its governance and problem-solving capacities and is increasingly vulnerable to spirals of conflict escalation.

Geopolitical transition places significant stress on three other global systems in particular:

- ◆ **Social order and governance:** Geopolitical transitions strain governments worldwide by creating a strategic environment of high uncertainty, insecurity, and disruption. They must adjust their geopolitical alignments, they are increasingly drawn into conflicts abroad, and they must grapple with growing numbers of refugees and internally displaced persons. Insofar as states pursue their interests on a unilateral basis, they may exacerbate geopolitical tensions in a vicious cycle.
- ◆ **Economy:** Geopolitical transitions put significant pressure on the global economy by forcing countries to divert resources from productive investments (including health, education, and infrastructure) to increase military spending, while generating uncertainty and instability. And geopolitical tensions disrupt supply chains as more countries weaponize trade. In 2024, violence caused US\$20 trillion in losses, equal to 11.6 percent of global GDP (IEP, 2025).

- ◆ **Climate:** Geopolitical tensions and fragmentation stymy international cooperation on climate change, which remains far below levels required to limit warming (WEF, 2025b). In another vicious cycle, climate heating worsens geopolitical instability, which worsens climate heating (Laybourn & Dyke, 2024).

Key indicators and data sources:

- The [Correlates of War Project](#) maintains databases on inter-state war, extra-state war, militarized international disputes, national material capabilities, and alliances, while the [Uppsala Conflict Data Program](#) also tracks state-based conflict.
- The Institute for Economics & Peace's [Global Peace Index](#) evaluates and ranks countries for their peacefulness based on societal safety and security, ongoing domestic and international conflicts, and militarization.
- The [Stockholm International Peace Research Institute](#) (SIPRI) maintains a Multilateral Peace Operations Database and a Military Expenditure Database, as well as its annual [Yearbook](#) on armaments, disarmament, and security.
- The World Economic Forum publishes an annual [Global Cooperation Barometer](#) report and the International Peace Institute (with the Institute for Economics & Peace) publishes an annual [Multilateralism Index](#).
- The *Bulletin of the Atomic Scientists* regularly updates its [doomsday clock](#) gauging the current risk of global nuclear war.

14. Propagation of artificial intelligence

Artificial intelligence (AI), along with related breakthrough technologies such as nanotechnology and bioengineering, is poised to alter all aspects of human life, with yet-to-be-determined benefits and harms. Its development and deployment far outpace its governance (Bremmer & Kupchan, 2025; UN AI Advisory Body, 2024). Within the global infrastructure system where the stress originates, AI creates new vulnerabilities due to its highly opaque nature, lack of regulation, rapid application, increasing autonomy, and highly uncertain potentials. It is already creating new concentrations of wealth and power among individuals, corporations, and states. Most experts believe that AI will not truthfully and intelligibly explain its decisions as early as 2028 (Grace 2024). AI opens new vulnerabilities through the automation of critical infrastructure, from healthcare to energy to supply chains, and escalates threats to cybersecurity. It also creates non-negligible existential risks to humanity, whether by abrupt catastrophe or through cumulative processes (Kasirzadeh, 2025).

Beyond its infrastructural impacts, the propagation of AI puts stress on other global systems:

- ◆ **Economy:** AI puts pressure on the global economy by displacing labour and worsening inequality. Where previous technological innovations have displaced human labour into more sophisticated tasks, AI threatens to outstrip all human capabilities (Korinek & Stiglitz,



2019). In a 2023 survey, 2,778 leading AI experts estimated (in aggregate) a 50 percent likelihood that unaided machines will be able to “accomplish every task better and more cheaply than human workers” by 2047, 13 years earlier than estimated in a similar survey conducted the previous year (Grace et al., 2024). Yet the International Labour Organization (2025) estimates that only one in four people have occupations presently exposed to displacement. AI is also increasing inequality as it widens the digital divide, empowers some, and excludes others, often through its discriminatory algorithmic biases. And depending on how financial actors use it, AI may produce new vulnerabilities in the financial system by heightening interconnectedness, opacity, and market manipulation.

