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WORLD ECONOMIC FORUM

The Global Risks Report 2024

19th Edition

INSIGHT REPORT

In partnership with Marsh McLennan and Zurich Insurance Group

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Preface

Saadia Zahidi
Managing Director

Last year's *Global Risks Report* warned of a world that would not easily rebound from continued shocks. As 2024 begins, the 19th edition of the report is set against a backdrop of rapidly accelerating technological change and economic uncertainty, as the world is plagued by a duo of dangerous crises: climate and conflict.

Underlying geopolitical tensions combined with the eruption of active hostilities in multiple regions is contributing to an unstable global order characterized by polarizing narratives, eroding trust and insecurity. At the same time, countries are grappling with the impacts of record-breaking extreme weather, as climate-change adaptation efforts and resources fall short of the type, scale and intensity of climate-related events already taking place. Cost-of-living pressures continue to bite, amidst persistently elevated inflation and interest rates and continued economic uncertainty in much of the world. Despondent headlines are borderless, shared regularly and widely, and a sense of frustration at the status quo is increasingly palpable. Together, this leaves ample room for accelerating risks – like misinformation and disinformation – to propagate in societies that have already been politically and economically weakened in recent years.

Just as natural ecosystems can be pushed to the limit and become something fundamentally new; such systemic shifts are also taking place across other spheres: geostrategic, demographic and technological. This year, we explore the rise of global risks against the backdrop of these "structural forces" as well as the tectonic clashes between them. The next set of global conditions may not necessarily be better or worse than the last, but the transition will not be an easy one.

The report explores the global risk landscape in this phase of transition and governance systems being stretched beyond their limit. It analyses the most severe perceived risks to economies and societies over two and 10 years, in the context of these influential forces. Could we catapult to a 3°C world as the impacts of climate change intrinsically rewrite the planet? Have we reached the peak of human development for large parts of the global population, given deteriorating debt and geo-economic conditions? Could we face an explosion of criminality and corruption that feeds on more fragile states and more vulnerable populations? Will an "arms race" in experimental technologies present existential threats to humanity?

These transnational risks will become harder to handle as global cooperation erodes. In this year's Global Risks Perception Survey, two-thirds of respondents predict that a multipolar order will dominate in the next 10 years, as middle and great powers set and enforce – but also contest - current rules and norms. The report considers the implications of this fragmented world, where preparedness for global risks is ever more critical but is hindered by lack of consensus and cooperation. It also presents a conceptual framework for addressing global risks, identifying the scope for "minimum viable effort" for action, depending on the nature of the risk.

The insights in this report are underpinned by nearly two decades of original data on global risk perception. The report highlights the findings from our annual Global Risks Perception Survey, which brings together the collective intelligence of nearly 1,500 global leaders across academia, business, government, the international community and civil society. It also leverages insights from over 200 thematic experts, including the risk specialists that form the Global Risks Report Advisory Board, Global Future Council on Complex Risks, and the Chief Risk Officers Community. We are also deeply grateful to our long-standing partners, Marsh McLennan and Zurich Insurance Group, for their invaluable contributions in shaping the themes and narrative of the report. Finally, we would like to express our gratitude to the core team that developed this report – Ellissa Cavaciuti-Wishart, Sophie Heading and Kevin Kohler – and to Ricky Li and Attilio Di Battista for their support.

The future is not fixed. A multiplicity of different futures is conceivable over the next decade. Although this drives uncertainty in the short term, it also allows room for hope. Alongside global risks and the era-defining changes underway lie unique opportunities to rebuild trust, optimism and resilience in our institutions and societies. It is our hope that the report serves as a vital call to action for open and constructive dialogue among leaders of government, business and civil society to take action to minimize global risks and build upon long-term opportunities and solutions.

Overview of methodology

The **Global Risks Perception Survey (GRPS)** has underpinned the *Global Risks Report* for nearly two decades and is the World Economic Forum's premier source of original global risks data. This year's GRPS has brought together leading insights on the evolving global risks landscape from 1,490 experts across academia, business, government, the international community and civil society. Responses for the GRPS 2023-2024 were collected from 4 September to 9 October 2023.

"Global risk" is defined as the possibility of the occurrence of an event or condition which, if it occurs, would negatively impact a significant proportion of global GDP, population or natural resources. Relevant definitions for each of the 34 global risks are included in **Appendix A: Definitions and Global Risks List**.

The GRPS 2023-2024 included the following components:

- **Risk landscape** invited respondents to assess the likely impact (severity) of global risks over a one-, two- and 10-year horizon to illustrate the potential development of individual global risks over time and identify areas of key concern.
- **Consequences** asked respondents to consider the range of potential impacts of a risk arising, to highlight relationships between global risks and the potential for compounding crises.
- **Risk governance** invited respondents to reflect on which approaches have the most potential for driving action on global risk reduction and preparedness.
- **Outlook** asked respondents to predict the evolution of key aspects underpinning the global risks landscape.

Refer to **Appendix B: Global Risks Perception Survey 2023-2024** for more detail on the methodology.

To complement GRPS data on global risks, the report also draws on the World Economic Forum's **Executive Opinion Survey (EOS)** to identify risks that pose the most severe threat to each country over the next two years, as identified by over 11,000 business leaders in 113 economies. When considered in context with the GRPS, this data provides insight into local concerns and priorities and points to potential "hot spots" and regional manifestations of global risks. Refer to **Appendix C: Executive Opinion Survey: National Risk Perceptions** for more details.

Finally, the report integrates the views of leading experts to generate foresight and to support analysis of the survey data. Contributions were collected from 55 colleagues across the World Economic Forum's platforms. The report also harnesses qualitative insights from over 160 experts from across academia, business, government, the international community and civil society through community meetings, private interviews and thematic workshops conducted from May to October 2023. These include the Global Risks Advisory Board, Global Future Council on Complex Risks and the Chief Risks Officers Community. Refer to **Acknowledgements** for more detail.

Key findings

The *Global Risks Report 2024* presents the findings of the Global Risks Perception Survey (GRPS), which captures insights from nearly 1,500 global experts. The report analyses global risks through three time frames to support decision-makers in balancing current crises and longer-term priorities. Chapter 1 explores the most severe current risks, and those ranked highest by survey respondents, over a two-year period, analysing in depth the three risks that have rapidly accelerated into the top 10 rankings over the two-year horizon. Chapter 2 focuses on the top risks emerging over the next decade against a backdrop of geostrategic, climate, technological and demographic shifts, diving deeper into four specific risk outlooks. The report concludes by considering approaches for addressing complex and non-linear aspects of global risks during this period of global fragmentation. Below are the key findings of the report.

A deteriorating global outlook

Looking back at the events of 2023, plenty of developments captured the attention of people around the world – while others received minimal scrutiny. Vulnerable populations grappled with lethal conflicts, from Sudan to Gaza and Israel, alongside record-breaking heat conditions, drought, wildfires and flooding. Societal discontent was palpable in many countries, with news cycles dominated by polarization, violent protests, riots and strikes.

Although globally destabilizing consequences – such as those seen at the initial outbreak of the Russia-Ukraine war or the COVID-19 pandemic – were largely avoided, the longer-term outlook for these developments could bring further global shocks.

As we enter 2024, 2023-2024 GRPS results highlight a predominantly negative outlook for the world over the next two years that is expected to worsen over the next decade (Figure A). Surveyed in September 2023, the majority of respondents (54%) anticipate some instability and a moderate risk of global catastrophes, while another 30% expect even more turbulent conditions. The outlook is markedly more negative over the 10-year time horizon, with nearly two-thirds of respondents expecting a stormy or turbulent outlook.

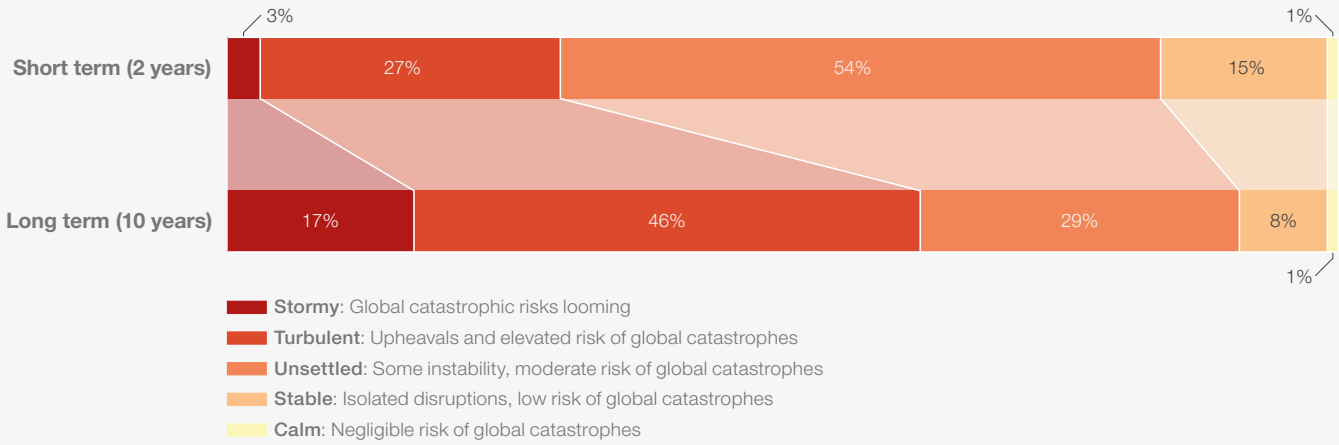
In this year's report, we contextualize our analysis through four structural forces that will shape the materialization and management of global risks over the next decade. These are longer-term shifts in the arrangement of and relationship between four systemic elements of the global landscape:

- Trajectories relating to global warming and related consequences to Earth systems (**Climate change**).
- Changes in the size, growth and structure of populations around the world (**Demographic bifurcation**).

FIGURE A

Short and long-term global outlook

"Which of the following best characterizes your outlook for the world over the following time periods?"



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
The percentages in the graph may not add up to 100% because figures have been rounded up/down.

– Developmental pathways for frontier technologies (**Technological acceleration**).

– Material evolution in the concentration and sources of geopolitical power (**Geostrategic shifts**).

A new set of global conditions is taking shape across each of these domains and these transitions will be characterized by uncertainty and volatility. As societies seek to adapt to these changing forces, their capacity to prepare for and respond to global risks will be affected.

Environmental risks could hit the point of no return

Environmental risks continue to dominate the risks landscape over all three time frames. Two-thirds of GRPS respondents rank **Extreme weather** as the top risk most likely to present a material crisis on a global scale in 2024 (Figure B), with the warming phase of the El Niño-Southern Oscillation (ENSO) cycle projected to intensify and persist until May this year. It is also seen as the second-most severe risk over the two-year time frame and similar to last year's rankings, nearly all environmental risks feature among the top 10 over the longer term (Figure C).

However, GRPS respondents disagree about the urgency of environmental risks, in particular **Biodiversity loss and ecosystem collapse** and **Critical change to Earth systems**. Younger respondents tend to rank these risks far more highly over the two-year period compared to older age groups, with both risks featuring in their top 10 rankings in the short term. The private sector highlights these risks as top concerns over the longer term, in contrast to respondents from civil society or government who prioritize these risks over shorter time frames. This dissonance in perceptions of urgency among key decision-makers implies sub-optimal alignment and decision-making, heightening the risk of missing key moments of intervention, which would result in long-term changes to planetary systems.

Chapter 2.3: A 3°C world explores the consequences of passing at least one "climate tipping point" within the next decade. Recent research suggests that the threshold for triggering long-term, potentially irreversible and self-perpetuating changes to select planetary systems is likely to be passed at or before 1.5°C of global warming, which is currently anticipated to be reached by the early 2030s. Many economies will remain largely unprepared for "non-linear" impacts: the potential triggering of a nexus of several related socioenvironmental risks has the potential to speed up climate change, through the release of carbon emissions, and amplify related impacts, threatening climate-vulnerable populations. The collective ability of societies to adapt could be overwhelmed, considering the sheer scale of potential impacts and infrastructure investment requirements, leaving some communities and countries unable to absorb both the acute and chronic effects of rapid climate change.

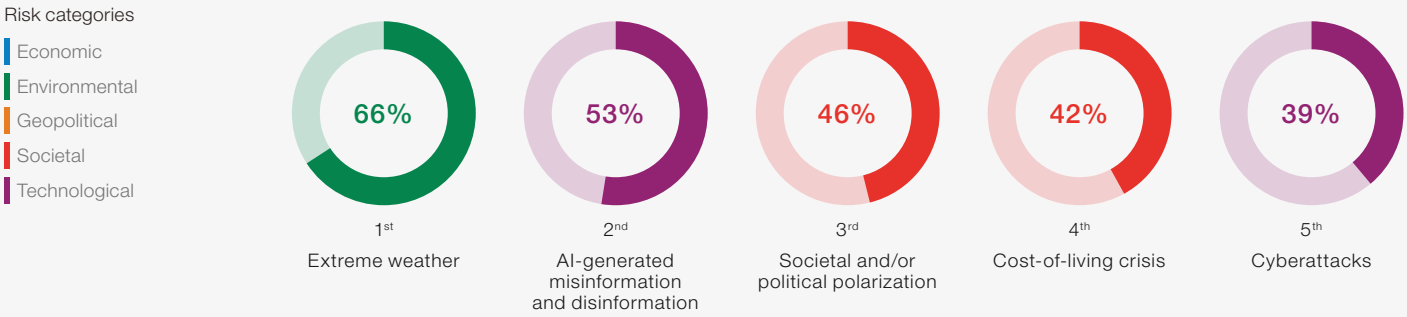
As polarization grows and technological risks remain unchecked, 'truth' will come under pressure

Societal polarization features among the top three risks over both the current and two-year time horizons, ranking #9 over the longer term. In addition, **Societal polarization** and **Economic downturn** are seen as the most interconnected – and therefore influential – risks in the global risks network (Figure D), as drivers and possible consequences of numerous risks.

FIGURE B

Current risk landscape

"Please select up to five risks that you believe are most likely to present a material crisis on a global scale in 2024."



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

FIGURE C

Global risks ranked by severity over the short and long term

"Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period."

Risk categories
- Economic
- Environmental
- Geopolitical
- Societal
- Technological

	2 years	10 years
1st	Misinformation and disinformation	Extreme weather events
2nd	Extreme weather events	Critical change to Earth systems
3rd	Societal polarization	Biodiversity loss and ecosystem collapse
4th	Cyber insecurity	Natural resource shortages
5th	Interstate armed conflict	Misinformation and disinformation
6th	Lack of economic opportunity	Adverse outcomes of AI technologies
7th	Inflation	Involuntary migration
8th	Involuntary migration	Cyber insecurity
9th	Economic downturn	Societal polarization
10th	Pollution	Pollution

Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Emerging as the most severe global risk anticipated over the next two years, foreign and domestic actors alike will leverage **Misinformation and disinformation** to further widen societal and political divides (Chapter 1.3: False information). As close to three billion people are expected to head to the electoral polls across several economies – including Bangladesh, India, Indonesia, Mexico, Pakistan, the United Kingdom and the United States – over the next two years, the widespread use of misinformation and disinformation, and tools to disseminate it, may undermine the legitimacy of newly elected governments. Resulting unrest could range from violent protests and hate crimes to civil confrontation and terrorism.

Beyond elections, perceptions of reality are likely to also become more polarized, infiltrating the public discourse on issues ranging from public health to social justice. However, as truth is undermined, the risk of domestic propaganda and censorship will also rise in turn. In response to mis- and disinformation, governments could be increasingly empowered to control information based on what they determine to be "true". Freedoms relating to the internet, press and access to wider sources of information that are already in decline risk descending into broader repression of information flows across a wider set of countries.

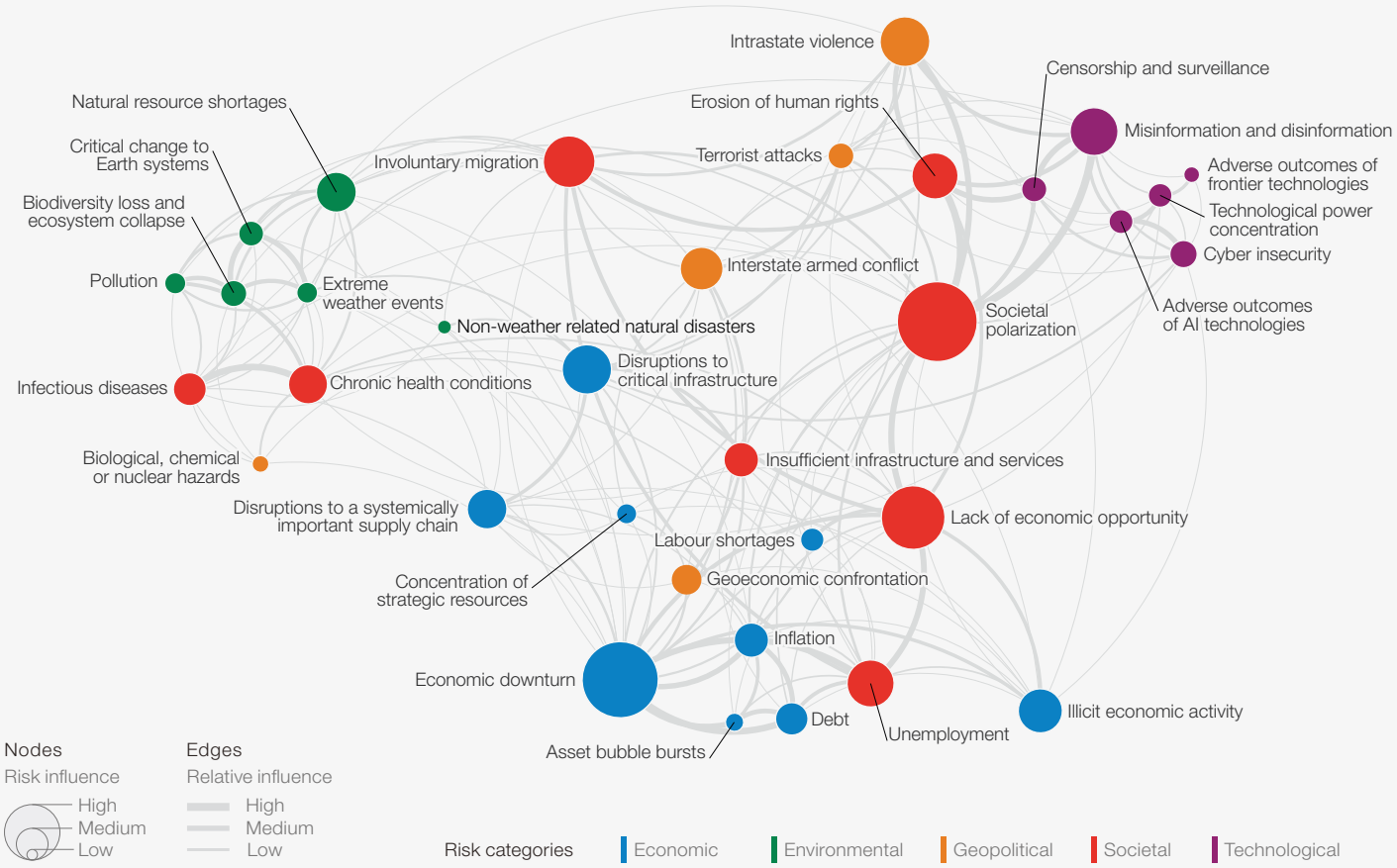
Economic strains on low- and middle-income people – and countries – are set to grow

The **Cost-of-living crisis** remains a major concern in the outlook for 2024 (Figure B). The economic risks of **Inflation** (#7) and **Economic downturn** (#9) are also notable new entrants to the top 10 risk rankings over the two-year period (Figure C). Although a "softer landing" appears to be prevailing for now, the near-term outlook remains highly uncertain. There are multiple sources of continued supply-side price pressures looming over the next two years, from El Niño conditions to the potential escalation of live conflicts. And if interest rates remain relatively high for longer, small- and medium-sized enterprises and heavily indebted countries will be particularly exposed to debt distress (Chapter 1.5: Economic uncertainty).

Economic uncertainty will weigh heavily across most markets, but capital will be the costliest for the most vulnerable countries. Climate-vulnerable or conflict-prone countries stand to be increasingly locked out of much-needed digital and physical infrastructure, trade and green investments and related economic opportunities. As the adaptive capacities of these fragile states erodes further, related societal and environmental impacts are amplified.

Similarly, the convergence of technological advances and geopolitical dynamics will likely create a new set of winners and losers across advanced and developing economies alike (Chapter 2.4: AI in charge). If commercial incentives and geopolitical imperatives, rather than public interest, remain the primary drivers of the development of artificial intelligence (AI) and other frontier technologies, the digital gap between high- and low-income countries will drive a stark disparity in the distribution of related benefits – and risks. Vulnerable countries and communities would be left further behind, digitally isolated from turbocharged AI breakthroughs impacting economic productivity, finance, climate, education and healthcare, as well as related job creation.

FIGURE D | **Global risks landscape: an interconnections map**



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Over the longer term, developmental progress and living standards are at risk. Economic, environmental and technological trends are likely to entrench existing challenges around labour and social mobility, blocking individuals from income and skilling opportunities, and therefore the ability to improve economic status (Chapter 2.5: End of development?). **Lack of economic opportunity** is a top 10 risk over the two-year period, but is seemingly less of a concern for global decision-makers over the longer-term horizon, dropping to #11 (Figure E). High rates of job churn – both job creation and destruction – have the potential to result in deeply bifurcated labour markets between and within developed and developing economies. While the productivity benefits of these economic transitions should not be underestimated, manufacturing- or services-led export growth might no longer offer traditional pathways to greater prosperity for developing countries.

The narrowing of individual pathways to stable livelihoods would also impact metrics of human development – from poverty to access to education and healthcare. Marked changes in the social contract as intergenerational mobility declines would radically reshape societal and political dynamics in both advanced and developing economies.

Simmering geopolitical tensions combined with technology will drive new security risks

As both a product and driver of state fragility, **Interstate armed conflict** is a new entrant into the top risk rankings over the two-year horizon (Figure C). As the focus of major powers becomes stretched across multiple fronts, conflict contagion is a key concern (Chapter 1.4: Rise in conflict). There are several frozen conflicts at risk of heating up in the near term, due to spillover threats or growing state fragility.

This becomes an even more worrying risk in the context of recent technological advances. In the absence of concerted collaboration, a globally fragmented approach to regulating frontier technologies is unlikely to prevent the spread of its most dangerous capabilities and, in fact, may encourage proliferation (Chapter 2.4: AI in charge). Over the longer-term, technological advances, including in generative AI, will enable a range of non-state and state actors to access a superhuman breadth of knowledge to conceptualize and develop new tools of disruption and conflict, from malware to biological weapons.

In this environment, the lines between the state, organized crime, private militia and terrorist groups would blur further. A broad set of non-state actors will capitalize on weakened systems, cementing the cycle between conflict, fragility, corruption and crime. **Illicit economic activity** (#31) is one of the lowest-ranked risks over the 10-year period but is seen to be triggered by a number of the top-ranked risks over the two- and 10-year horizons (Figure D). Economic hardship – combined with technological advances, resource stress and conflict – is likely to push more people towards crime, militarization or radicalization and contribute to the globalization of organized crime in targets and operations (Chapter 2.6: Crime wave).

The growing internationalization of conflicts by a wider set of powers could lead to deadlier, prolonged warfare and overwhelming humanitarian crises. With multiple states engaged in proxy, and perhaps even direct warfare, the incentives to condense decision time through the integration of AI will grow. The creep of machine intelligence into conflict decision-making – to autonomously select targets and determine objectives – would significantly raise the risk of accidental or intentional escalation over the next decade.

Ideological and geoeconomic divides will disrupt the future of governance

A deeper divide on the international stage between multiple poles of power and between the Global North and South would paralyze international governance mechanisms and divert the attention and resources of major powers away from urgent global risks.

Asked about the global political outlook for cooperation on risks over the next decade, two-thirds of GRPS respondents feel that we will face a multipolar or fragmented order in which middle and great powers contest, set and enforce regional rules and norms. Over the next decade, as dissatisfaction with the continued dominance of the Global North grows, an evolving set of states will seek a more pivotal influence on the global stage across multiple domains, asserting their power in military, technological and economic terms.

As states in the Global South bear the brunt of a changing climate, the aftereffects of pandemic-era crises and geoeconomic rifts between major powers, growing alignment and political alliances within this historically disparate group of countries could increasingly shape security dynamics, including implications for high-stakes hotspots: the Russia-Ukraine war, the Middle East conflict and tensions over Taiwan (Chapter 1.4: Rise in conflict). Coordinated efforts to isolate "rogue" states are likely to be increasingly futile, while international governance and peacekeeping efforts shown to be ineffective at "policing" conflict could be sidelined.

The shifting balance of influence in global affairs is particularly evident in the internationalization of conflicts – where pivotal powers will increasingly lend support and resources to garner political allies – but will also shape the longer-term trajectory and management of global risks more broadly. For example, access to highly concentrated tech stacks will become an even more critical component of soft power for major powers to cement their influence. However, other countries with competitive advantages in upstream value chains – from critical minerals to high-value IP and capital – will likely leverage these economic assets to obtain access to advanced technologies, leading to novel power dynamics.

Opportunities for action to address global risks in a fragmented world

Cooperation will come under pressure in this fragmented, in-flux world. However there remain key opportunities for action that can be taken locally or internationally, individually or collaboratively – that can significantly reduce the impact of global risks.

Localized strategies leveraging investment and regulation can reduce the impact of those inevitable risks that we can prepare for, and both the public and private sector can play a key role to extend these benefits to all. Single breakthrough endeavors, grown through efforts to prioritize the future and focus on research and development, can similarly help make the world a safer place. The collective actions of individual citizens, companies and countries may seem insignificant on their own, but at critical mass they can move the needle on global risk reduction. Finally, even in a world that is increasingly fragmented, cross-border collaboration at scale remains critical for risks that are decisive for human security and prosperity.

The next decade will usher in a period of significant change, stretching our adaptive capacity to the limit. A multiplicity of entirely different futures is conceivable over this time frame, and a more positive path can be shaped through our actions to address global risks today.

FIGURE E

Global risks ranked by severity

"Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period."

Short term (2 years)

1st	Misinformation and disinformation
2nd	Extreme weather events
3rd	Societal polarization
4th	Cyber insecurity
5th	Interstate armed conflict
6th	Lack of economic opportunity
7th	Inflation
8th	Involuntary migration
9th	Economic downturn
10th	Pollution
11th	Critical change to Earth systems
12th	Technological power concentration
13th	Natural resource shortages
14th	Geoeconomic confrontation
15th	Erosion of human rights
16th	Debt
17th	Intrastate violence
18th	Insufficient public infrastructure and services
19th	Disruptions to a systemically important supply chain
20th	Biodiversity loss and ecosystem collapse
21st	Censorship and surveillance
22nd	Labour shortages
23rd	Infectious diseases
24th	Concentration of strategic resources
25th	Disruptions to critical infrastructure
26th	Asset bubble bursts
27th	Chronic health conditions
28th	Illicit economic activity
29th	Adverse outcomes of AI technologies
30th	Unemployment
31st	Biological, chemical or nuclear hazards
32nd	Terrorist attacks
33rd	Non-weather related natural disasters
34th	Adverse outcomes of frontier technologies

Long term (10 years)

1st	Extreme weather events
2nd	Critical change to Earth systems
3rd	Biodiversity loss and ecosystem collapse
4th	Natural resource shortages
5th	Misinformation and disinformation
6th	Adverse outcomes of AI technologies
7th	Involuntary migration
8th	Cyber insecurity
9th	Societal polarization
10th	Pollution
11th	Lack of economic opportunity
12th	Technological power concentration
13th	Concentration of strategic resources
14th	Censorship and surveillance
15th	Interstate armed conflict
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17th	Debt
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27th	Unemployment
28th	Economic downturn
29th	Labour shortages
30th	Asset bubble bursts
31st	Illicit economic activity
32nd	Inflation
33rd	Non-weather related natural disasters
34th	Terrorist attacks

Risk categories: Economic, Environmental, Geopolitical, Societal, Technological

Source
World Economic Forum Global Risks Perception Survey 2023-2024.

1 Global Risks 2024: At a turning point

The *Global Risks Report* analyses global risks over one-, two- and 10-year horizons to support decision-makers in adopting a dual vision that balances short- and longer-term risks. This chapter addresses the outlook for the first two time frames and examines selected risks that are likely to heighten by 2026. Chapter 2 addresses the 10-year outlook and how evolving risks may interact to create four potential high-risk outlooks for the world. The third and final chapter examines the concept of cooperation, showcasing different approaches to address global risks.

1.1 The world in 2024

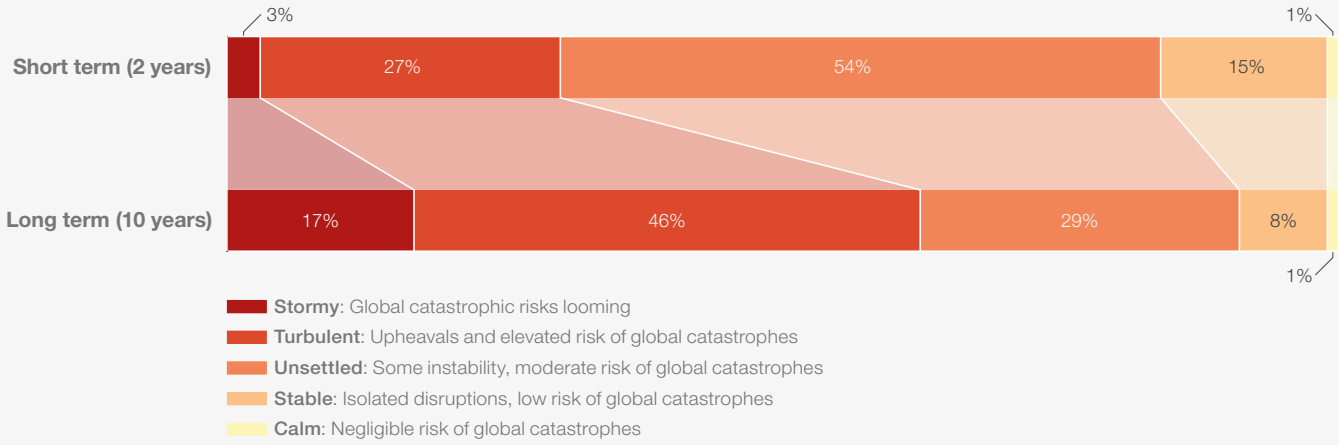
The aftermath of the COVID-19 pandemic and ongoing Russia-Ukraine war has exposed cracks in societies that are being further strained by episodic upheaval. Yet the global system has thus far proved surprisingly resilient. A widely anticipated recession failed to materialize last year, and financial turbulence was quickly subdued, but the outlook remains uncertain.[1] Political strife and violent conflicts, from Niger and Sudan to Gaza and Israel, have captured the attention and apprehension of populations worldwide in some instances while attracting little focus in others. These developments have not yet led to wider regional conflicts – nor have they created globally destabilizing consequences such as those seen at the initial outbreak of the war in Ukraine or the COVID-19 pandemic – but their long-term outlook could bring further shocks.

As we enter 2024, results of the Forum's Global Risks Perception Survey 2023-2024 (GRPS) highlight a predominantly negative outlook for the world over the short term that is expected to worsen over the long term (Figure 1.1). Surveyed in September 2023, the majority of respondents (54%) anticipate some instability and a moderate risk of global catastrophes, while another 27% expect greater turbulence and 3% expect global catastrophic risks to materialize in the short term. Only 16% expect a stable or calm outlook in the next two years. The outlook is markedly more negative over the 10-year timeframe, with 63% of respondents expecting a stormy or turbulent outlook and less than 10% expecting a calm or stable situation.

FIGURE 1.1

Short and long-term global outlook

"Which of the following best characterizes your outlook for the world over the following time periods?"



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
The percentages in the graph may not add up to 100% because figures have been rounded up/down.

GRPS results for 2024, 2026 and 2034 highlight current crises that corrode resilience, as well as new and rapidly evolving sources of risk that will reshape the next decade. For the one-year time frame, respondents were asked to select up to five risks that they feel are most likely to present a material crisis on a global scale in 2024. Results are summarized in Figure 1.2.

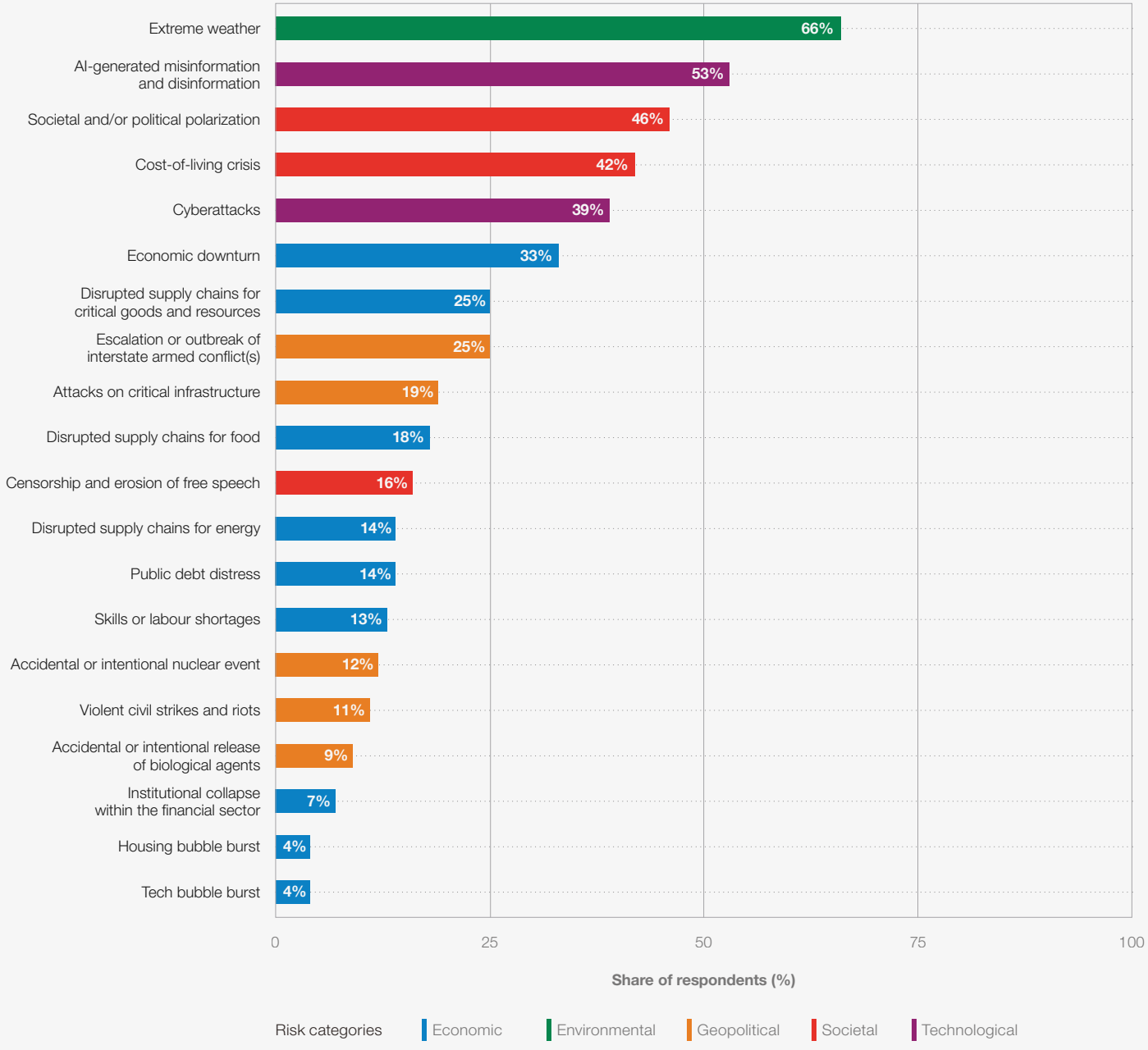
After the hottest Northern Hemisphere summer in recorded history in 2023,[2] two-thirds of respondents selected **Extreme weather** (66%) as the top risk faced in 2024. El Niño, or the warming phase of the alternating El Niño-Southern Oscillation (ENSO) cycle, is expected to strengthen and persist until May this year.[3] This could continue to set new records in heat conditions, with extreme heatwaves, drought, wildfires and flooding anticipated.

AI-generated misinformation and disinformation (53%) and **Societal and/or political polarization** (46%) follow in second and third place. Many countries are still struggling to regain lost years of progress that arose from the COVID-19 pandemic, creating fertile ground for misinformation and disinformation to take hold and polarize communities, societies and countries.

FIGURE 1.2

Current risk landscape

"Please select up to five risks that you believe are most likely to present a material crisis on a global scale in 2024."



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Mirroring the previous year's survey results, the **Cost-of-living crisis** (42%) and **Cyberattacks** (39%) remain major concerns in the outlook overall and appear as a top-three concern for government and private-sector respondents, respectively. The **Cost-of-living crisis** is ranked higher by younger age groups: it was selected by 55% of respondents aged 39 or below, compared to just 28% of those aged 60 or over.[4]

Although energy and food crises ranked among the top risks of 2023, this year less than one-fifth of respondents selected **Disrupted supply chains for food** (18%) or **Disrupted supply chains for energy** (14%) as core concerns for 2024. The survey was conducted in September of 2023, thus the outlook may have since shifted given the conflict in the Middle East, particularly if hostilities escalate. Climate pressures may yet drive prices higher;[5] however, a warmer winter in the Northern Hemisphere, for example, followed by the easing of the El Niño cycle over the summer, could partially alleviate further energy price spikes resulting from any escalation of the Israel-Gaza or Russia-Ukraine conflicts.

Notably, while the survey was conducted before the outbreak of the former conflict, a quarter of respondents rank the **Escalation or outbreak of interstate armed conflict(s)** (25%) as among the top five risks for 2024, pointing to a broader set of concerns. At more than 200,000 deaths in 2022, conflict deaths are at the highest level in decades, driven predominantly by state-based armed conflict.[6]

Risks relating to the financial, tech and real-estate sectors are towards the bottom of respondents' concerns for 2024.

1.2 The path to 2026

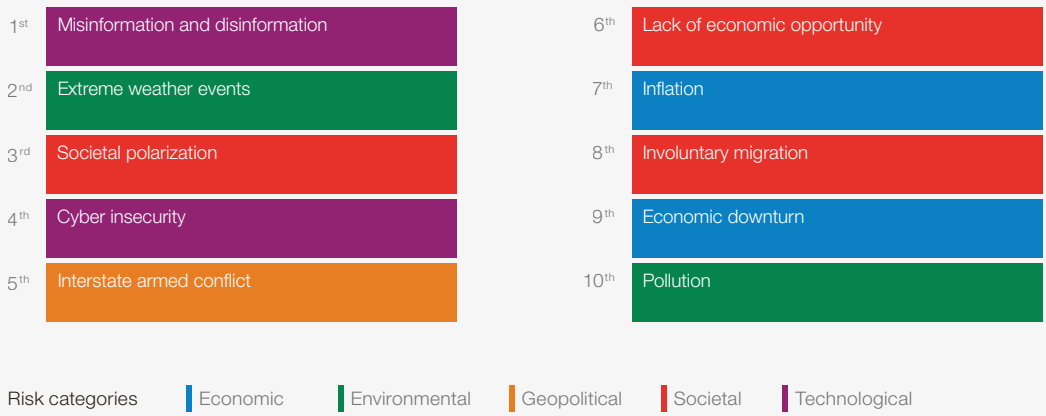
Weakened systems only require the smallest shock to edge past the tipping point of resilience. In the second time frame covered by the survey, respondents were asked to rank the likely impact of risks in the next two years. The results suggest that corrosive socioeconomic vulnerabilities will be amplified in the near term, with looming concerns about an **Economic downturn** (Chapter 1.5), resurgent risks such as **Interstate armed conflict** (Chapter 1.4), and rapidly evolving risks like **Misinformation and disinformation** (Chapter 1.3).

As discussed in last year's *Global Risks Report*, less predictable and harder-to-handle inflation heightens the risk of miscalibration of efforts to balance price stability and economic growth (Chapter 1.5: Economic uncertainty). Economic risks are notable new entrants to the top 10 rankings this year, with both **Inflation** (#7) and **Economic downturn** (#9) featuring in the two-year time frame (Figure 1.3). Economic risks are prioritized in particular by public- and private-sector respondents (Figure 1.5). **Geoeconomic confrontation** (#14) is a marked absence from the top 10 rankings this year (Figure 1.4) and has decreased in perceived severity compared to last year's scores. However, like related economic risks, it features among the top concerns for both public- and private-sector respondents (at #10 and #11, respectively) as a continuing source of economic volatility.

FIGURE 1.3

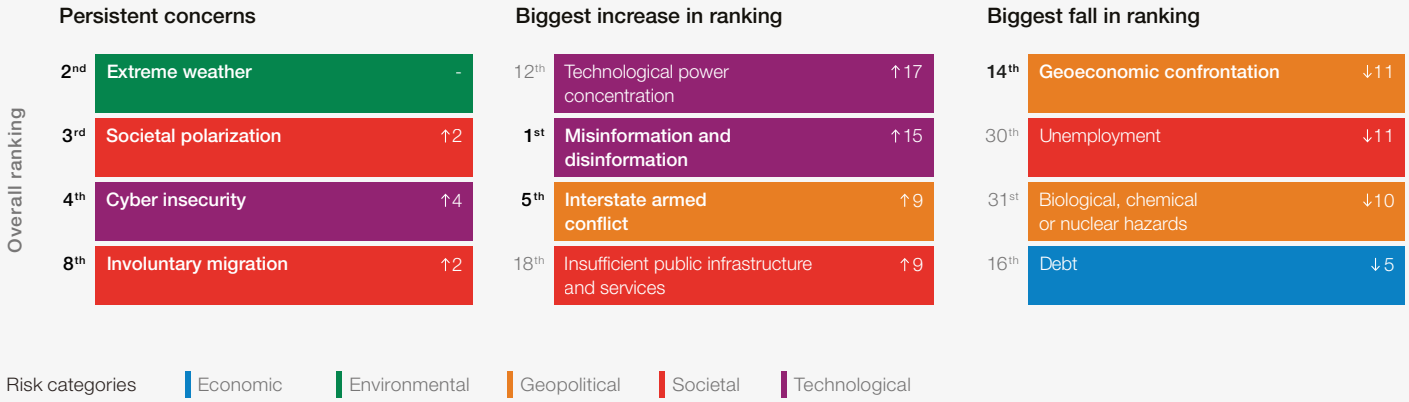
Global risks ranked by severity over the short term (2 years)

"Please estimate the likely impact (severity) of the following risks over a 2-year period."