- ◆ **World order:** AI is already a key part of great power competition and geoeconomic realignment. AI development has become an arms race that puts pressure on precautionary efforts and creates vulnerability to escalation and miscalculation, especially if one power makes a breakthrough. Drones and “hybrid warfare” (involving widespread cyber attacks) are already changing the nature of warfare, and the future deployment of autonomous lethal weaponry would shift it further. AI also creates geopolitical competition for key resources and components, such as critical minerals and semiconductors. And new AI capabilities disperse the power of global-scale disruption to non-state groups such as criminals, hackers, and terrorists (including AI-enabled bioterrorists; see Sandbrink, 2023). In all of these ways, AI exacerbates the turmoil of geopolitical transition.
- ◆ **Social order and governance:** AI poses unprecedented challenges for governance and already strains social order (UNDESA, 2025; WEF, 2025a). Various actors presently use it to generate increasingly sophisticated misinformation in ways that weaken democracy (for example, through electoral interference), worsen social conflicts (for example, by spreading hate speech or inciting violence), reduce trust in institutions (for example, by spreading conspiracy theories and deepfakes), and exacerbate the ideological fragmentation and polarization stress (for example, by reinforcing echo chambers and spreading extremist content). And governments may grow more authoritarian by using AI for mass surveillance and to control information.
- ◆ **Energy:** The immense energy requirements of AI infrastructure put pressure on energy prices and energy availability. Global data centres’ energy demand is likely to increase 160 percent by 2030, potentially more than doubling their carbon emissions (Bremmer & Kupchan, 2025, p. 30).
- ◆ **Food:** AI data centres also require large amounts of water for cooling, and risk creating water shortages and price increases for agriculture (Hao, 2024).

Key indicators and data sources:

- The [United Nations AI Advisory Body](#) is attempting to form an international commission on AI to conduct regular and comprehensive reporting, modelled on the Intergovernmental Panel on Climate Change.

- The OECD hosts [AIM: The AI Incidents and Hazards Monitor](#), the Massachusetts Institute of Technology's AI Risk Repository hosts the [AI Incident Tracker](#), and the [AI Incident Database](#) hosts similar reporting.
- The Cyber Peace Institute hosts a [Cyber Incident Tracers](#) tracking various online threats and cyberattacks.
- Future of Life hosts the [AI Safety Index](#), which assesses the safety and security efforts of seven leading AI companies.

Conclusion

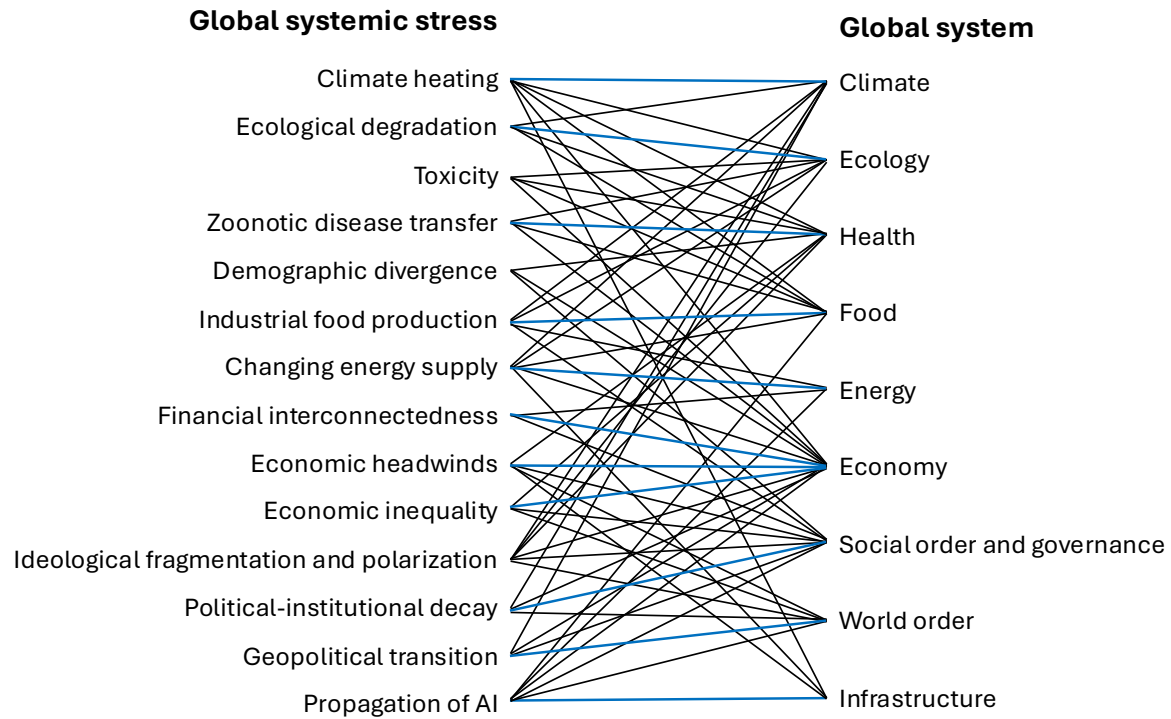
The connections among global crises—both active and potential—remain a notable blind spot in the global risk reporting landscape. This report addresses this gap by investigating the global systemic stresses that strain the resilience of global systems and leave them vulnerable to crises. Each of the 14 systemic stresses analyzed above affects multiple global systems. In so doing, they constitute the underlying causes of global polycrisis. They are the common drivers of declining resilience and recurrent crises across global systems.