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

FIGURE 1.4 Annual change in global risk perceptions over the short term (2 years)



Risk categories: Economic, Environmental, Geopolitical, Societal, Technological

Source
World Economic Forum Global Risks Perception Surveys 2022-2023 and 2023-2024.

Note
Bolded risks refer to global risks that are currently in the short-term top 10 risks list, or were formerly in the top 10 in GRPS 2022-2023. Refer to **Appendix B: Global Risks Perception Survey 2022-2023** for further information on changes to the global risk list. Numbers after arrows refer to directional change in rankings between GRPS 2022-2023 and GRPS 2023-2024.

FIGURE 1.5 Severity by stakeholder over the short term (2 years)

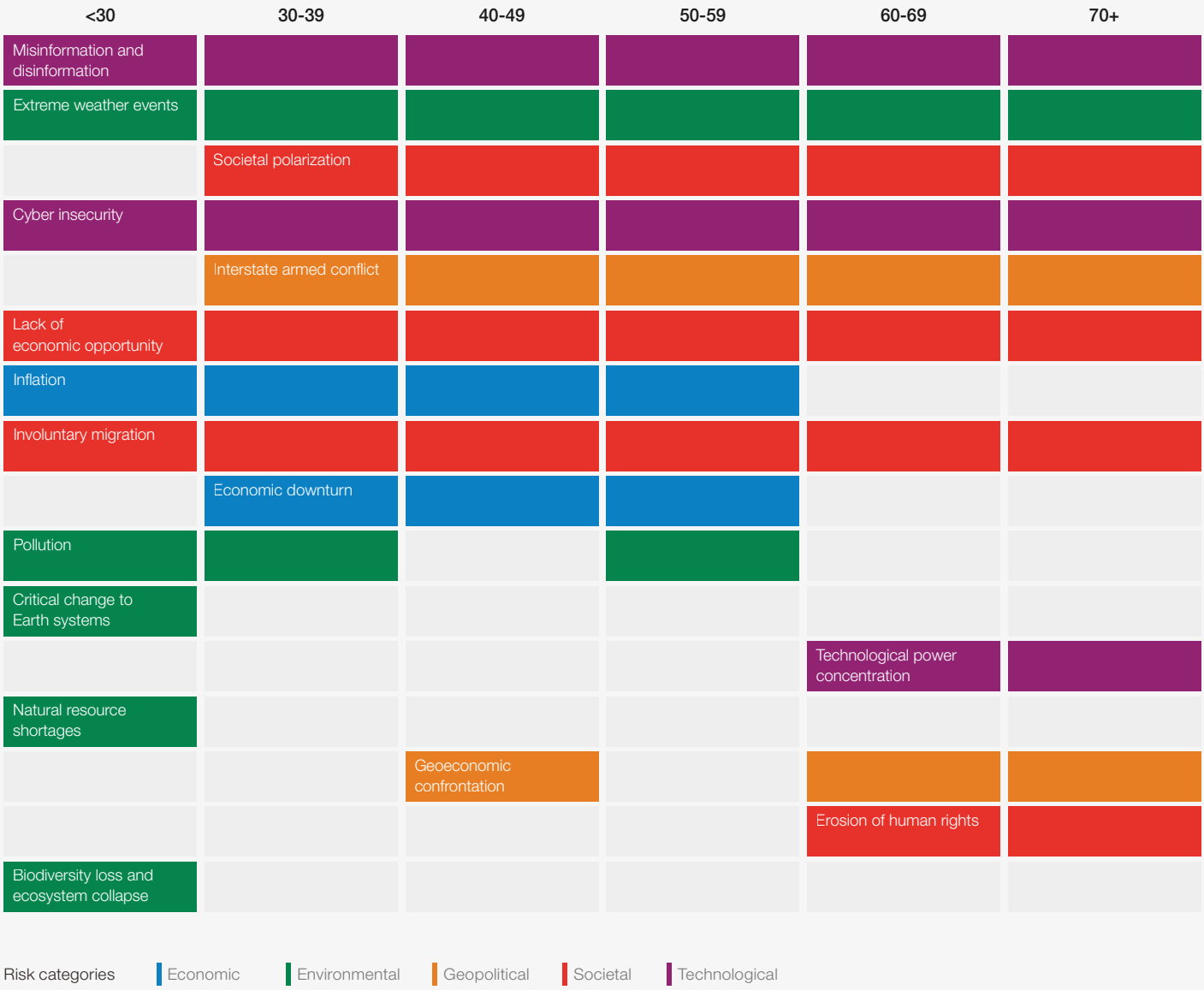
Risk categories: Economic, Environmental, Geopolitical, Societal, Technological

Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Sample size by stakeholder group varied, and all respondents were weighted equally for the purposes of global rankings. These results are based on approximately the following: civil society, n=152 (10% of total); international organisations, n=127 (9%); academia, n=276 (19%); government, n=183 (12%); and private sector, n=715 (48%).

Misinformation and disinformation has risen rapidly in rankings to first place for the two-year time frame, and the risk is likely to become more acute as elections in several economies take place this year (Chapter 1.3: False information). **Societal polarization** is the third-most severe risk over the short term, and a consistent concern across nearly all stakeholder groupings (Figures 1.5 and 1.6). Divisive factors such as political polarization and economic hardship are diminishing trust and a sense of shared values. The erosion of social cohesion is leaving ample room for new and evolving risks to propagate in turn. **Societal polarization**, alongside **Economic downturn**, is seen as one of the most central risks in the interconnected "risks network", with the greatest potential to trigger and be influenced by other risks (Figure 1.7).

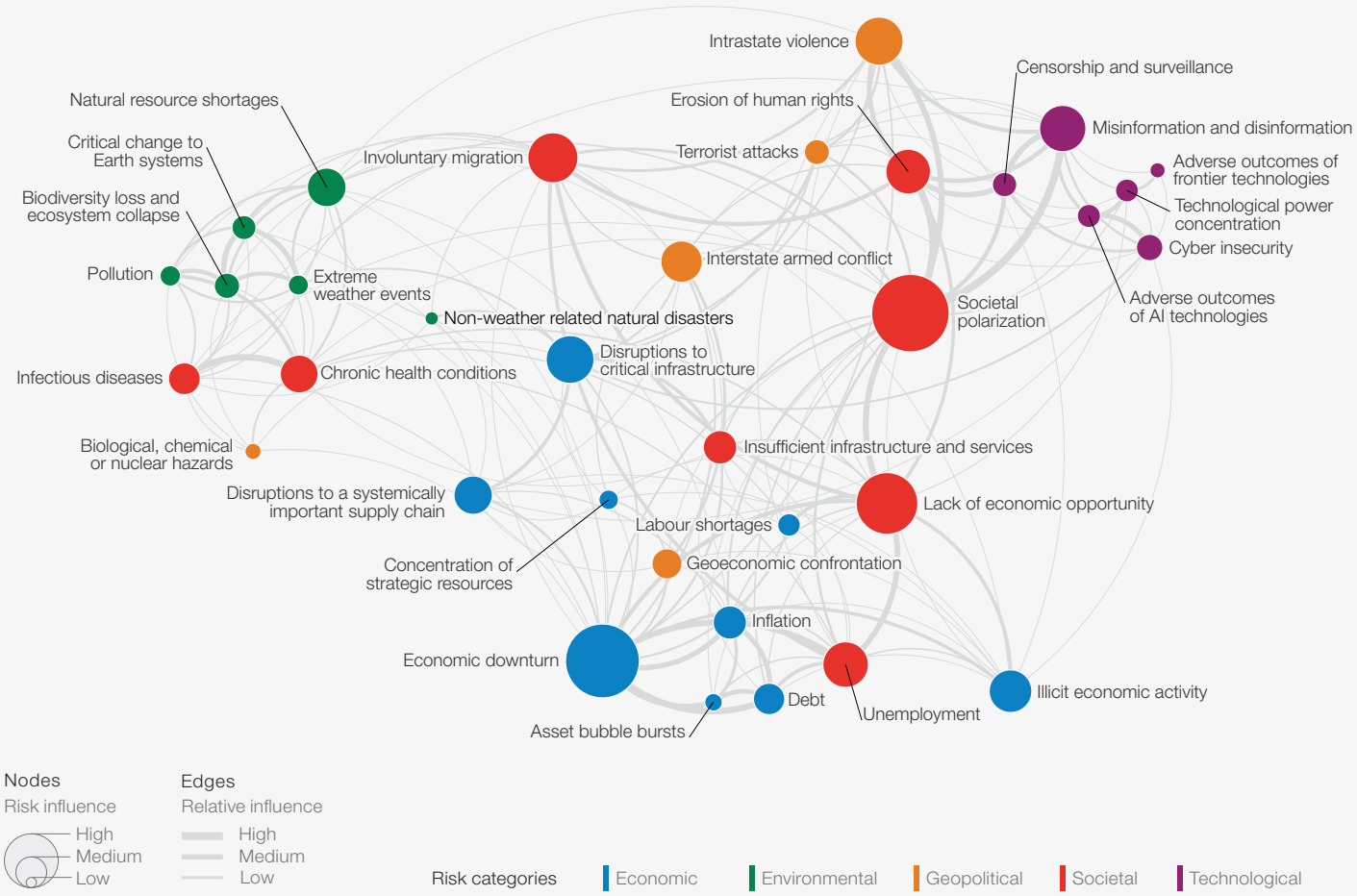
FIGURE 1.6 **Risk perceptions by age over the short term (2 years)**



Source
World Economic Forum Global Risks Perception Survey 2022-2023.

Note
Each column represents the top 10 risks by age group, ordered by global ranking rather than within-age group rankings, to visualize common themes in risk perceptions. Sample size by age group varied, and all respondents were weighted equally for the purposes of global rankings. These results are based on approximately the following: <30, n=183 (12% of total); 30-39, n=250 (17%); 40-49, n=396 (27%); 50-59, n=406 (27%); 60-69, n=183 (12%); and 70+, n=69 (5%).

FIGURE 1.7 | **Global risks landscape: an interconnections map**



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Interstate armed conflict (#5) rises in the rankings for the two-year horizon, across nearly all stakeholder groups, except for government respondents. This divergence may simply reflect different views around defining conflict: interstate armed conflict in the strict definition has remained relatively rare thus far, but international interventions in intrastate conflict are on the rise (Chapter 1.4: Rise in conflict).

Extreme weather events, a persistent concern between last year and this year, is at #2, **Cyber insecurity** at #4, **Involuntary migration** at #8 and **Pollution** at #10, rounding out the top 10 concerns in respondents' risk perceptions through to 2026. Overall, global risks have lower severity scores compared to last year's results.[7] Further down in the two-year time frame rankings, **Critical change to Earth systems** comes in at #11, **Debt** in 16th place, and **Adverse outcomes of AI technologies** and other **frontier technologies** in 29th and last place, respectively.

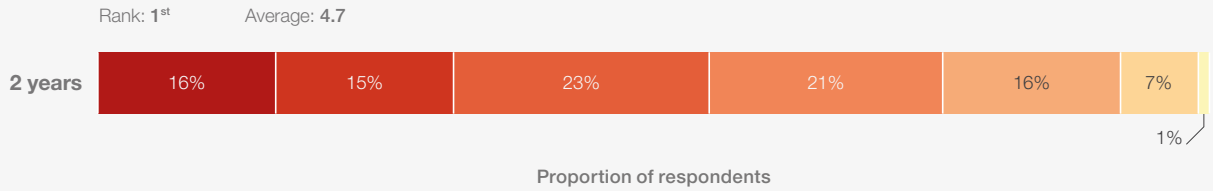
The following sections explore some of the most severe risks that many expect to play out over the next two years, focusing on three entrants to the top 10 risks list over the short term: **Misinformation and disinformation** (#1), **Interstate armed conflict** (#5) and **Economic downturn** (#9). We briefly describe the latest developments and key drivers for false information, a rise in conflict and economic uncertainty, and consider their emerging implications and knock-on effects.

1.3 False information

FIGURE 1.8

Severity score: Misinformation and disinformation

Persistent false information (deliberate or otherwise) widely spread through media networks, shifting public opinion in a significant way towards distrust in facts and authority. Includes, but is not limited to: false, imposter, manipulated and fabricated content.



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Severity was assessed on a 1-7 Likert scale [1 – Low severity, 7 – High severity]. The percentages in the graph may not add up to 100% because figures have been rounded up/down.

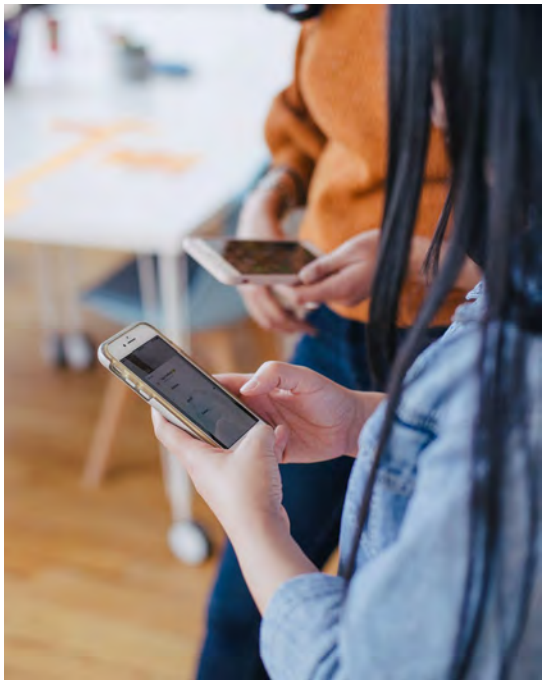
Severity
7 6 5 4 3 2 1
High Low

- Misinformation and disinformation may radically disrupt electoral processes in several economies over the next two years.
- A growing distrust of information, as well as media and governments as sources, will deepen polarized views – a vicious cycle that could trigger civil unrest and possibly confrontation.
- There is a risk of repression and erosion of rights as authorities seek to crack down on the proliferation of false information – as well as risks arising from inaction.

The disruptive capabilities of manipulated information are rapidly accelerating, as open access to increasingly sophisticated technologies proliferates and trust in information and institutions deteriorates. In the next two years, a wide set of actors will capitalize on the boom in synthetic content,[8] amplifying societal divisions, ideological violence and political repression – ramifications that will persist far beyond the short term.

Misinformation and disinformation (#1) is a new leader of the top 10 rankings this year. No longer requiring a niche skill set, easy-to-use interfaces to large-scale artificial intelligence (AI) models have already enabled an explosion in falsified information and so-called 'synthetic' content, from sophisticated voice cloning to counterfeit websites. To combat growing risks, governments are beginning to roll out new and evolving regulations to target both hosts and creators of online disinformation and illegal content.[9] Nascent regulation of generative AI will likely complement these efforts. For example, requirements in China to watermark AI-generated content may help identify false information, including unintentional misinformation through AI hallucinated content.[10] Generally however, the speed and effectiveness of regulation is unlikely to match the pace of development.

Synthetic content will manipulate individuals, damage economies and fracture societies in numerous ways over the next two years. Falsified information could be deployed in pursuit of diverse goals, from climate activism to conflict escalation. New classes of crimes will also proliferate, such as non-consensual deepfake pornography or stock market manipulation.[11] However, even as the insidious spread of misinformation and disinformation threatens the cohesion of societies, there is a risk that some governments will act too slowly, facing a trade-off between preventing misinformation and protecting free speech, while repressive governments could use enhanced regulatory control to erode human rights.



Jason Goodman, Unsplash

Mistrust in elections

Over the next two years, close to three billion people will head to the electoral polls across several economies, including the United States, India, the United Kingdom, Mexico and Indonesia (Figure 1.9).[12] The presence of misinformation and disinformation in these electoral processes could seriously destabilize the real and perceived legitimacy of newly elected governments, risking political unrest, violence and terrorism, and a longer-term erosion of democratic processes.

Recent technological advances have enhanced the volume, reach and efficacy of falsified information, with flows more difficult to track, attribute and control. The capacity of social media companies to ensure platform integrity will likely be overwhelmed in the face of multiple overlapping campaigns.[13] Disinformation will also be increasingly personalized to its recipients and targeted to specific groups, such as minority communities, as well as disseminated through more opaque messaging platforms such as WhatsApp or WeChat.[14]

The identification of AI-generated mis- and disinformation in these campaigns will not be clear-cut. The difference between AI- and human-generated content is becoming more difficult to discern, not only for digitally literate individuals, but also for detection mechanisms.[15] Research and development continues at pace, but this area of innovation is radically underfunded in comparison to the underlying technology.[16] Moreover, even if synthetic content is labelled as such,[17] these labels are often digital and not visible to consumers of content or appear as warnings that still allow the information to spread. Such information can thus still be emotively powerful, blurring the line between malign and benign use. For example, an AI-generated campaign video could influence voters and fuel protests, or in more extreme scenarios, lead to violence or radicalization, even if it carries a warning by the platform on which it is shared that it is fabricated content.[18]

The implications of these manipulative campaigns could be profound, threatening democratic processes. If the legitimacy of elections is questioned, civil confrontation is possible – and could even expand to internal conflicts and terrorism, and state collapse in more extreme cases. Depending on the systemic importance of an economy, there is also a risk to global trade and financial markets. State-backed campaigns could deteriorate interstate relations, by way of strengthened sanctions regimes, cyber offense operations with related spillover risks, and detention of individuals (including targeting primarily based on nationality, ethnicity and religion).[19]

FIGURE 1.9

National risk perceptions in the context of upcoming elections

"Which five risks are most likely to pose the biggest threat to your country in the next two years?"

1st risk in India
Over 1.4bn (nearly 50% internet penetration) head for a general election in April-May 2024

6th risk in the United States
Nearly 340m (92% internet penetration) head for a presidential election in November 2024

8th risk in European Union
Nearly 450m (89% internet penetration) elect the EU Parliament in June 2024

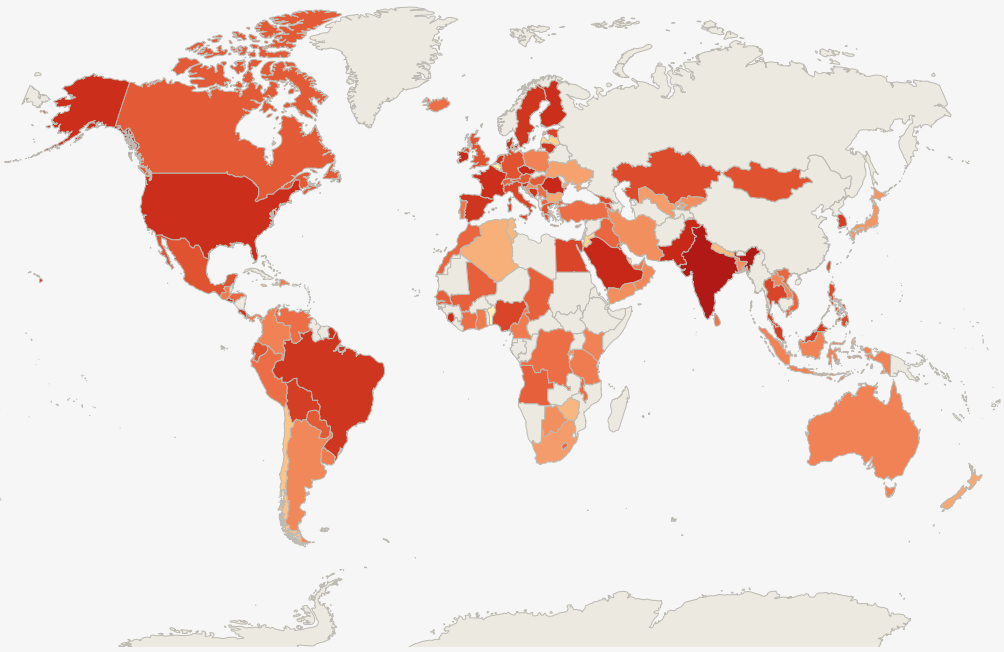
11th risk in United Kingdom
Nearly 68m (98% internet penetration) head for a general election by January 2025

11th risk in Mexico
128m (79% internet penetration) head for a general election in June 2024

18th risk in Indonesia
Nearly 278m (88% internet penetration) head for a presidential election in March 2024

22nd risk in South Africa
Over 60m (72% internet penetration) head for a general election in 2024

Russia
Around 145m (88% internet penetration) head for a presidential election in March 2024



Source
World Economic Forum Executive Opinion Survey 2023; Worldometer, 2023; Statista, 2023; DataReportal, 2023.

Note
EU excludes Slovakia.

Rank
1st 10th 20th 30th 36th

Societies divided

Misinformation and disinformation and **Societal polarization** are seen by GRPS respondents to be the most strongly connected risks in the network, with the largest potential to amplify each other. Indeed, polarized societies are more likely to trust information (true or false) that confirms their beliefs. Given distrust in the government and media as sources of false information,[20] manipulated content may not be needed – merely raising a question as to whether it has been fabricated may be sufficient to achieve relevant objectives. This then sows the seeds for further polarization.

As identified in last year's *Global Risks Report (Chapter 1.2: Societal polarization)*, the consequences could be vast. Societies may become polarized not only in their political affiliations, but also in their perceptions of reality, posing a serious challenge to social cohesion and even mental health. When emotions and ideologies overshadow facts, manipulative narratives can infiltrate the public discourse on issues ranging from public health to social justice and education to the environment. Falsified information can also fuel animosity, from bias and discrimination in the workplace to violent protests, hate crimes and terrorism.

Some governments and platforms, aiming to protect free speech and civil liberties, may fail to act to effectively curb falsified information and harmful content, making the definition of "truth" increasingly contentious across societies. State and non-state actors alike may leverage false information to widen fractures in societal views, erode public confidence in political institutions, and threaten national cohesion and coherence. Trust in specific leaders will confer trust in information, and the authority of these actors – from conspiracy theorists, including politicians, and extremist groups to influencers and business leaders – could be amplified as they become arbiters of truth.

Defining truth

False information could not only be used as a source of societal disruption, but also of control, by domestic actors in pursuit of political agendas.[21] Although misinformation and disinformation have long histories, the erosion of political checks and balances, and growth in tools that spread and control information, could amplify the efficacy of domestic disinformation over the next two years.[22] Global internet freedom is already in decline and access to wider sets of information has dropped in numerous countries.[23] Falls in press freedoms in recent years and a related lack of strong investigative media, are also significant vulnerabilities that are set to grow.[24]

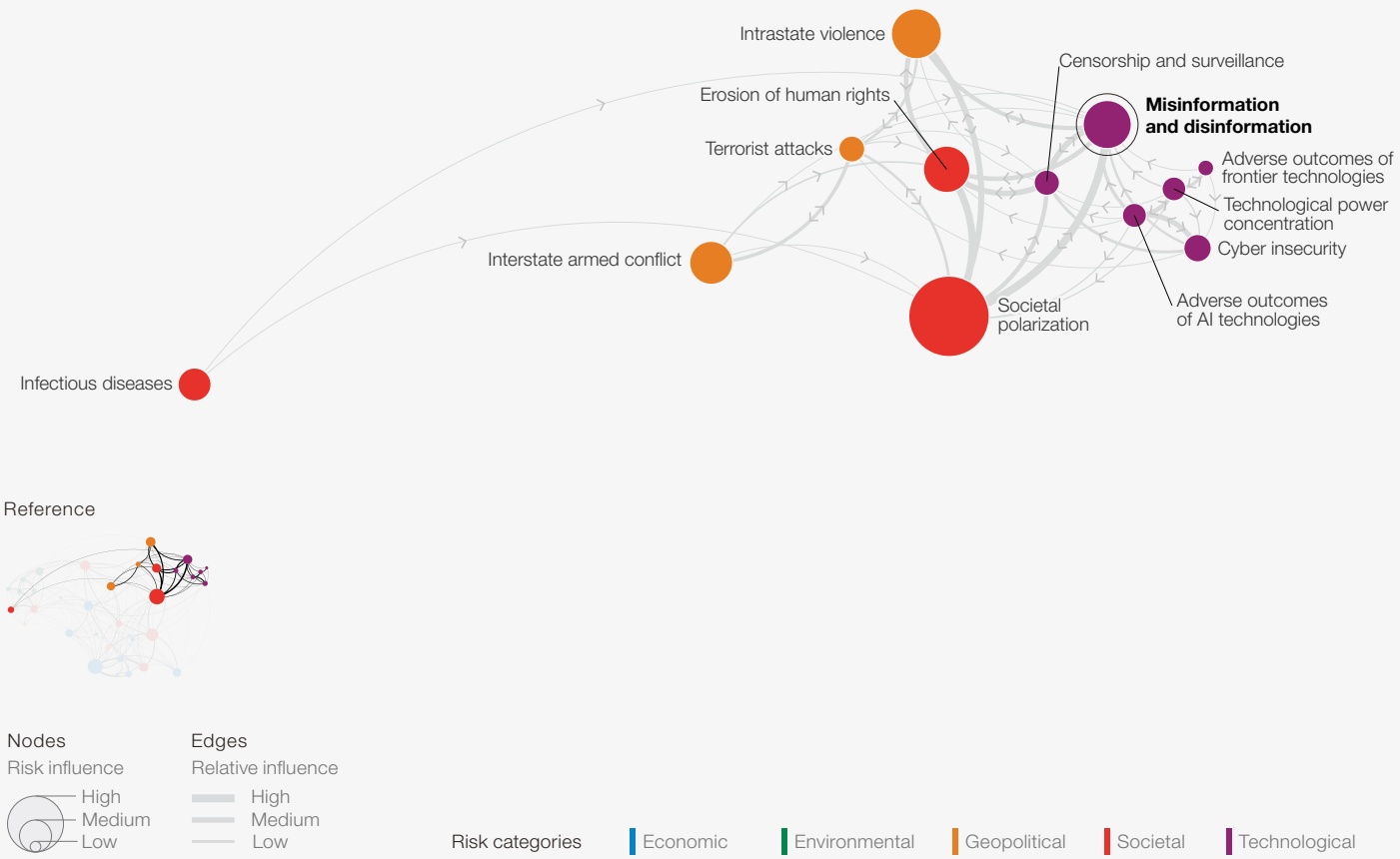
Indeed, the proliferation of misinformation and disinformation may be leveraged to strengthen digital authoritarianism and the use of technology to control citizens. Governments themselves will be increasingly in a position to determine what is true, potentially allowing political parties to monopolize the public discourse and suppress dissenting voices, including journalists and opponents.[25] Individuals have already been imprisoned in Belarus and Nicaragua, and killed in Myanmar and Iran, for online speech.[26]

Spenser H, Unsplash

FIGURE 1.10

Risk interconnections

Misinformation and disinformation



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

The export of authoritarian digital norms to a wider set of countries could create a vicious cycle: the risk of misinformation quickly descends into the widespread control of information which, in turn, leaves citizens vulnerable to political repression and domestic disinformation.[27] GRPS respondents highlight strong bilateral relationships between **Misinformation and disinformation**, **Censorship and surveillance** (#21) and the **Erosion of human rights** (#15), indicating a higher perceived likelihood of all three risks occurring together (Figure 1.10).

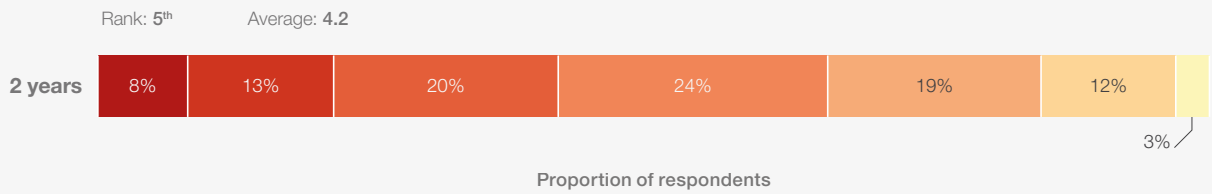
This is a particular concern in those countries facing upcoming elections, where a crackdown on real or perceived foreign interference could be used to consolidate existing control, particularly in flawed democracies or hybrid regimes. Yet more mature democracies could also be at risk, both from extensive exercises of government control or due to trade-offs between managing mis- and disinformation and protecting free speech. In January last year, Twitter and YouTube agreed to remove links to a BBC documentary in India.[28] In Mexico, civil society has been concerned about the government's approach to fake news and its implications for press freedom and safety.[29]

1.4 Rise in conflict

FIGURE 1.11

Severity score: Interstate armed conflict

Bilateral or multilateral use of force between states, manifesting as proxy war or open, hot war.



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Severity was assessed on a 1-7 Likert scale [1 – Low severity, 7 – High severity]. The percentages in the graph may not add up to 100% because figures have been rounded up/down.

Severity
7 6 5 4 3 2 1
High Low

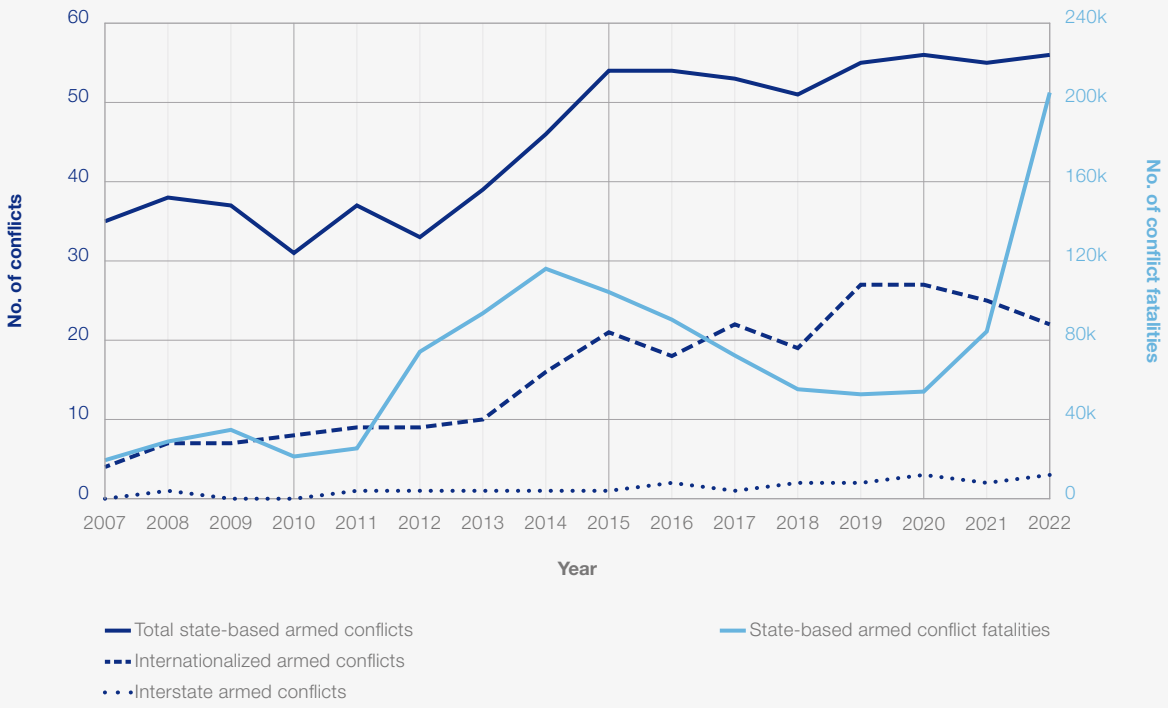
- Escalation in three key hotspots – Ukraine, Israel and Taiwan – is possible, with high-stakes ramifications for the geopolitical order, global economy, and safety and security.
- Geographic, ideological, socioeconomic and environmental trends could converge to spark new and resurgent hostilities, amplifying state fragility.
- As the world becomes more multipolar, a widening array of pivotal powers will step into the vacuum, potentially eroding guardrails to conflict containment.

The world has become significantly less peaceful over the past decade, with conflict erupting in multiple regions last year.[30] Active conflicts are at the highest levels in decades, while related deaths have witnessed a steep increase, nearly quadrupling over the two-year period from 2020 to 2022 (Figure 1.12), largely attributable to developments in Ethiopia and Ukraine. While difficult to attribute to a single cause, longer-term shifts in geopolitical power, economic fragility and limits to the efficacy and capacity of international security mechanisms have all contributed to this surge.

Interstate armed conflict (#5) is a new entrant to the top 10 risk rankings this year. Specific flashpoints could absorb focus and split the resources of major powers over the next two years, degrading global security and destabilizing the global financial system and supply chains. Although war between two states in the strict definition remains relatively rare (Figure 1.12), this could contribute to conflict contagion, leading to rapidly expanding humanitarian crises that overwhelm the capacity to respond.

Daniel, Unsplash

FIGURE 1.12 **Incidence and impact of state-based armed conflict, 2007-2022**



Source
Uppsala Conflict Data Program (UCDP), 2023.

Note
The UCDP Armed Conflict Database's definition of state-based armed conflict is defined as "a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in one calendar year". This may include intrastate armed conflict (occurring between a government and a non-governmental party), internationalized intrastate armed conflict (occurring between a government, and one or more internal opposition groups, with intervention from other states on either side), and interstate armed conflict (occurring between two or more states or governments). The definition of interstate armed conflict adopted by the GRPS is broader than the UCDP's definition of "interstate armed conflict", encompassing some elements of "internationalized intrastate armed conflict".

High-stakes hotspots

Over the next two years, the attention and resources of global powers are likely to be focused on three hotspots in particular: the war in Ukraine, the Israel-Gaza conflict and tensions over Taiwan. Escalation in any one of these hotspots would radically disrupt global supply chains, financial markets, security dynamics and political stability, viscerally threatening the sense of security and safety of individuals worldwide.

All three areas stand at a geopolitical crossroads, where major powers have vested interests: oil and trade routes in the Middle East, stability and the balance of power in Eastern Europe, and advanced technological supply chains in East Asia. Each could lead to broader regional destabilization, directly drawing in major power(s) and escalating the scale of conflict. All three also directly involve power(s) reckoned to possess nuclear capabilities.

Over the next two years, the war in Ukraine could sporadically alternate between intensifying and refreezing. Despite sanctions, Russia has continued to benefit from energy profits and commodity exports – and this could increase further if the conflict in the Middle East widens.[31] Pro-Russian or neutral sentiment in Eastern and Central Europe could soften support from Ukraine's European allies,[32] while support in the United States could wane under domestic pressures, other international priorities, or under a new government. Global divisions with respect to the Middle East conflict may also complicate efforts by Ukraine to maintain unity with Western allies, while also garnering support from the Global South.[33] If the conflict intensifies, it is still more likely to do so through conventional rather than nuclear means, but it could also expand to neighbouring countries. While post-conflict scenarios for both Ukraine and Russia are difficult to predict, the war could 'refreeze' into a prolonged, sporadic conflict that could last years or even decades.[34]

Proximate developments in the Middle East are a source of considerable uncertainty, risking further indirect or direct confrontation between global powers. If the Israel-Gaza conflict destabilizes into wider regional warfare, more extensive intervention by major powers is possible, including Iran and the West.[35] Beyond potentially seismic shocks to global energy prices and supply chains, escalation could split the attention and resources of the EU and the United States between Ukraine and Israel.[36] The scale of Gulf countries' or Western intervention is uncertain; it's likely to continue to be deeply polarizing domestically and hold significant political sway.

Numerous GRPS respondents also cited Taiwan and disputed territories in East and South-East Asia as areas of concern. In contrast to Russia, which doubled its defense spending target to more than $100 billion in 2023, and the United States, which allocated over $113 billion in assistance relating to the war in Ukraine alone,[37] China has largely acted as a non-interventionist power in both the Ukraine and Middle East conflicts, avoiding the risk of overstretch.[38] While there is no evidence to suggest that escalation is imminent, there remains a material possibility of accidental or intentional outbreak of hostilities, given heightened activity in the region.[39]

Clayton Holmes, Unsplash

Conflict contagion

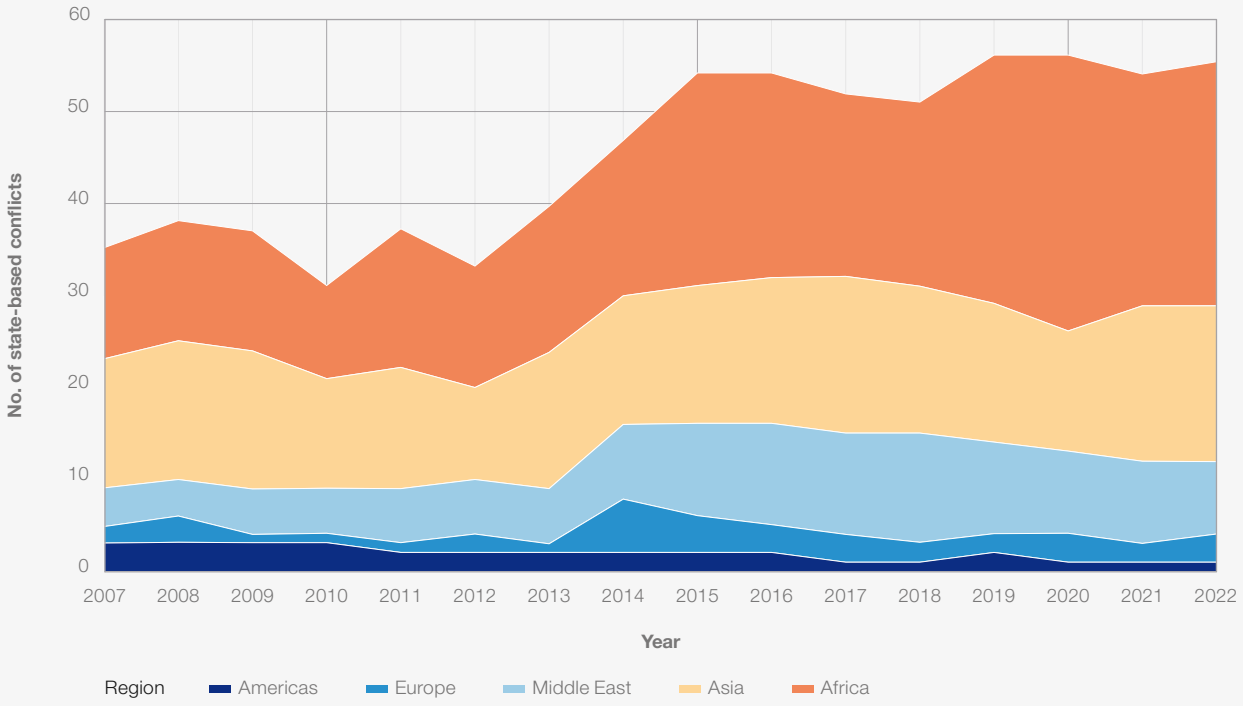
As high-stakes hotspots undermine global security, a wider set of trends may fuel a combustible environment in which new and existing hostilities are more likely to ignite. As conflicts spread, guardrails to their containment are eroding and resolve for long-term solutions have stalled.[40] In parallel, the internationalization of conflicts by a wider set of alternate powers will accelerate 'multipolarity' and the risk of inadvertent escalation.

First, simmering tensions and frozen conflicts that are proximate to existing hotspots could heat up. For example, spillover impacts from a high concentration of conflicts, such as in Asia and Africa (Figure 1.13), could range from more readily available arms trafficking to conflict-driven migration. Other states could also deliberately stoke tensions in neighbouring countries to divert attention and resources, through disinformation campaigns or the deployment of state-backed militia groups, for example. Frozen conflicts at risk could include the Balkans, Libya, Syria, Kashmir, Guyana, the Kurdish region and Korean peninsula.[41] These risks are well-recognized by business leaders: **Interstate armed conflict** features as a top-five risk in 20 countries (18%) surveyed in the Forum's Executive Opinion Survey (EOS, see **Appendix C: Executive Opinion Survey: National Risk Perceptions**), including Egypt, Iraq, Kazakhstan and Serbia, and is the top risk in Armenia, Georgia, Kyrgyzstan and Japan.

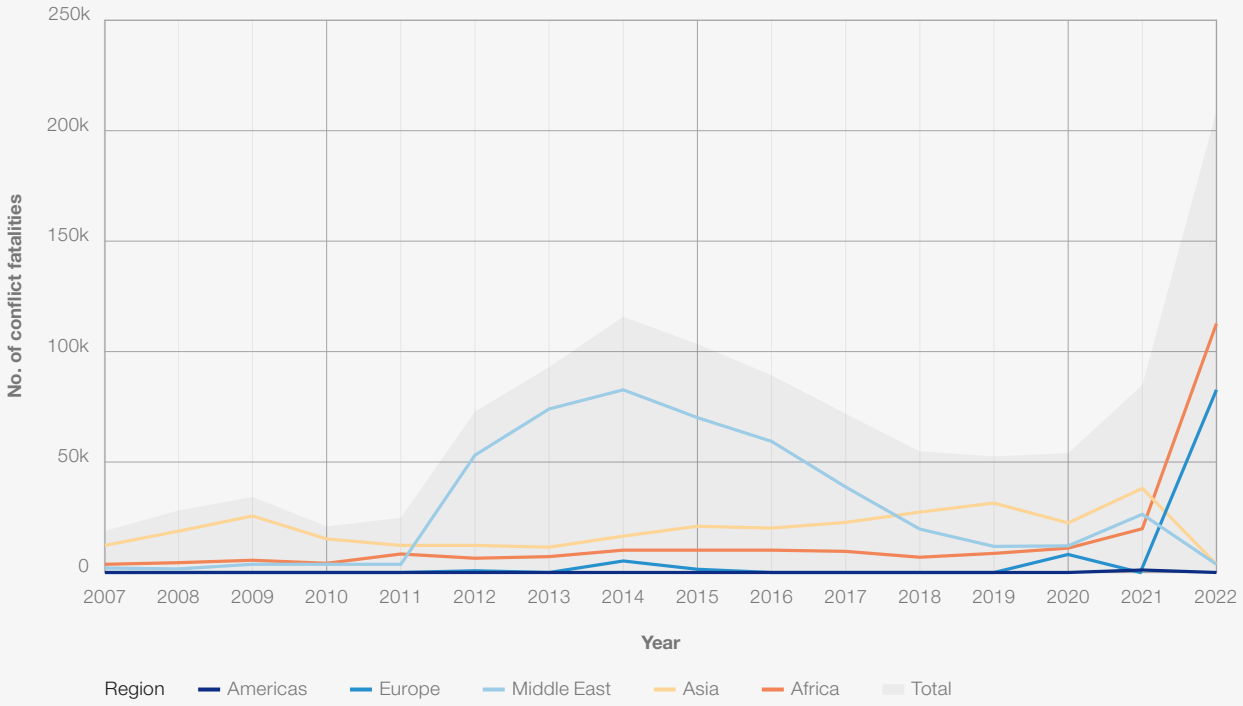
Second, resource stress, economic hardship and weakened state capacity will likely grow and, in turn, fuel conflict.[42] There may also be a rise of 'ungoverned countries', where non-state actors fight for control over large swathes of territory, or where parties not recognized by the international system gain full control. For example, resource-rich countries could become caught in a battleground of proxy warfare between multiple powers, including neighbouring economies, organized crime networks and paramilitary groups (**Chapter 2.6: Crime wave**).[43]

FIGURE 1.13 | **Geography of violence**

A. State-based armed conflicts by region, 2007-2022



B. State-based armed conflict fatalities by region, 2007-2022



Source
Uppsala Conflict Data Program (UCDP), 2023.