Table 1 shows how many of the 14 global systemic stresses affect each global system. These numbers do not directly capture the *amount* of stress affecting each system, but they do reveal the *scope* of the challenges they face. Figure 1, meanwhile, shows which stresses affect each of the nine global systems. Together, Table 1 and Figure 1 show, for example, that the global economy faces stresses from a variety of social and material sources, while the energy system faces more narrow stresses related to technology and finance.

TABLE 1:
Number of global stresses affecting each global system (from most to least)

Global system	Number of stresses affecting system
Economy	12
Social order and governance	9
Health	8
Climate	7
Ecology	7
Food	7
World order	6
Infrastructure	4
Energy	4

FIGURE 1:
Stresses affecting global systems



Blue lines denote the system most directly related to a stress (as its source or system of primary impact).
Black lines denote other systems affected by the stress.

Table 2 shows how many global systems each stress affects, revealing the breadth (but not severity) of their impacts. Some stresses—such as climate heating, changing energy supply, ideological fragmentation and polarization, and the propagation of AI—have wide-ranging effects, while others—such as demographic divergence and financial interconnectedness—have more specific global systemic impacts.

TABLE 2:
Number of global systems affected by each stress (from highest to lowest)

Global systemic stress:	Number of global systems affected:
Climate heating	6
Changing energy supply	6
Ideological fragmentation and polarization	6
Propagation of AI	6
Industrial food production	5
Economic headwinds	5
Toxicity	4
Zoonotic disease transfer	4
Economic inequality	4
Political-institutional decay	4
Geopolitical transition	4
Ecological degradation	4
Demographic divergence	3
Financial interconnectedness	3

The stress analysis presented in this report provides crucial details on the multiple sources, characteristics, and inter-systemic impacts of the 14 most significant global systemic stresses acting today. The subsections in Section 4 also identify key indicators, data sources, and analyses with which to better understand each stress. Future research should pursue these and other resources to investigate in greater detail how these stresses have developed and changed through time. Such analysis would help to more precisely gauge the shifting severity of these stresses, project their future trajectories, and more extensively chart their interconnections. This report thus represents a starting point for stress monitoring in a world veering ever more sharply into polycrisis.

Appendix:

Surveying the global risk reporting landscape

Governments, international organizations, think tanks, and private firms routinely assess the most significant risks and trends shaping their operational horizons. Though they all scan the same general risk landscape, their assessments paint different pictures of the world's potential harms and shifting opportunities. This variation stems, to some extent, from their differing referents of concern—the “thing” at risk of harm, whether that’s a particular market, geopolitics, or the well-being of humanity. But these reports vary more significantly in their conceptual approach to risk assessment:

- ◆ Risk lists present laundry lists of risks that are often assessed and ranked based on their severity and likelihood, generally assessed by in-house analysts or a survey of relevant experts.
- ◆ Flashpoint reports locate areas of conflict that could sharply escalate into widespread violence and destruction, generally by drawing on in-house expertise and field reporting.
- ◆ Scenario planning identifies drivers of change—the social, economic, political, environmental, and technological forces that will reshape the world in the coming years and decades (Bernstein et al., 2000; Schwartz, 1996). In collaborative discussions, relevant experts devise storylines about how drivers of change may interact with other contextual factors to generate different possible futures.
- ◆ Public opinion polls conduct widespread surveys to assess shifting trends in public sentiment towards various risks and related issues.

The review of this literature underpinning Section 4’s list of global systemic stresses concentrated on those reports (listed in Table 3) that met four criteria: they discuss risks, trends, and/or drivers of change that are *global* in scale, affecting most of the planet and/or humanity; they consider issues affecting *multiple global systems*, not just one or two; they have been published within the last four years and thus remain more or less *up to date* with today’s challenges; and they have the detail of a *report* (ten or more pages) rather than the brevity of a briefing note or blog post.