Note
Regions as defined by the UCDP.

Third, with instant information networks and reinforcing algorithms, the symbolism of high-stakes hotspots could trigger contagion beyond conflict geographies. Deeply ingrained ideological grievances are in some cases driving hostilities, and these divisions are resonating with communities and political parties elsewhere. This expands beyond religious and ethnic divisions to broader challenges to systems of governance. National identities, international law and democratic values are coming into question, contributing to civil unrest, threatening human rights, and reigniting violence, including in advanced democracies and between the Global North and South.

North-South rift

Dissatisfaction with the continued political, military and economic dominance of the Global North is growing, particularly as states in the Global South bear the brunt of a changing climate, the aftereffects of pandemic-era crises and geoeconomic rifts between major powers. Historical grievances of colonialism, combined with more recent ones regarding the costs of food and fuel, geopolitical alliances, the United Nations and Bretton Woods systems, and the loss and damage agenda, could accelerate anti-Western sentiment over the next two years. In conjunction with more thinly spread resources and tighter economic conditions, military power projection by the West could fade further, potentially creating power vacuums in parts of Africa, the Middle East and Asia. France, for example, has withdrawn troops on request from Mali, Burkina Faso and Niger over the past two years.[44]

As the dominance of long-held power centres wanes, alternate powers will compete for influence in interstate and intrastate conflicts, potentially leading to deadlier, prolonged proxy warfare and overwhelming humanitarian crises.[45] There are a number of incentives to this involvement, from access to raw resources, such as minerals and oil, to the protection and promotion of trade, investment and security interests. Pivotal powers will also increasingly lend support and resources to garner political allies, taking advantage of this widening rift between the Global North and the Global South.

As a new set of influences in global affairs takes shape, political alliances and alignment within the Global South will also shape the longer-term trajectory of internationalized conflicts. A deep divide on the international stage could mean that coordinated efforts to isolate 'rogue' states may be increasingly futile, while international governance and peacekeeping mechanisms shown to be ineffective at 'policing' conflict could be sidelined.

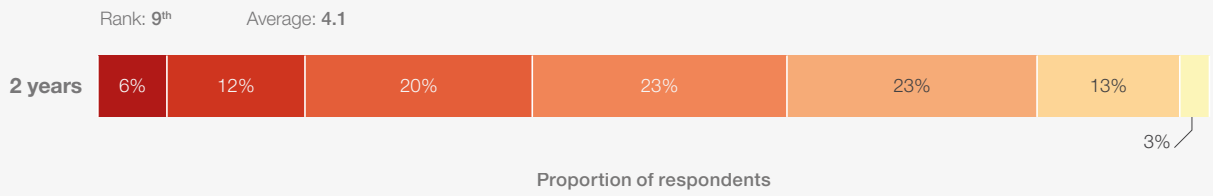
Mathias Reding, Unsplash

1.5 Economic uncertainty

FIGURE 1.14

Severity score: Economic downturn

Near-zero or slow global growth lasting for several years or a global contraction (recession or depression).



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Severity was assessed on a 1-7 Likert scale [1 – Low severity, 7 – High severity]. The percentages in the graph may not add up to 100% because figures have been rounded up/down.

Severity
7 6 5 4 3 2 1
High Low

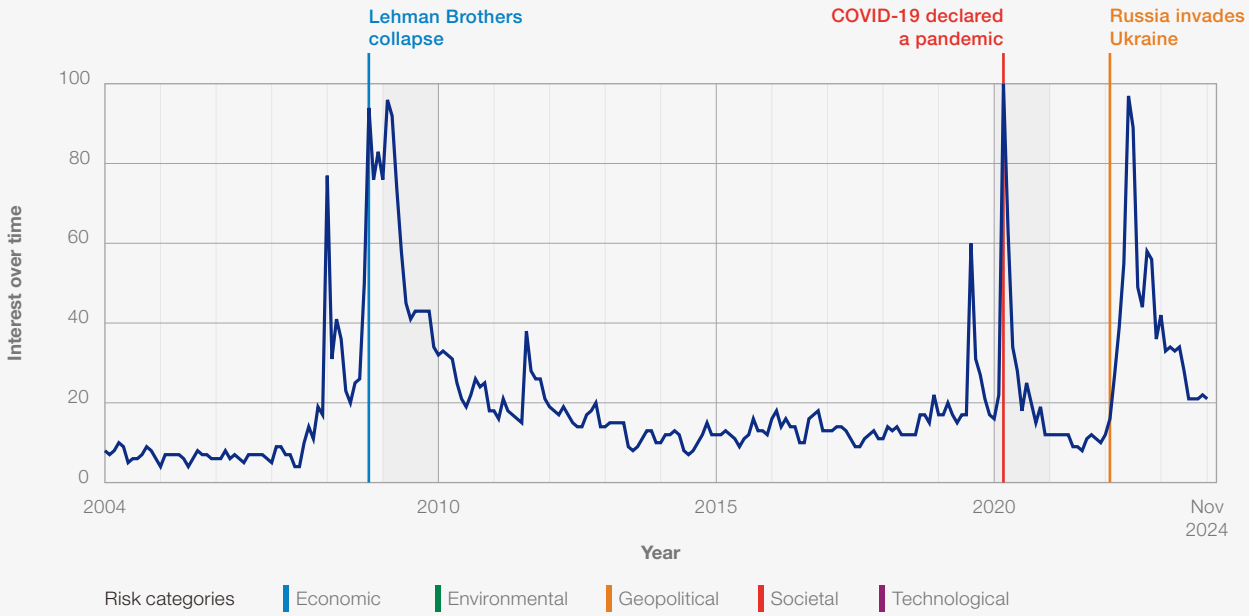
- The near-term outlook remains highly uncertain due to domestic factors in some of the world's largest markets as well as geopolitical developments.
- Continued supply-side pressures and demand uncertainty could contribute to persistent inflation and high interest rates.
- Small- and medium-sized companies and heavily indebted countries will be particularly exposed to slowing growth amid elevated interest rates.

According to one narrative, the global economy has shown surprising resilience in the face of the most aggressive global tightening of monetary policy in decades. Despite widespread predictions of a recession in 2023 (Figure 1.15),[46] the perception of a 'softer landing' appears to be prevailing. Inflation is falling amid tight labour markets and stronger-than-anticipated consumer spending and growth, particularly in the United States.[47]

In another version, persistently elevated inflation in many countries and high interest rates are weighing heavily on economic growth, particularly in export- and manufacturing-led markets. An already visible economic downturn is likely to spread, with a risk that new economic shocks would be unmanageable in such fragility and debt passes the tipping point of sustainability.

FIGURE 1.15

Google search for 'Recession'



Source
Google, 2023.

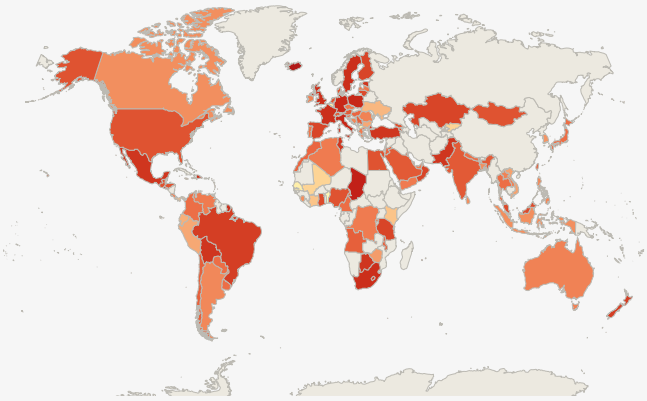
Global recessions occurred in 2009 and 2020

FIGURE 1.16

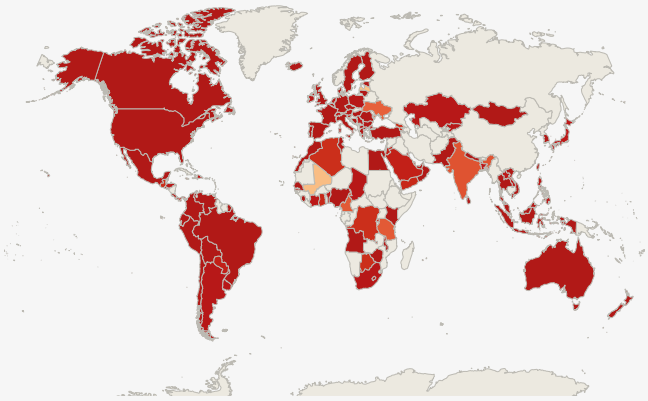
National risk perceptions: Economic downturn

"Which five risks are the most likely to pose the biggest threat to your country in the next two years?"

A. Prolonged economic stagnation, 2022

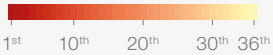


B. Economic downturn, 2023



Source
World Economic Forum Executive Opinion Surveys 2022 and 2023.

Rank



These contrasting narratives encapsulate the highly uncertain economic outlook. Fears of an **Economic downturn** are widespread among private-sector respondents, featuring as a top-five risk in 102 countries (90%) surveyed in the EOS, a significant uptick from 2022 (Figure 1.16). A slowdown in global growth is already occurring, but it is taking place under a different set of economic parameters than previous cycles, heightening uncertainty. Over the next two years, there may be a lack of coherence in forward projections within and between economies, particularly with respect to inflation, interest rates and growth rates. With contrasting views about the future, the risk of miscalibration by central banks, governments and companies will rise accordingly, potentially deepening and prolonging economic risks. Additionally, continued trade conflicts and geoeconomic rifts between the United States, European Union and China add to the significant economic uncertainty ahead.

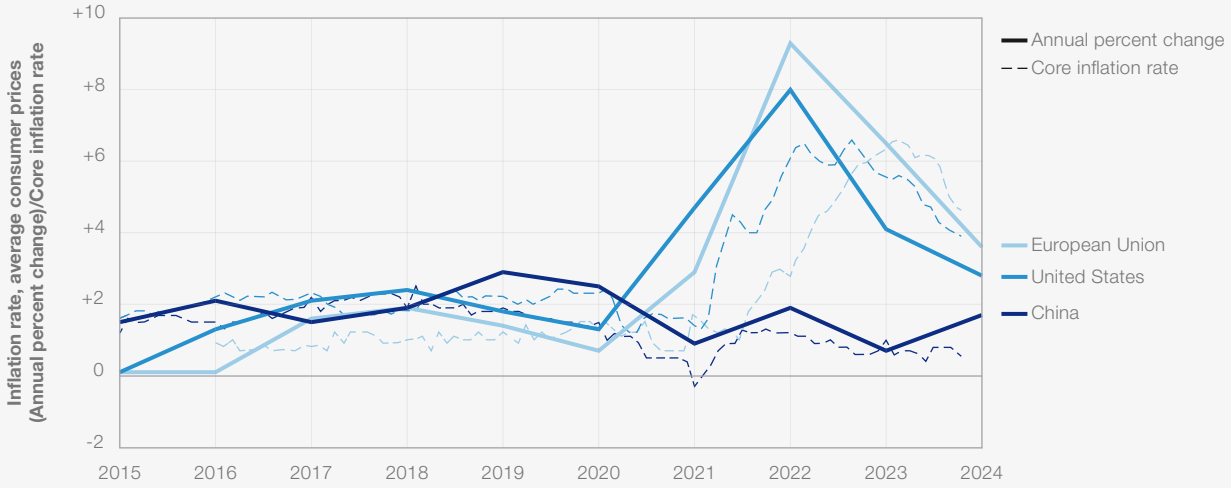
Adeolu Eletu, Unsplash

Supply-driven price pressures

Markets are already anticipating interest rate cuts in key economies in the first half of this year.[48] However, there are several inflationary pressures that may stymie expectations and present a less-smooth path to inflation targets. If price pressures continue, central banks could be hesitant to cut rates in response to signals of weaker growth, resulting in higher-for-longer inflation and interest rates.

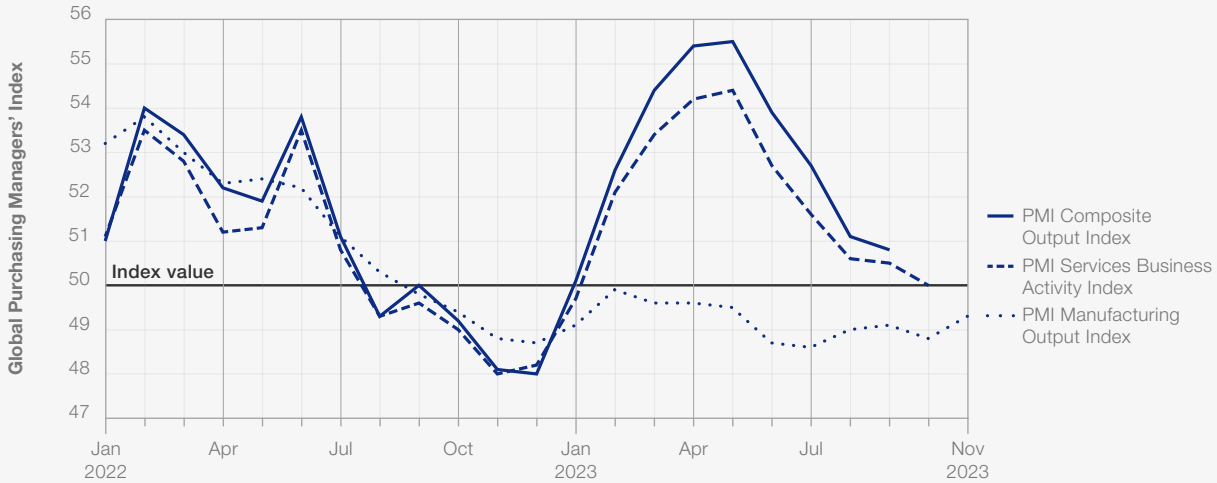
Reflecting tighter financial conditions, both headline and core inflation have dropped in the United States and the Eurozone (Figure 1.17).[49] In parallel, there has been a slowdown in economic growth in key industries and markets. The global economy had been propped up by continued strength in services throughout 2023, which is now flagging, while manufacturing has already been in contraction for over a year (Figure 1.18).[50] Economic growth is stagnant in the European Union, at 0.6% last year, with estimates suggesting that the economic powerhouse of Germany contracted by 0.3% in 2023.[51] Profits of the S&P 500, excluding the 'Magnificent 7' tech stocks, were estimated to contract by 8.6% last year.[52]

FIGURE 1.17 **Inflation**



Source
IMF, 2023; Trading Economics, 2023.

FIGURE 1.18 **Global Purchasing Managers' Index (PMI)**



Source
S&P Global, 2023.

Yet even as inflation has been partially tamed through higher interest rates, it has not reached central bank targets of two percent and there remains a material risk of largely supply-side price pressures over the next two years. For example, El Niño-impacts to food production and logistics could drive inflation and costly disruptions to supply chains. Any amplification of the Middle East conflict could trigger price spikes in energy and further disrupt shipping routes, compounding continued impacts from the war in Ukraine.[53] The cost-of-living impact of persistent inflation, perceived to be declining in 2024, could resurge as the continued impact of elevated prices persists. A wage-price spiral is still possible, with EOS respondents anticipating labour shortages in key sectors and economies over the next two years (**Chapter 2.5: End of development?**). Stronger industrial policies and trade controls emanating from advanced economies, targeting the green transition and advanced technology, could also remain a persistent inflationary trend over this period.

Uncertainty within global powerhouses

The outlooks for the two largest economies – China and the United States – are highly complex, and these two key sources of uncertainty could lead to unanticipated, and possibly divergent, implications for the trajectory of the global economy.

China's economy is widely expected to slow this year, with the weakening of the property market and local and external demand generally cited as primary causes.[54] Despite retaining its 'A1' long-term credit rating, the outlook for China's government debt was recently downgraded from 'neutral' to 'negative', reflecting risks relating to 'structurally and persistently lower medium-term economic growth'.[55] Yet investment in both manufacturing and energy infrastructure have been key drivers of growth in recent years, replacing lost construction demand to a degree.[56] Although challenges remain, in the absence of further shocks, there is room for an upside surprise – local consumption may revive, growth may be less sluggish and the slowdown shallower than pervasive market expectations. In addition, in the absence of further geoeconomic backlash, excess capacity in advanced manufacturing, particularly in green technologies, could help counteract global price pressures, lending momentum to the green transition and global demand.[57]

There is similar uncertainty in the United States. Some forecasts are already pricing in up to 2.4% economic growth for 2024, and others predict rate cuts in the early half of the year.[58] Fiscal policy has remained loose even as monetary policy tightened, with the United States running a $1.7 trillion deficit in 2023, effectively doubling the deficit in the past year alone.[59] This could continue to keep demand-driven price pressures high. The correlation between consumer sentiment and spending is also adding to uncertainty: economic pessimism may be widespread, but it is not necessarily dampening demand – yet.[60] On the other hand, debt servicing hit over $981 billion in Q3 2023 – an increase of over $753 billion compared to the same period in 2022, a sum similar to the budgetary spend on defense.[61] Any fiscal consolidation in the United States – or a political stand-off relating to debt loads – could have a profound effect on global markets and trade, while any overestimation of the slowdown could lead to earlier or sharper intervention on interest rates and re-spark demand-side price pressures. The outcome of the US presidential elections in November creates additional uncertainty for the country's economic outlook, depending on the policy choices of the next government.[62]

Matthew Henry, Unsplash

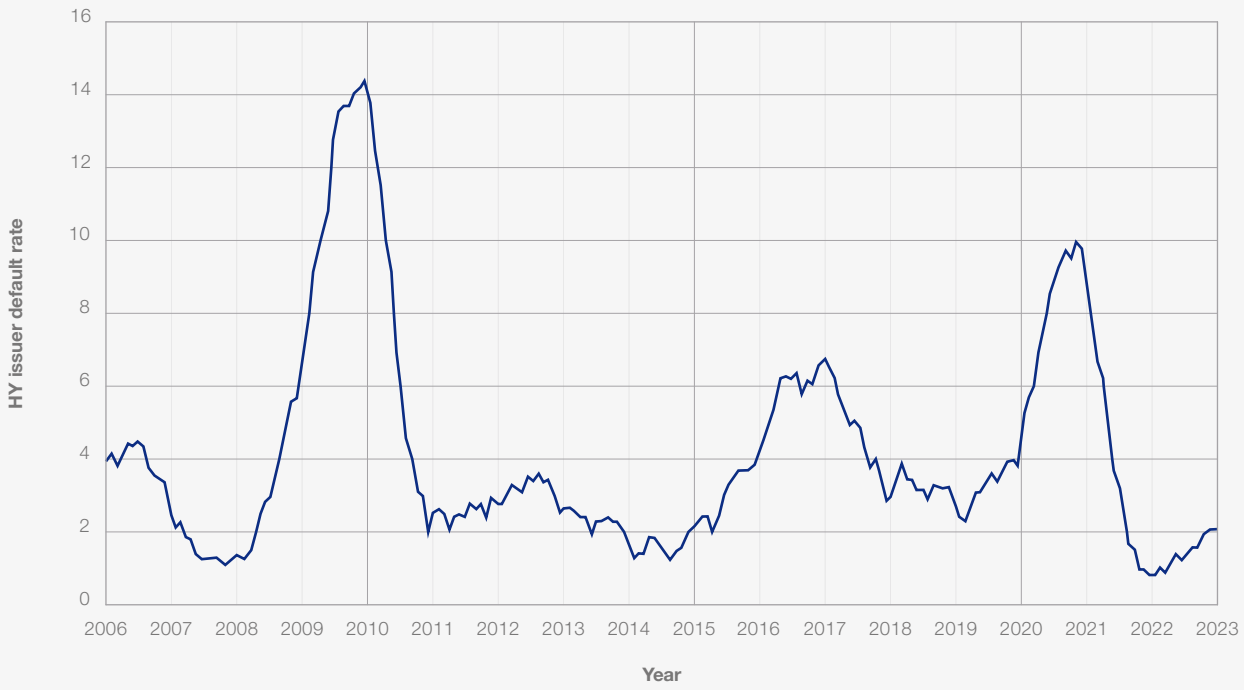
Debt distress

Higher interest rates amid slowing growth will strain debt loads for the public and private sector alike. The corporate debt default rate remains far lower than peaks hit during the 2008-09 Global Financial Crisis (Figure 1.19).[63] The majority of corporate debt is also years from maturity. Less than 14% of S&P 500 debt is set to mature in the next two years, with nearly half to mature after 2030.[64] In essence, the world's largest companies will be effectively insulated from higher interest rates for more than half a decade.