Table 4 lists additional risk reports from financial firms that were less central to Section 4’s stress analysis due to their brevity, narrow focus, and/or scant detail. These reports nonetheless provide some helpful insights and indicate the breadth of this report’s literature scan.

TABLE 3:

The global risk reporting landscape

Report	Publication frequency	Referent concern/ audience	Methods and data sources
Risk lists by think tanks, consultancies, and international organizations			
AXA, <i>Future Risks Report</i> series, www.axa.com/news/2024-future-risks-report (2024 edition).	Annual since 2014.	Global economy and business environment (for an insurance industry audience).	Risk list based on a survey of 3,000 experts from AXA and its professional networks, spread over 50 countries; and nearly 20,000 members of the public in 15 countries.
Citi GPS, <i>Systemic Risk Report</i> , www.citigroup.com/global/insights/systemic-risk (April 2021).	One-off report in 2021, published in partnership with Cambridge Global Risk Index, which published annual reports from 2015-2020.	Global economy (business environment).	Risk list (10) based on the in-house expertise of the Citi Global Insights team and the Centre for Risk Studies at the University of Cambridge Judge Business School, supplemented with expert interviews with Dame Inga Beale (Former CEO at Lloyd's of London) and Mark Carney (then UN Special Envoy for Climate Action and Finance and former Governor of the Bank of England).
CRO (Chief Risk Officer) Forum, <i>Emerging Risks Initiative: Major Trends and Emerging Risk Radar</i> , https://thecroforum.org/emerging-risks-initiative-major-trends-and-emerging-risk-radar-2025/ .	Annual since 2018.	Insurance industry.	Risk list (29) spanning six global trends generated by in-house expertise and member survey.
Economist Intelligence Unit, "Five global risks," www.eiu.com/n/campaigns/five-global-risks/ .	Annual, formerly published as Risk Outlook.	Global economy and geopolitical environment.	Risk list (5) developed with in-house expertise.
Eurasia Group, <i>Top Risks</i> reports, www.eurasiagroup.net/issues/top-risks-2025 (2025 edition).	Annual since 2011.	Geopolitical environment (including security and economy).	Risk list (10) and ranking based on in-house expertise, primarily co- authors Ian Bremmer (Eurasia Group President) and Cliff Kupchan (Eurasia Group Chairman).
European Commission, <i>Risks on the Horizon</i> , https://policy-lab.ec.europa.eu/news/risks-horizon-insights-resilient-future-2024-07-18_en .	One-off report in 2024.	Future of the European Union.	Scenario analysis of 10 possible futures (risk clusters) based on in-house horizon scanning, which was then used to generate a risk list (40) evaluated through a Delphi survey of 92 participants.
RAND, <i>Global Catastrophic Risk Assessment</i> , www.rand.org/pubs/research_reports/RRA2981-1.html .	One-off report from 2024, fulfilling the reporting requirement of the U.S. Global Catastrophic Risk Management Act (GCRMA) of 2022.	The continued existence of human civilization and the human species.	Risk list of six catastrophic risks based on the in-house expertise and research of the Homeland Security Operational Analysis Center at RAND, in collaboration with the Department of Homeland Security's Science and Technology Directorate and the Federal Emergency Management Agency of the United States Government.