However, small and medium-sized companies, that form the backbone of many domestic markets, will be particularly sensitive to slowing economic growth and persistently high interest rates. As struggling companies cut costs, unemployment may rise, reducing consumer spending and creating a negative feedback loop that can contribute to a deeper economic downturn. This could also contribute to heightened market concentration, as start-ups struggle and larger, more financially robust corporations consolidate their position, including in the tech sector (Chapter 2.4: AI in charge).

Heavily indebted countries are also exposed to these economic conditions. The risk of sovereign debt defaults is rising but notably, even with a strong US dollar, larger emerging economies such as Mexico and Brazil have largely avoided debt distress to date.[65] This has been attributed to structurally different conditions in these markets than in the past, including central bank independence and the accumulation of large foreign-exchange reserves.[66] In other parts of the world, like in Egypt, Ethiopia, Ghana, Lebanon, Pakistan, and Tunisia, the risks are much higher. The impacts of tighter financial conditions will build over time, and pressures on fiscal balances will rise. Given historically high debt loads, many governments might be unable or unwilling to help cushion economic impacts to the same degree as they have in recent years, sharpening the slowdown for companies and individuals.

FIGURE 1.19 **Corporate debt defaults (United States, 2006-2023)**



Source
Kraemer & Kugle, 2023.

1.6 Looking ahead

These results point to a global risks landscape where economic, geopolitical and societal vulnerabilities will continue to build. Worrying developments emerging today have the potential to become chronic global risks over the next decade.

As constant upheaval becomes the norm, decades of investment in human development – and human resilience – are slowly being chipped away, potentially leaving even comparatively strong states and individuals vulnerable to rapid shocks from novel and resurgent sources. The impacts of extreme weather may deplete available economic resources to mitigate and adapt to climate change. Increasing vulnerabilities, brought about by resource stress, conflict and increasing polarization, could expose societies and whole economies to crime and corruption. Exponential technology growth may leave the next generation without a clear path to improve human potential, security and wellbeing.

How these global risks evolve will reflect the global conditions that are slowly taking shape across multiple spheres: geostrategic, environmental, demographic and technological. Chapter 2 discusses a world that is being stretched beyond its limit, highlighting a series of emergent risks that are arising in the context of these structural regime shifts. A multiplicity of futures are conceivable over the next decade. While the next chapter explores the most concerning potential outcomes, Chapter 3 explores how a more positive path can be shaped through acting today.

Ali Arif Soydaş, Unsplash

Endnotes

1. Gourinchas, Pierre-Olivier, "Resilient Global Economy Still Limping Along, With Growing Divergences", *IMF Blog*, 10 October 2023, https://www.imf.org/en/Blogs/Articles/2023/10/10/resilient-global-economy-still-limping-along-with-growing-divergences.
2. Berman, Noah and Sabine Baumgartner, "The Weather of Summer 2023 Was the Most Extreme Yet", *Council on Foreign Relations*, 18 September 2023, https://www.cfr.org/article/weather-summer-2023-was-most-extreme-yet#:~:text=The%20Weather%20of%20Summer%202023,heat%2C%20wildfires%2C%20and%20storms.&text=The%20summer%20of%202023%20was%20the%20Northern%20Hemisphere's%20hottest%20in%20recorded%20history.
3. There is an 80% chance it will continue to March-May 2024, and a 75-85% chance it will become a strong event. See: NOAA Climate Prediction Center, "El Niño/Southern Oscillation (Enso) Diagnostic Discussion", 12 October 2023, https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ensodisc.shtml; Becker, Emily, "October 2023 El Niño update: big cats", *NOAA*, 12 October 2023, https://www.climate.gov/news-features/blogs/october-2023-el-nino-update-big-cats.
4. N=443 for 39 or under age group, and n=252 for 60 and over age group.
5. Ciccarelli, Matteo, Friderike Kuik and Catalina Martínez Hernández, "The outlook is mixed: the asymmetric effects of weather shocks on inflation", *European Central Bank*, 10 October 2023, https://www.ecb.europa.eu/pub/economic-research/resbull/2023/html/ecb.rb231010~d34f3708ac.en.html.
6. State-based armed conflict is defined as: "a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths in one calendar year." Department of Peace and Conflict Research, *Uppsala Conflict Data Program*, Uppsala University, https://ucdp.uu.se/exploratory, accessed 18 October 2023.
7. The average scoring of the top 10 rankings is nearly a full Likert point lower than last year (4.3 compared to 5.2, out of a possible 7), as is the perceived severity of the top risk (4.7 for **Misinformation and disinformation** in 2024, against 5.5 for **Cost-of-living crisis** in 2023).
8. Synthetic content refers to the content (text, images, videos, audio) that has been generated or manipulated using digital technologies, including artificial intelligence and machine learning.
9. Australian Government Department of Infrastructure, Transport, Regional Development, Communications and the Arts, *New ACMA powers to combat misinformation and disinformation*, https://www.infrastructure.gov.au/have-your-say/new-acma-powers-combat-misinformation-and-disinformation, accessed 19 October 2023; Breton, Thierry, *Fighting disinformation and dissemination of illegal content in the context of the Digital Services Act and in times of conflict*, 18 October 2023, speech delivered at the European Commission, Brussels, https://ec.europa.eu/commission/presscorner/detail/en/SPEECH_23_5126; Bhatnaghar, Dhruv, "India's regulatory response to online misinformation arguably violates international human rights law", *Oxford Human Rights Hub*, 6 June 2023, https://ohrh.law.ox.ac.uk/indias-regulatory-response-to-online-misinformation-arguably-violates-international-human-rights-law/; Bhardwaj, Deeksha, "New digital law may carry a fine for disinformation", *Hindustan Times*, 19 October 2023, https://www.hindustantimes.com/india-news/new-digital-law-may-carry-a-fine-for-disinformation-101695926259938.html.
10. Roberts, Huw and Emmie Hine, "The future of AI policy in China", *East Asia Forum*, 27 September 2023, https://www.eastasiaforum.org/2023/09/27/the-future-of-ai-policy-in-china/.
11. For more information, see Europol, *Facing reality? Law enforcement and the challenge of deepfakes*, 2022, www.europol.europa.eu/cms/sites/default/files/documents/Europol_Innovation_Lab_Facing_Reality_Law_Enforcement_And_The_Challenge_Of_Deepfakes.pdf.
12. Worldometer, *Countries in the world by population (2023)*, accessed 18 October 2023, https://www.worldometers.info/world-population/population-by-country/; Statista, *Internet penetration rate in the European Union from 2019 to 2022, by country*, 26 July 2023, https://www.statista.com/statistics/1246141/eu-internet-penetration-rate/, accessed 18 October 2022; DataReportal, *Digital 2023: Global Overview Report*, 26 January 2023, https://datareportal.com/reports/digital-2023-global-overview-report.
13. Despite the potential benefits that AI can play in content moderation. See: Fredheim, Rolf, Sebastian Bay, Tetiana Haiduchyk, Anton Dek and Martha Stolze, "Social media manipulation 2022/2023: Assessing the ability of social media companies to combat platform manipulation", *NATO Strategic Communications Centre of Excellence*, January 2023; digwatch, *Content policy*, Geneva Internet Platform, https://dig.watch/topics/content-policy, accessed 19 October 2023.
14. Fernando, Christine, "Election disinformation campaigns targeted voters of color in 2020. Experts expect 2024 to be worse", *AP*, 29 July 2023, https://apnews.com/article/elections-voting-misinformation-race-immigration-712a5c5a9b72c1668b8c9b1eb6e0038a; Shih, Gerry, "Inside the vast digital campaign by Hindu nationalists to inflame India", *The Washington Post*, 26 September 2023, https://www.washingtonpost.com/world/2023/09/26/hindu-nationalist-social-media-hate-campaign/; Tang, Didi, "The US warns of a Chinese global disinformation campaign that could undermine peace and stability", *AP*, 4 October 2023, https://apnews.com/article/disinformation-china-us-xinjiang-global-opinion-c9e033f22622841935a2b1bc1060c01b.
15. Groh, Matt, "Detect DeepFakes: How to counteract misinformation created by AI", *MIT*, https://www.media.mit.edu/

projects/detect-fakes/overview/, accessed 18 October 2023; Europol, *Facing reality? Law enforcement and the challenge of deepfakes*, 2022, www.europol.europa.eu/cms/sites/default/files/documents/Europol_Innovation_Lab_Facing_Reality_Law_Enforcement_And_The_Challenge_Of_Deepfakes.pdf.

16. Beyer, Jan Nicola, "The race to detect AI can be won", *Politico*, 10 June 2023, https://www.politico.eu/article/artificial-intelligence-ai-detection-race-can-be-won/.

17. Lawson, Amanda, "A Look at Global Deepfake Regulation Approaches", *Responsible Artificial Intelligence Institute*, 24 April 2023, https://www.responsible.ai/post/a-look-at-global-deepfake-regulation-approaches.

18. The use of AI-powered deepfakes in campaigns is a current area of interest for regulators in many jurisdictions. For example, see Siemons, Jorja, "Deepfake Ads Strain Pre-AI Campaign Laws, Puzzling US Regulators", *Bloomberg Law*, 17 July 2023, https://news.bloomberglaw.com/privacy-and-data-security/deepfake-ads-rock-pre-ai-campaign-laws-puzzling-us-regulators.

19. Jones, Kate, "Legal loopholes and the risk of foreign interference", *European Parliament*, January 2023, https://www.europarl.europa.eu/RegData/etudes/IDAN/2023/702575/EXPO_IDA(2023)702575_EN.pdf.

20. Edelman, *2023 Edelman Trust Barometer*, 18 January 2023, https://www.edelman.com/sites/g/files/aatuss191/files/2023-01/2023%20Edelman%20Trust%20Barometer%20Global%20Report.pdf.

21. Herrmann, Katja-Elisabeth, "Disinformation and Democracy: Navigating the 2023 Political Landscape in Central and Eastern Europe", *Warsaw Institute*, 7 August 2023, https://warsawinstitute.org/disinformation-and-democracy-navigating-the-2023-political-landscape-in-central-and-eastern-europe/; Chacón, Marcos Martínez, "Experts warn against wave of fake news ahead of Mexico's 2024 presidential election", *AP*, 25 August 2023, https://apnews.com/article/mexico-fake-news-social-media-elections-2024-487943383b8f57f5eb0cc9ae1324fcc1.

22. Funk, Allie, Adrian Shahbaz and Kian Vesteinsson, *Freedom on the Net 2023: The Repressive Power of Artificial Intelligence*, Freedom House, 2023, https://freedomhouse.org/report/freedom-net/2023/repressive-power-artificial-intelligence.

23. Legatum Institute, *The 2023 Legatum Prosperity Index: Sixteenth Edition*, 2023, https://www.prosperity.com/download_file/view_inline/4789; Economist Intelligence Unit, *Democracy Index 2022: Frontline democracy and the battle for Ukraine*, 2023, https://www.eiu.com/n/campaigns/democracy-index-2022/; Freedom House, *Freedom on the Net 2022: Myanmar*, https://freedomhouse.org/country/myanmar/freedom-net/2022, accessed 19 October 2023.

24. See *The Westminster Declaration*, an open letter warning of "increasing international censorship that threatens to erode centuries-old democratic norms" (https://westminsterdeclaration.org/, accessed 21 October 2023); Economist Intelligence Unit, *Democracy Index 2022: Frontline democracy and the battle for Ukraine*, 2023, https://www.eiu.com/n/campaigns/democracy-index-2022/.

25. Amnesty International, *International map reveals state-sanctioned violence against protesters worldwide*, 19 September 2023, https://www.amnesty.org/en/latest/news/2023/09/interactive-map-reveals-state-sanctioned-violence-against-protesters-worldwide/, accessed 19 October 2023; Mehrotra, Karishma and Joseph Menn, "How India tamed Twitter and set a global standard for online censorship", *The Washington Post*, 8 November 2023, https://www.washingtonpost.com/world/2023/11/08/india-twitter-online-censorship/; Duque, Estefanny Perez and Esteban Ponce de León, "Mexico's president is weaponizing narratives against media and opposition to combat criticism," *Digital Forensic Research Lab (DFRLab)*, 21 June 2023, https://dfrlab.org/2023/06/21/mexicos-president-is-weaponizing-narratives-against-media-and-opposition-to-combat-criticism.

26. Funk, Allie, Adrian Shahbaz and Kian Vesteinsson, *Freedom on the Net 2023: The Repressive Power of Artificial Intelligence*, Freedom House, 2023, https://freedomhouse.org/report/freedom-net/2023/repressive-power-artificial-intelligence.

27. U.S. Department of State, *Global Engagement Center Special Report: How the People's Republic of China Seeks to Reshape the Global Information Environment*, 28 September 2023, https://www.state.gov/gec-special-report-how-the-peoples-republic-of-china-seeks-to-reshape-the-global-information-environment/.

28. Mehrotra, Karishma and Joseph Menn, "How India tamed Twitter and set a global standard for online censorship", *The Washington Post*, 8 November 2023, https://www.washingtonpost.com/world/2023/11/08/india-twitter-online-censorship/; Economist Intelligence Unit, *Democracy Index 2022: Frontline democracy and the battle for Ukraine*, 2023, https://www.eiu.com/n/campaigns/democracy-index-2022/.

29. Duque and Ponce de León, 21 June 2023; *Economist Intelligence Unit*, 2023.

30. Institute for Economics & Peace, *Global Peace Index 2023*, 2023, https://www.visionofhumanity.org/wp-content/uploads/2023/06/GPI-2023-Web.pdf.

31. Gabuev, Alexander, "Putin is looking for a bigger war, not an off-ramp, in Ukraine", *Financial Times*, 30 July 2023, https://www.ft.com/content/861a8955-924e-4d3e-8c59-73a13403e191?emailId=14610ce2-9840-46c0-9173-de0cd6676cbf&segmentId=22011ee7-896a-8c4c-22a0-7603348b7f22.

32. Euronews, *Russia's Balkan power play continues as Kosovo tensions flare*, 27 September 2023, https://www.euronews.com/2023/09/27/russias-balkan-power-play-continues-as-kosovo-tensions-flare; Henley, Jon, "Slovakia's pro-Russia former PM reaches deal to form coalition government", *The Guardian*, 11 October 2023, https://www.theguardian.com/world/2023/oct/02/slovakias-pro-russia-former-pm-robert-fico-invited-to-form-coalition; Schwarz, Karl-Peter, "In Central Europe, time may not be on Ukraine's side", *GIS*, 26 September 2023, https://www.gisreportsonline.com/r/central-europe-ukraine-support/.

33. Kusa, Iliya, "What Does the Conflict in the Middle East Mean for Ukraine?", *Carnegie Endowment for International Peace*, 8

November 2023, https://carnegieendowment.org/politika/90945.

34. Toosi, Nahal, "Ukraine could join ranks of 'frozen' conflicts, U.S. officials say", *Politico*, 18 May 2023, https://www.politico.com/news/2023/05/18/ukraine-russia-south-korea-00097563.

35. Rosenzweig-Ziff, Dan, "Here's how world leaders are reacting to the Israel-Gaza war", *The Washington Post*, 11 October 2023, https://www.washingtonpost.com/world/2023/10/10/israel-hamas-war-global-reaction/; Cohen, Patricia, "Risk of a Wider Middle East War Threatens a 'Fragile' World Economy", *The New York Times*, 1 November 2023.

36. Kusa, 8 November 2023.

37. Faulconbridge, Guy, "Blood and billions: the cost of Russia's war in Ukraine", *Reuters*, 23 August 2023, https://www.reuters.com/world/europe/blood-billions-cost-russias-war-ukraine-2023-08-23/; Reynolds, Stefani, "The Past, Present, and Future of U.S. Assistance to Ukraine: A Deep Dive into the Data", *Center for Strategic & International Studies*, 26 September, 2023, https://www.csis.org/analysis/past-present-and-future-us-assistance-ukraine-deep-dive-data.

38. Aboudouh, Ahmed, "China's approach to the war in Gaza is not anti-Israel. It's designed to contain the US", *Chatham House*, 25 October 2023, https://www.chathamhouse.org/2023/10/chinas-approach-war-gaza-not-anti-israel-its-designed-contain-us.

39. Reuters, *Taiwan says 37 Chinese military aircraft entered its air defence zone*, 8 June 2023, https://www.theguardian.com/world/2023/jun/08/taiwan-says-37-chinese-military-aircraft-entered-its-air-defence-zone; Reuters, *Chinese blockade of Taiwan would likely fail*, Pentagon officials say, 19 September 2023, https://www.reuters.com/world/asia-pacific/chinese-blockade-taiwan-would-likely-fail-pentagon-official-says-2023-09-19/; Institute for Economics & Peace, 2023.

40. Beals, Emma and Peter Salisbury, "A World at War: What Is Behind the Global Explosion of Violent Conflict?", *Foreign Affairs*, 30 October 2023, https://www.foreignaffairs.com/africa/world-war/.

41. For example, see Nadhim, Firdews, "A Flash Point: Where is the Kirkuk Conflict Heading?", *Emirates Policy Centre*, 6 October 2023, https://epc.ae/en/details/scenario/a-flash-point-where-is-the-kirkuk-conflict-heading-.

42. Legatum Institute, 2023; Szayna, Thomas S., et. al., *Conflict Trends and Conflict Drivers: An Empirical Assessment of Historical Conflict Patterns and Future Conflict Projections*, Rand Corporation, 2017, https://www.rand.org/pubs/research_reports/RR1063.html.

43. Pinto, Teresa Nogueira, "Is the Third Congo War approaching?", *GIS*, 12 April 2023, https://www.gisreportsonline.com/r/drc-war/; Africanews, *The UN worries about a risk of 'direct confrontation' between DRC and Rwanda*, 18 October 2023, https://www.africanews.com/2023/10/18/the-un-worries-about-a-risk-of-direct-confrontation-between-drc-and-rwanda/.

44. Ndiaga, Thiam, "Burkina Faso marks official end of French military operations on its soil", *Reuters*, 20 February 2023, https://www.reuters.com/world/africa/burkina-faso-marks-official-end-french-military-operations-its-soil-2023-02-19/#:~:text=In%20January%2C%20Burkina%20Faso%20gave,the%20country%20to%20defend%20itself; Reuters, *Withdrawal of French troops from Niger nearly half-complete, colonel says*, 20 October 2023, https://www.reuters.com/world/africa/withdrawal-french-troops-niger-nearly-half-complete-colonel-says-2023-10-20/; Schofield, Hugh, "France calls time on anti-jihadist Operation Barkhane in Sahel", *BBC*, 9 November 2022, https://www.bbc.com/news/world-europe-63575602.

45. Davies, Shawn, Therese Pettersson and Magnus Öberg, "Organized violence 1989-2022 and the return of conflicts between states?", *Journal of Peace Research*, vol. 60, no. 4, 13 July 2023, pp. 691-708, https://journals.sagepub.com/doi/10.1177/00223433231185169#:~:text=of%20all%20one%2Dsided%20violence,%2C%20non%2Dstate%20fatalities%20decreased.

46. Google Trends, *Search term: Recession*, 2023, https://trends.google.com/trends/explore?date=all&q=recession&hl=en, accessed 5 December 2023.

47. Harris, Karen, Dunigan O'Keeffe, Jeffrey Crane and Jason Heinrich, "Global Recession Watch: The Latest Data", *Bain & Company*, 27 September 2023, https://www.bain.com/insights/global-recession-watch-latest-data-snap-chart/; Mena, Bryan, "The US economy grew at a blistering rate despite high interest rates", *CNN Business*, 26 October 2023, https://edition.cnn.com/2023/10/26/economy/us-economy-third-quarter-gdp/index.html#:~:text=The%20US%20economy%20expanded%20at,the%20Commerce%20Department%20reported%20Thursday.

48. Sen, Conor, "The Case for Two Fed Rate Cuts in Early 2024 Is Building", *Bloomberg*, 17 November 2023, https://www.bloomberg.com/opinion/articles/2023-11-17/the-case-for-two-fed-rate-cuts-in-early-2024-is-building.

49. IMF, *Inflation rate, average consumer prices*, 2023, https://www.imf.org/external/datamapper/PCPIPCH@WEO/OEMDC, accessed 4 December 2023; Trading Economics, *China Core Inflation Rate*, https://tradingeconomics.com/china/core-inflation-rate, accessed 5 December 2023; Trading Economics, *European Union Core Inflation Rate*, https://tradingeconomics.com/european-union/core-inflation-rate, accessed 5 December 2023; Trading Economics, *United States Core Inflation Rate*, https://tradingeconomics.com/united-states/core-inflation-rate#:~:text=US%20Annual%20Core%20Inflation%20Rate,4.3%25%20in%20the%20prior%20month, accessed 5 December 2023.

50. S&P Global, *PMI by S&P Global*, 2023, https://www.spglobal.com/marketintelligence/en/mi/products/pmi.html, accessed 5 December 2023.

51. Grobe, Stefan, "Brussels cuts EU growth forecast again to just 0.6% this year", *Euronews*, 15 November 2023, https://www.euronews.com/my-europe/2023/11/15/brussels-cuts-eu-growth-forecast-again-to-just-06-this-year#:~:text=Europe's%20economy%20will%20grow%20less,than%20its%20previous%20summer%20projections; European Commission, *Economic forecast for Germany*, 15 November 2023, https://economy-finance.ec.europa.eu/economic-surveillance-eu-economies/germany/economic-forecast-germany_en#:~:text=Economic%20activity%20in%20

Germany%20is,weighing%20on%20consumption%20and%20investment., accessed 21 November 2023.

52. Saul, Derek, "S&P 500 Dips To 5-Month Low As Earnings Season Highlights Struggles of 'Magnificent 7' Tech Stocks To Keep Rally Afloat", *Forbes*, 26 October 2023, https://www.forbes.com/sites/dereksaul/2023/10/26/sp-500-dips-to-5-month-low-as-earnings-season-highlights-struggles-of-magnificent-7-tech-stocks-to-keep-rally-afloat/.

53. World Bank, *Conflict in Middle East Could Bring 'Dual Shock' to Global Commodity Markets* [Press release], 30 October 2023, https://www.worldbank.org/en/news/press-release/2023/10/26/commodity-markets-outlook-october-2023-press-release; Alvarez, Jorge, Mehdi Benatiya Andaloussi and Martin Stuermer, "Geoeconomic Fragmentation Threatens Food Security and Clean Energy Transition", *IMF Blog*, 3 October 2023, https://www.imf.org/en/Blogs/Articles/2023/10/03/geoeconomic-fragmentation-threatens-food-security-and-clean-energy-transition.

54. Cash, Joe and Ryan Woo, "IMF upgrades China's 2023, 2024 GDP growth forecasts", *Reuters*, 7 November 2023, https://www.reuters.com/world/china/imf-upgrades-chinas-2023-2024-gdp-growth-forecasts-2023-11-07/.

55. Tan, Clement, "Moody's cut China's credit outlook to negative on rising debt risks", *CNBC*, 5 December 2023, https://www.cnbc.com/2023/12/05/moodys-cut-chinas-credit-outlook-to-negative-on-rising-debt-risks.html.

56. Rahim, Saad, *Macro & Markets*, speech presented at World Economic Forum, Geneva, November 2023.

57. Durfee, Don, Kevin Yao and Eduardo Baptista, "China's high-tech manufacturing loans raise fears of wave of cheap exports", *Reuters*, 13 November 2023, https://www.reuters.com/world/china/with-manufacturing-loans-rising-can-china-avoid-new-supply-glut-2023-11-12/.

58. Goldman Sachs, *The S&P 500 Index is forecast to return 6% in 2024*, 20 November 2023, https://www.goldmansachs.com/intelligence/pages/the-sp-500-index-is-forecast-to-return-six-percent.html#:~:text=The%20S%26P%20500%20index%20is%20expected%20to%20rise%20to%204700,already%20reflected%20in%20stock%20prices; McDougall, Mary, "Investors reduce bets on interest rate cuts in 2024", *Financial Times*, 6 January 2024, https://www.ft.com/content/39596533-a41c-43a6-a639-8d5b9605be3e.

59. When adjusted for accounting relating to student loans. See: Rappeport, Alan and Jim Tankersley, "U.S. Deficit, Pegged at $1.7 Trillion, Effectively Doubled in 2023", *New York Times*, 20 October 2023, https://www.nytimes.com/2023/10/20/business/treasury-report-shows-1-7-trillion-deficit.html.

60. The Economist, *The pandemic has broken a closely followed survey of sentiment*, 7 September 2023, https://www.economist.com/graphic-detail/2023/09/07/the-pandemic-has-broken-a-closely-followed-survey-of-sentiment.

61. St Louis Fed, Table 3.2. *Federal Government Current Receipts and Expenditures: Quarterly*, https://fred.stlouisfed.org/release/tables?rid=53&eid=5272#snid=5308, accessed 21 November 2023; Egan, Matt, "US debt: Federal interest payments could soon exceed military spending", *CNN*, 1 November 2023, https://edition.cnn.com/2022/11/01/economy/inflation-fed-debt-military/index.html.

62. Dolan, Mike, "As US election looms, investors fear for fiscal peace", *Reuters*, 4 October 2023, https://www.reuters.com/markets/us/us-election-looms-investors-fear-fiscal-peace-mike-dolan-2023-10-04/; Rodden, Jonathan, et. al., "Polarised elections raise economic uncertainty", *CEPR*, 22 December 2020, https://cepr.org/voxeu/columns/polarised-elections-raise-economic-uncertainty.

63. Kraemer, Nick W. and Brenden J Kugle, "Default, Transition, and Recovery: Higher Rates For Even Longer Could Push The U.S. Speculative-Grade Corporate Default Rate To 5% By September 2024", *S&P Global*, 16 November 2023, https://www.spglobal.com/ratings/en/research/articles/231116-default-transition-and-recovery-higher-rates-for-even-longer-could-push-the-u-s-speculative-grade-corporat-12916045.

64. Goldman Sachs, *Top of Mind: Corporate Credit Concerns*, Global Macro Research Issue 121, 10 August, 2023, https://www.goldmansachs.com/intelligence/pages/top-of-mind/corporate-credit-concerns/report.pdf.

65. Reuters, "IMF-World Bank meetings: Which developing countries face debt crisis?", *Reuters*, 6 October 2023, https://www.reuters.com/markets/developing-countries-facing-debt-crunch-2023-10-04/.

66. Rogoff, Kenneth, "Why have emerging markets not spiralled into a debt crisis?", *The Guardian*, 2 November 2023, https://www.theguardian.com/business/2023/nov/02/emerging-markets-debt-crisis-defaults.

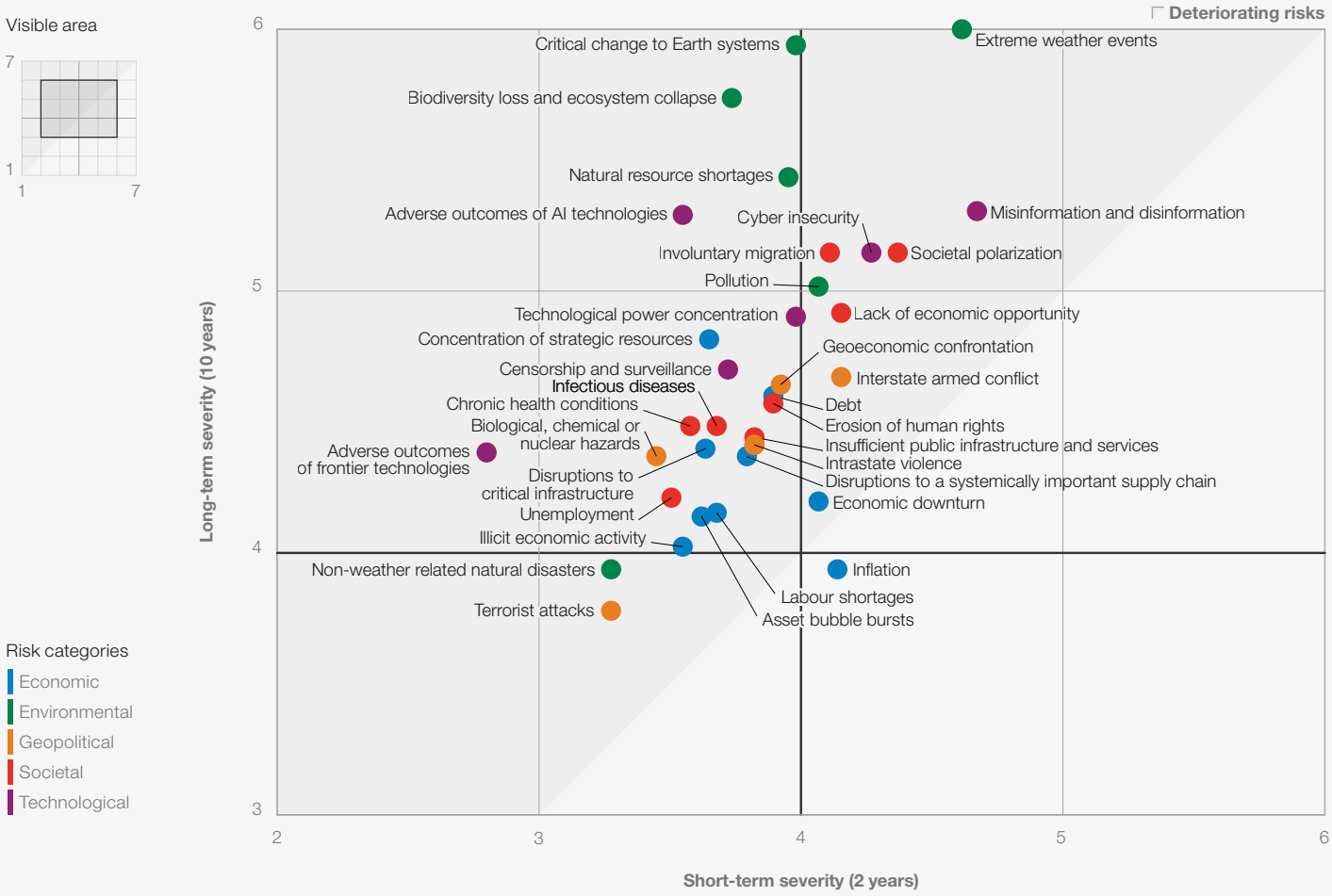
2 Global Risks 2034: Over the limit

This chapter focuses on the longer-term horizon, highlighting risks that may become the most severe over the next decade. While the short-term risks landscape described in Chapter 1 may, if not addressed, contribute to these negative, longer-term outcomes, attention, planning and action today can still set us on a markedly more positive trajectory.

2.1 The world in 2034

The next decade will usher in a period of significant change, stretching our adaptive capacity to the limit. GRPS respondents are far less optimistic about the outlook for the world over the longer term than the short term. As noted in Chapter 1, nearly two-thirds (63%) of respondents to the GRPS predict a turbulent or stormy outlook, with upheavals and an elevated risk of global catastrophes at best (Chapter 1, Figure 1.1).

FIGURE 2.1 **Relative severity of risks over a 2 and 10-year period**



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Severity was assessed on a 1-7 Likert scale [1 – Low severity, 7 – High severity].

Comparing the two- and 10-year time frames reveals a deteriorating global risks landscape. Thirty-three of the 34 global risks increase in severity score over the longer-term, reflecting respondents' concerns about the heightened frequency or intensity of these risks over the course of the 10-year horizon (Figure 2.1).

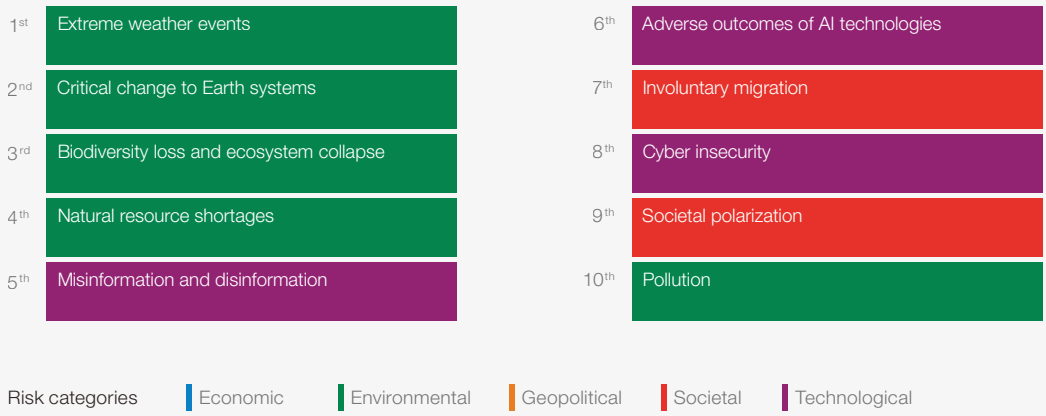
Environmental and technological risks are among those expected to deteriorate the most in severity over this period and dominate the longer-term global risks landscape. Nearly all environmental risks are included in the top 10 rankings for the decade ahead (Figure 2.2). **Extreme weather events** are anticipated to become even more severe, as the top ranked risk over the next decade.

Mirroring last year's results, the perceived severity of **Biodiversity loss and ecosystem collapse** worsens the most of all risks, increasing by a full two Likert points, rising from #20 in the short-term to 3rd place. **Critical change to Earth systems** (#2) and **Natural resource shortages** (#4) are also among those perceived to materially deteriorate, contributing to their entrance into the top 10 ranking of risks over the next 10 years, while the related risk of **Involuntary migration** rises one place to #7 over the next decade. **Pollution** remains in 10th place. In contrast, **Non-weather related natural disasters** (#33) falls close to the bottom of rankings over both time horizons, likely reflecting the nature of such a tail risk and the often geographically isolated nature of these events.

FIGURE 2.2

Global risks ranked by severity over the long term (10 years)

"Please estimate the likely impact (severity) of the following risks over a 10-year period."



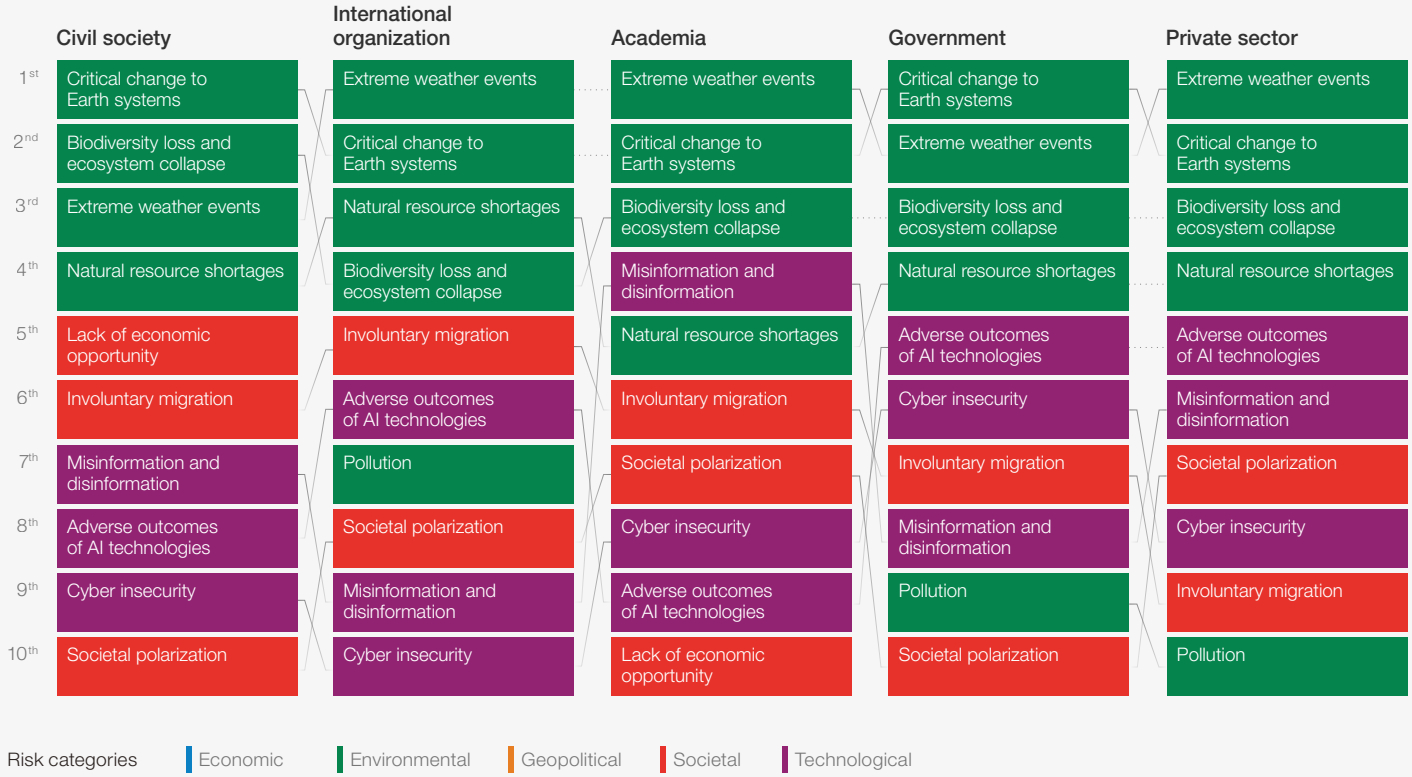
Source
World Economic Forum Global Risks Perception Survey 2023-2024.

These results highlight divergent perceptions around the comparative urgency of environmental risks. **Biodiversity loss and ecosystem collapse** (#20 in the two-year time frame) and **Critical change to Earth systems** (#11 in the two-year time frame) feature in the longer-term rankings for all stakeholder groups (Figure 2.3). However, it appears that younger respondents prioritize these risks as a more urgent concern, ranking them higher in the two-year period compared to other age groups (Chapter 1, Figure 1.6). Private-sector respondents, unlike those from civil society or government, feel that most environmental risks will materialize over a longer time frame (Figures 1.5 and 2.3). This dissonance in perceptions among key decision-makers could mean the time to act may soon pass, without sufficient progress made (Chapter 2.3: A 3°C world).

Concerns around the possible implications of recent technological developments are also clearly evident. **Adverse outcomes of AI technologies** is anticipated to experience one of the largest deteriorations in severity. It rapidly rises from #29 over the two-year period to #6 over the 10-year period, likely reflecting the possible systemic or even existential nature of related risks as AI penetrates economic, social and political systems (Chapter 2.4: AI in charge). Despite worsening severity scores over this time frame, the most prominent technological risks in the short term, **Misinformation and disinformation** and **Cyber insecurity**, drop in ranking but remain in the top 10 over the longer-term, at 5th and 8th place, respectively. The related risk of **Societal polarization** also drops from 3rd place in the short term to 9th place over the longer-term horizon.

Despite a small increase in perceived severity, the societal risk of **Lack of economic opportunity** falls from #6 over two years to #11 in the global rankings; however, it makes the top 10 rankings for both civil society and academia respondents over the longer-term horizon (Figure 2.3). The divergence from perceptions of the public sector – which do not rank this risk in the top 10 – coupled with the long-term, cumulative effects of a low-opportunity world on the next generation make this a risk to

FIGURE 2.3 **Severity by stakeholder over the long term (10 years)**



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

watch over the coming years (**Chapter 2.5: End of development?**). The related economic risk of **Illicit economic activity** is perceived to be of lower severity over both time periods. However, it is seen to be driven by several risks ranked in both the short- and longer-term top 10, suggesting it may be an underappreciated risk over the coming decade (**Chapter 2.6: Crime wave**).

Inflation is the only risk with a severity score predicted to improve over the next decade, and it moves from #7 to #32. In fact, most economic risks fall rapidly in comparative rankings of risk perception over the next decade, with, for example, **Economic downturn** dropping from #9 to #28 over the longer-term horizon. This may reflect that **Geoeconomic confrontation** (#16), a key driver of many of economic risks, has decreased significantly in perceived severity over both time horizons when compared to last year's scores.[1]

Indeed, geopolitical risks are noticeably absent from the top 10 rankings over the next decade. **Interstate armed conflict** exhibits the same long-term severity score as last year but falls from 5th to 15th place over the 10-year period. Similar to last year, **Terrorist attacks** sits in the bottom left quadrant of Figure 2.1, indicating lower perceived severity over both the short and long term. While the latest available data indicates that overall lethality remains contained compared to other risks, at 6,701 global fatalities in 2022, terrorism has the potential to spark broader conflict and unrest, such as the current conflict in the Middle East.[2]

2.2 Structural forces

Across several spheres – geostrategic, technological, climatic and demographic – we are transitioning to a new underlying set of conditions and parameters. These shifts form the backdrop to the global risks that will play out over the next decade. This year, the *Global Risks Report* introduces the concept of **structural forces** to our analysis of global risks over the next decade.[3] We define these as the **long-term shift in the arrangement of, and relation between, the systemic elements of the global landscape**. These forces have the potential to materially impact the speed, spread or scope of global risks, and will be influenced in turn by each other.

There are four structural forces that are the most materially influential to the global risks landscape. These are summarized in Box 2.1[4] and include: technological acceleration; geostrategic shifts; climate change; and demographic bifurcation. While all four forces have global ramifications, some, such as the changing climate, are more multi-directional in their development, which could allow for several potential futures. Similarly, while all represent longer-term shifts to the structural landscape, some have the potential to manifest more quickly due to underlying variables. Geostrategic shifts, for example, may lead to a lack of alignment between powers, while technological acceleration can foster new discoveries that transform systems rapidly.

BOX 2.1 Structural forces

Technological acceleration relates to development pathways of emerging technologies.

A subset of key technologies, including general-purpose AI, is anticipated to experience significant, accelerated development over the next 10 years.

Given the sheer scope of frontier development and general-purpose applications, multiple trajectories may arise. Quantum computing, for example, could allow compute power to leapfrog and, alongside anticipated benefits, rapidly give rise to novel global risks. Technological experimentation, such as brain-computer interfaces, could blur the boundaries between technology and humanity, to unknown effects.

Climate change encompasses the range of possible trajectories of global warming and consequences to Earth systems.