Report	Publication frequency	Referent concern/ audience	Methods and data sources
Organisation for Economic Co-operation and Development (OECD), <i>Mapping Emerging Critical Risks</i> , www.oecd.org/content/dam/oecd/en/publications/reports/2024/12/mapping-emerging-critical-risks_364fd5b7/eb642ada-en.pdf .		Societies, polities, and economies.	Risk list of 13 emerging (expanding, evolving, and novel) critical risks identified by 30 participants from 20 countries in an online consultation conducted by the OECD High-Level Risk Forum.
Swiss Re Sonar, <i>New Emerging Risks Insights</i> reports, www.swissre.com/institute/research/sonar.html .	Annual since 2013.	The global insurance industry.	Risk list (13) of new and changing risks generated from in-house expertise and consultations with scientists, clients, and industry peers.
United Nations, <i>Global Risks Report</i> , https://unglobalriskreport.org/ .	Inaugural report published in 2025, planned as an annual series with second report due December 2026.	Global vulnerabilities to societies, polities, and economies.	Risk list (28) spanning societal, technological, economic, environmental, and political categories, assessed in “based on survey responses from over 1,100 stakeholders across 136 countries” (p. 3.), bolstered by a scenario planning section based on in-house expertise.
United Nations Development Programme, <i>Landscape of Development</i> , https://www.undp.org/future-development/publications/landscape-development-2025 .	One-off report from January 2025.	UNDP development strategy and operations from 2026-2029.	List of the 12 “most salient features and emerging trends in the landscape of development,” including their associated risks and opportunities, as assessed by in-house expertise, including the UNDP’s extensive network of (400+) experts.
		Global economy (business environment).	Risk list (33) and ranking based on the Global Risks Perception Survey of over 900 leaders in academia, business, government, international organizations, and civil society.
Scenario planning and foresight by governments			
Policy Horizons Canada, <i>Disruptions on the Horizon</i> , https://horizons.service.canada.ca/en/2024/disruptions/ .	One-off report in 2024.	Robust and resilient policymaking by the Canadian government amidst possible international and global disruptions.	A survey of 500 stakeholders, colleagues, and foresight experts produced 35 disruption scenarios (similar to risks) that may confront Canadian policymakers in the near future.
United Kingdom Ministry of Defence, <i>Global Strategic Trends</i> reports, www.gov.uk/government/publications/global-strategic-trends-out-to-2055 (2024 edition).	Every three years since 2003.	Geopolitical and strategic environment, to inform decisionmakers in the UK and allied governments.	In-house expertise and research by the UK government supplemented by engagements with experts in 40 countries.
United States National Intelligence Council (US NIC), <i>Global Trends</i> reports, www.dni.gov/index.php/gt2040-home/gt2040-media-and-downloads (2021 edition).	Every four years since 1997.	International geopolitical environment (and American strategic interests).	Scenario analysis drawing on in-house expertise supplemented by consultations with academics, practitioners, and stakeholders.

Report	Publication frequency	Referent concern/ audience	Methods and data sources
Trendspotting with public opinion polls			
IPSOS, <i>IPSOS Global Trends</i> reports, www.ipsos.com/en/global-trends-2024 (2024 edition).	Every one to three years since 2014.	Business branding strategies (public sentiment and values)	Public opinion poll “based on more than 50,000 interviews across 50 markets representing three-quarters of the world’s population and 90% of the world’s GDP” intended to provide “a comprehensive picture of today’s global citizen” (p. 2).
Lloyd’s Register Foundation, <i>World Risk Poll</i> , www.lrfoundation.org.uk/publications/what-the-world-worries-about-global-perceptions-and-experiences-of-risk-and-harm (2024 edition).	Every two years since 2019.	Everyday human experience around the world.	Public opinion poll of 147,000 respondents from 142 countries on their worries and experience of risks in their everyday lives.

TABLE 4:
Risk lists by major financial firms

Report	Publication frequency	Referent concern/ audience	Methods and data sources
AlixPartners, <i>Disruption Index</i> , www.alixpartners.com/disruption/ .	Annual since 2020.	Business operations.	Risk list based on a survey of 3,200 senior executives about their most pressing business concerns.
BDO, <i>Global Risk Landscape</i> reports, www.bdo.co.uk/en-gb/insights/advisory/risk-and-advisory-services/global-risk-landscape (2024 edition).	Annual since 2018.	Business operations.	Risk list based on a survey of an undisclosed number of business leaders.
BlackRock Investment Institute, <i>Global Geopolitical Risk Dashboard</i> , www.blackrock.com/corporate/insights/blackrock-investment-institute/interactive-charts/geopolitical-risk-dashboard .	Updated monthly.	Geopolitical environment.	Risk list developed with in-house expertise and data mining of brokerage reports and financial news to gauge market sentiment on risk.
Casualty Actuarial Society and Society of Actuaries, <i>Emerging Risks Survey</i> , www.casact.org/publications-research/research/annual-survey-emerging-risks .	Annual since 2008.	Insurance industry.	Risk list that surveys risk managers for their top five of 23 emerging risks.
Control Risks, <i>Top Risks</i> , https://www.controlrisks.com/riskmap .	Annual.	Business operations.	Risk list (5) based on in-house expertise.
KKR Insights, <i>Global Macro Trends</i> reports, https://www.kkr.com/content/dam/kkr/insights/pdf/2025-outlook-glass-still-half-full.pdf .	Semi-annual.	Investment climate.	Trend analysis (7) based on in-house expertise.

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