Climate change is characterized as a systemic shift in this year's analysis because the threshold of 1.5°C above pre-industrial temperatures, specified in the 2015 Paris Agreement, is anticipated to be crossed by the early to mid-2030s.

However, global warming pathways will still be influenced by the speed at which decarbonization takes place, and deployment of climate solutions. Degradation of environmental systems could also accelerate estimated trajectories, to the extent that they "naturally" contribute to global warming and related effects (such as the reversal of carbon sinks).

Geostrategic shifts refers to evolving sources and concentration of geopolitical power.

This, in turn, influences the alignment of the geopolitical order, impacting related alliances and dynamics, as well as the offensive and defensive projection of soft and hard power over the next decade. Economic power is becoming more diffuse, for instance, reflecting changes in currency dependencies, sources of energy, available capital and size of consumer markets. Concentrations of economic and military power are also highly related to technological and resource assets.

While alternate futures are possible, an array of powers will likely assert their dominance on the global stage in a multipolar world.

Demographic bifurcation refers to changes in the size, growth and structure of populations around the world.

The demographic divide is widening. Polarizing growth at the top and bottom end of population pyramids, and between countries and regions, will have material implications for related socioeconomic and political systems.

Asia continues to dominate in terms of absolute population growth. Most countries will continue to grapple with an ageing population, combining a long-term rise in life expectancy with declining fertility rates. In contrast, Africa faces a radically different policy challenge: by 2030, young Africans are expected to constitute 42% of global youth.

Source
World Economic Forum *Global Risks Report 2024*.

Note
Refer to **Appendix A: Definitions and Global Risks List** for further detail.

Elizabeth Lies, Unsplash

As these structural forces interact, we consider four emerging global risks and how they may evolve over the next decade:

- **Earth systems**: all stakeholder groups agree that **Critical change to Earth systems** (#2) poses one of the most severe risks faced over the next decade. Could anthropogenic (in)action and climate change push select Earth systems past the tipping point, catapulting towards a 3°C world to which we cannot adapt?

- **AI technologies**: a number of **Adverse outcomes of AI technologies** (#6) are anticipated to rapidly rise over the next decade. Could powerful frontier technologies destabilize global economic and security dynamics and put tech – and its concentrated owners – in charge?

- **Human development**: featuring as a top risk over the two-year period and just out of the top 10 over the next decade, **Lack of economic opportunity** (#11) is a persistent but lower priority risk for global decision-makers over the longer-term horizon. Could closing developmental pathways leave vulnerable populations and countries, and the next generation, with little hope for a brighter future?

- **Organized crime**: **Illicit economic activity** (#31) is one of the lowest-ranked risks in the global risks network, but the convergence of several top-ranked risks could turn an under-the-radar chronic risk into a pressing crisis. Will transnational crime networks subsume fragile states and vulnerable populations, capitalizing on highly disruptive technologies and weakened state capacity?

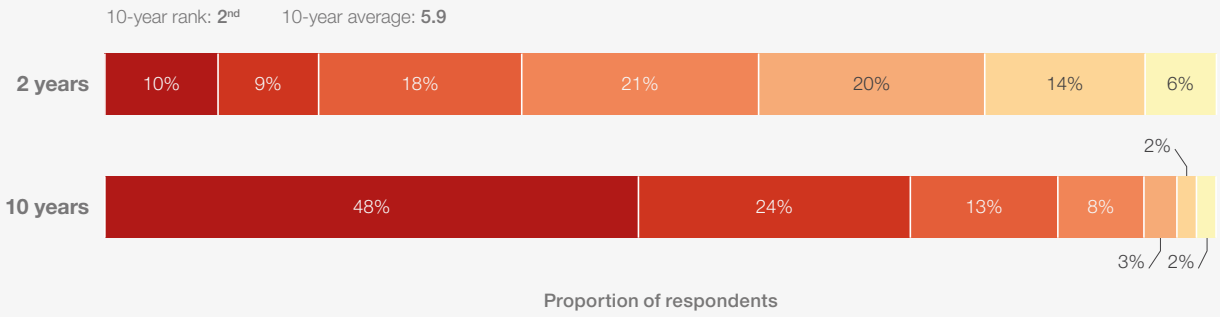
The futures highlighted in each of the following sections is only one of a multiplicity of possibilities, and we highlight opportunities to shape a more positive path forward by acting today.

2.3 A 3°C world

FIGURE 2.4

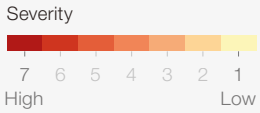
Severity score: Critical change to Earth systems

Long-term, potentially irreversible and self-perpetuating changes to critical planetary systems, as a result of breaching a critical threshold or 'tipping point', at a regional or global level, that have abrupt and severe impacts on planet health or human welfare. Includes, but is not limited to: sea level rise from collapsing ice sheets; carbon release from thawing permafrost; and disruption of ocean or atmospheric currents.



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Severity was assessed on a 1-7 Likert scale [1 – Low severity, 7 – High severity]. The percentages in the graphs may not add up to 100% because figures have been rounded up/down.



- Thresholds for large-scale and self-perpetuating changes to planetary systems are likely to be exceeded within the next decade.
- The pace and scale of climate-change adaptation efforts are already falling short, with societies increasingly exposed to environmental impacts to which they may be unable to adapt, fueling displacement and migration.
- Nascent mitigation technologies, while attractive in some respects, could have unintended environmental and social consequences, with implications for legal liabilities, geopolitical dynamics and the climate agenda.

Current trajectories of global warming mean that at least one "climate tipping point"[5] (or the threshold at which long-term, potentially irreversible and self-perpetuating change to a planetary system occurs) could be passed within the next 10 years.[6] Under nearly all Intergovernmental Panel on Climate Change (IPCC) scenarios, the 1.5°C threshold will be crossed in the early 2030s.[7] Based on the latest research, at least four systems are considered likely to tip at 1.5°C (Figure 2.5): low-latitude coral reefs die-off (high confidence), collapse of the Greenland and West Antarctic Ice Sheets (high confidence), and abrupt thawing of permafrost (medium confidence).[8] There is also new evidence to suggest that the North Atlantic Subpolar Gyre circulation could additionally be placed at risk at 1.5°C, while the boreal forest, mangroves and seagrass meadows will start to become vulnerable.[9]

With **Critical change to Earth systems** a new entrant to the global risks list this year, all stakeholder groups agreed that it poses one of the most severe risks faced over the next decade (Figure 2.3). While these changes emerge comparatively silently, with their effects building over the long term, impacts are felt on a systemic level, intensifying impacts to food, water and health security. Yet as the need for climate solutions become more urgent, the risk of technology-induced tipping points – such as from geoengineering – will also grow.

Breached thresholds

It remains challenging to define climate tipping points and assess their likelihood. However, the latest research increasingly suggests that long-term changes to planetary systems will be triggered over the next decade, possibly without the world realizing that the point of no return – the point of intervention - has passed. Importantly, most of the IPCC scenarios allow for temperature overshoot – however, the breaching of critical thresholds will trigger long-lasting and fundamental changes,[10] with a fresh set of climate and environmental conditions that could rewrite our collective understanding of the risks posed by climate change.

While recent research suggests that the trajectory of 1.5°C may be locked in regardless of action

FIGURE 2.5 | **Examples of global and regional tipping points**

Source
McKay, et. al., 2022; OECD, 2022; Lenton, et. al., 2023.

taken today, estimates relating to climate tipping points may be conservative or even optimistic.[11] Most climate models, whether public, private or academic, do not adequately capture non-linear impacts. For example, the transition of the Amazon into savannah will likely be caused by a combination of climate and ecological impacts, possibly transitioning well before 3°C of warming (Figure 2.5), due to land-use changes and deforestation.[12] Most models also fail to capture the interconnectedness of these systems: how could cascading effects from the passing of one tipping point lower the critical threshold for others? For example, melting of the Greenland Ice Sheet could lead to an influx of fresh water, destabilizing the Atlantic Meridional Overturning Circulation (AMOC) and creating conditions that melt the West Antarctic Ice Sheet faster.[13]

Early warning signs suggest that several systems, including the Greenland Ice Sheet, AMOC and Amazon rainforest, are losing resilience,[14] and it is possible that some critical thresholds have already been crossed.[15] Indeed, not all tipping points will be observed. Some will manifest as distinct changes, such as an ocean heatwave that precipitates the collapse of coral reefs. The "edge" of these thresholds can be sharp – for example, the point at which the Greenland Ice Sheet reflects less heat than it absorbs. But not all tipping points will be visible at the current level of modelling and monitoring. The comparatively slow velocity of most critical changes to Earth systems – time between the tipping point and when impacts are fully felt – means that most will be silent, with impacts gradually building over the longer-term.

As such, climate tipping points are risks that are well-known but not necessarily well-understood. GRPS results indicate that the impacts of climate change are well-recognized by global decision-makers. However, if critical changes to Earth systems are seen as longer-term risks – with likelihoods or impacts underestimated, or simply dismissed as too uncertain – intervention may come too late to prevent cascading planetary change, hindering our ability to fully adapt to related impacts.

Limits to climate adaptation

Over the next 10 years, many economies could remain largely unprepared for these non-linear impacts of climate change. This is not the first time that abrupt changes to our planetary system have

BOX 2.2 | **The next global shock?**

Collapse of the AMOC

Research suggests that the tipping point of the Atlantic Meridional Overturning Circulation (AMOC) is "possible" at 1.4°C, but only "likely" at 4.0°C.[16] However, a profound shift at much lower temperatures cannot be ruled out.[17] While timescales and temperature thresholds are heavily debated among the scientific community, there is some evidence to suggest that the circulation of this current is at its weakest point in over 1,000 years, and may be closer than anticipated to a critical transition.[18] A collapse of this system would wholly reorganize ocean circulation, resulting in global and regional cooling, and a redistribution of heat, rainfall and sea ice. Sea levels and agricultural, marine and terrestrial systems would be impacted, and global food security compromised.[19]

occurred: tipping points in our planet's history have led to alternative stable states to which life has adapted over time.[20] Rather, the risk is posed to socioeconomic structures: is the alternate state one to which we as human societies can adapt?

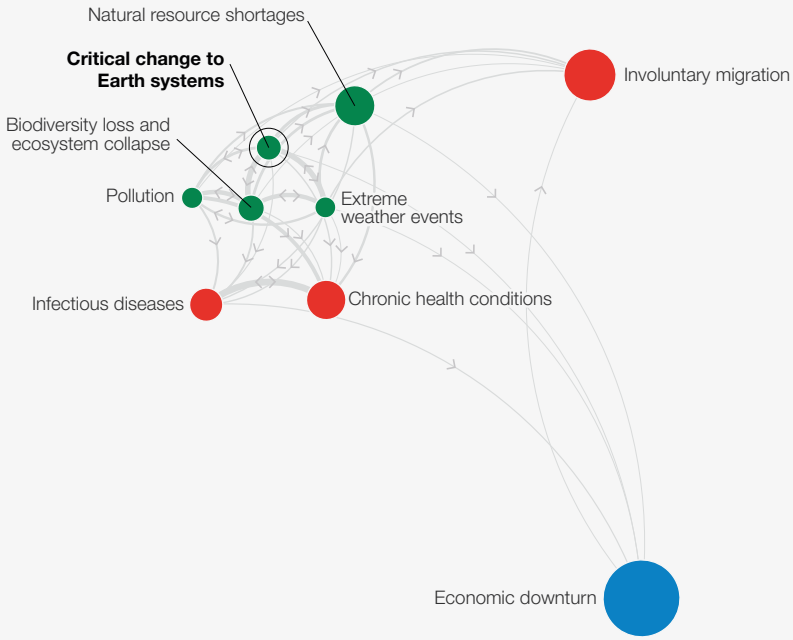
Climate tipping points could result in a socio-environmental crisis, intensifying current risks. GRPS respondents foresee a highly related cluster of environmental risks, with bilateral connections to **Critical change to Earth systems.** This includes **Biodiversity loss and ecosystem collapse**, **Extreme weather events** and **Pollution**, with strong potential to lead to **Natural resource shortages** (Figure 2.6). Alongside environmental impacts, several GRPS respondents also highlight possible socioeconomic implications, including **Involuntary migration**, **Chronic health conditions**, **Infectious diseases** and **Economic downturn**. Indeed, as explored in last year's Global Risks Report (Chapter 2.2: Natural ecosystems), this nexus of socioenvironmental risks have the potential to accelerate climate change, through the release of emissions, and amplify related impacts, threatening climate-vulnerable populations.

The collective ability to adapt to these impacts may be overwhelmed by several factors.

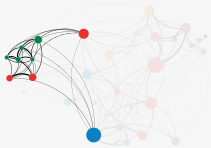
FIGURE 2.6

Climate tipping points

Risk interconnections: **Critical change to Earth systems**



Reference



Nodes
Risk influence
High
Medium
Low

Edges
Relative influence
High
Medium
Low

Risk categories: Economic | Environmental | Geopolitical | Societal | Technological

Source
World Economic Forum Global Risks Perception Survey 2023-2024.

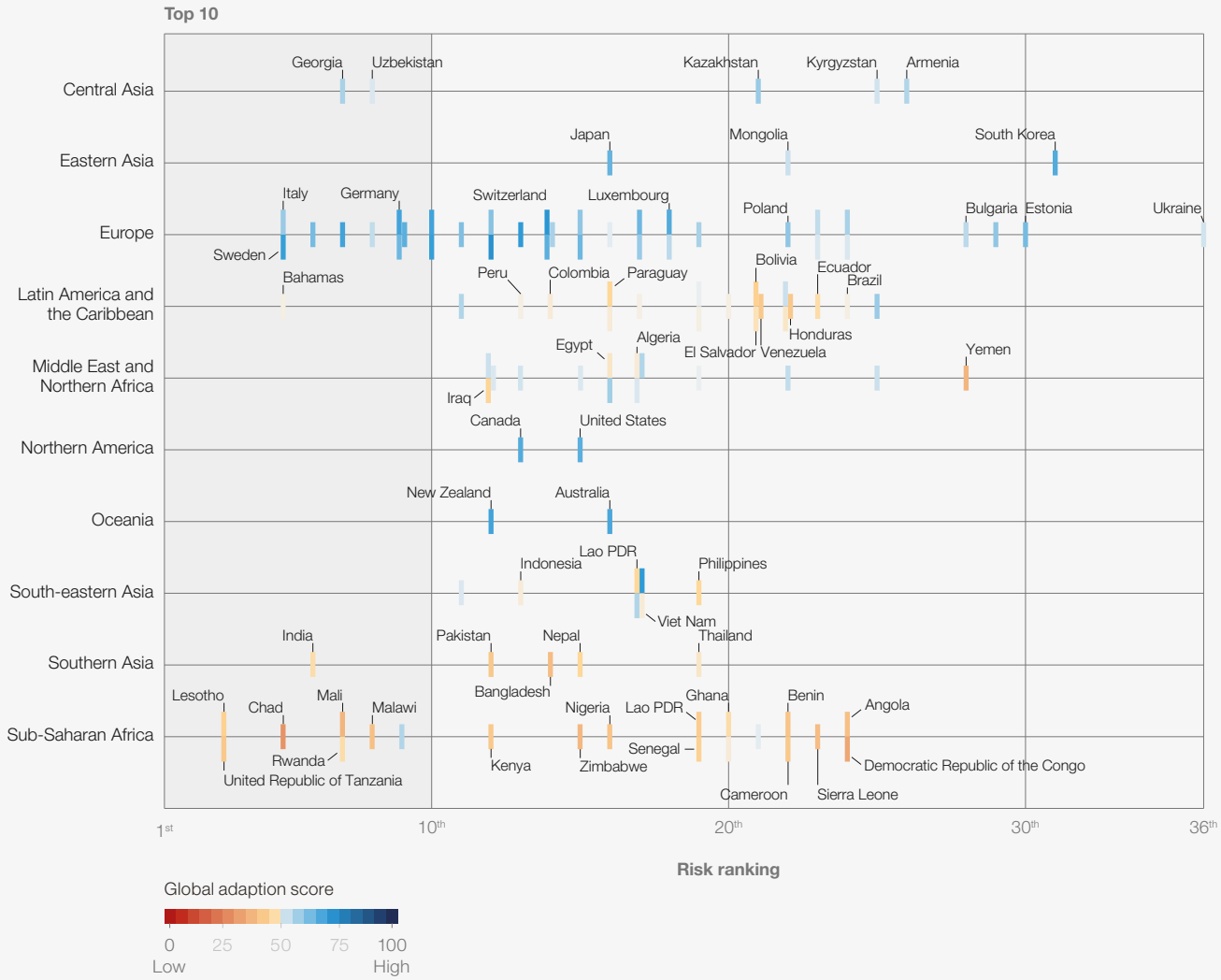
First, adaptation efforts are unlikely to radically progress over the next decade, particularly in the most climate-vulnerable economies. Despite persistent and extreme weather impacts, **Failure of climate-change adaptation** was a top-five risk in only six countries for the two-year time frame (compared to 16 in 2023). Figure 2.7[21] presents a regional comparison of the latest Executive Opinion Survey (EOS) results, highlighting a number of climate-vulnerable markets across developing regions (shaded orange),[22] but where a failure to adapt to climate change is not a relatively high concern for some. This likely reflects far more pressing challenges, including state fragility, poverty and conflict – such as in Yemen and the Democratic Republic of the Congo – but could hinder climate-adaptive action from being undertaken, in advance of these impacts intensifying further.

Indeed, adaptation efforts in developing countries could be constrained by finances, paired with the sheer scope of infrastructure investment needs over the next decade (Figure 2.8).[23] As the fragility of highly-exposed, low-resilience states rises, internal conflicts and border clashes over resources could become more common (**Chapter 1.4: Rise in conflict**),[24] and many countries could increasingly be seen as too high risk to operate or invest in (**Chapter 2.5: End of development?**), eroding adaptive capacities further. Related socioeconomic tipping points – such as land abandonment or the exit of investment and insurance in high-risk regions – could therefore occur even before planetary tipping points are demonstrably breached.[25] Advanced economies will not be insulated from some of these effects. For example, in Australia nearly 521,000 homes are predicted to be uninsurable by 2030 due to the risks of extreme weather.[26]

FIGURE 2.7

Adaptation readiness

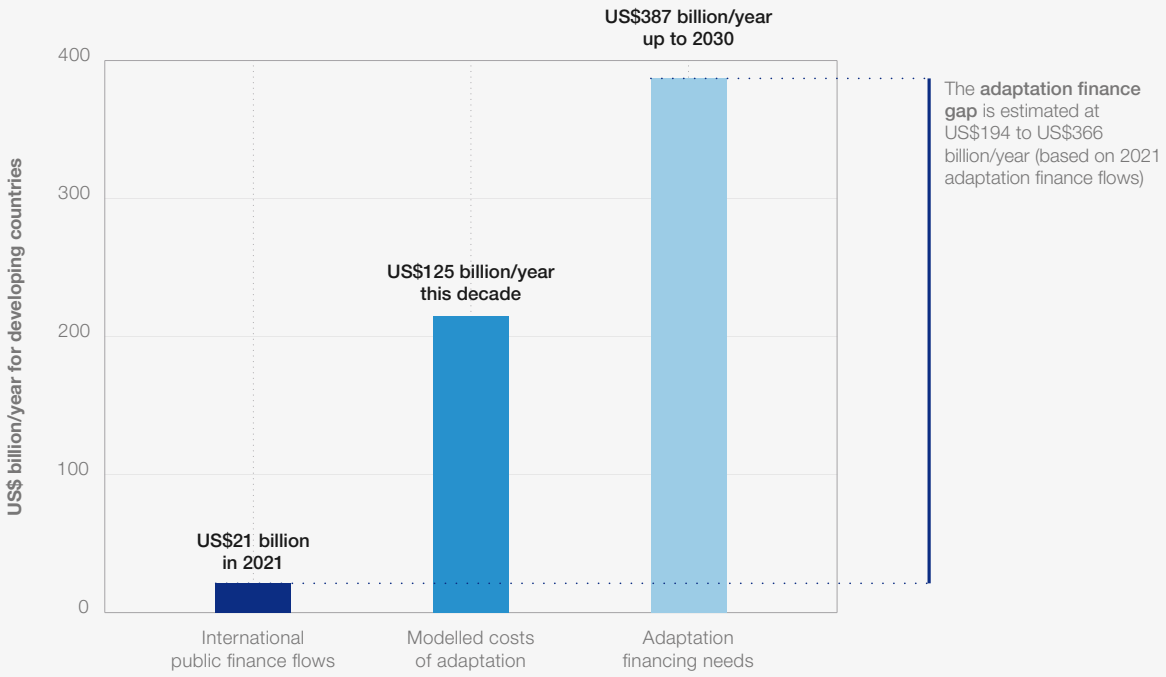
"Which five risks are the most likely to pose the biggest threat to your country in the next two years?"



Source
ND-Gain Country Index; World Economic Forum Executive Opinion Survey 2023.

Note
The colour of the data points reflects the ND-GAIN Country Index (2021), which summarizes a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience. A higher score (blue) indicates a higher degree of overall readiness. The x-axis displays the comparative ranking of **Failure to adapt to climate change** in national risk perceptions, as captured by the EOS survey.

FIGURE 2.8 **Adaptation finance gap**



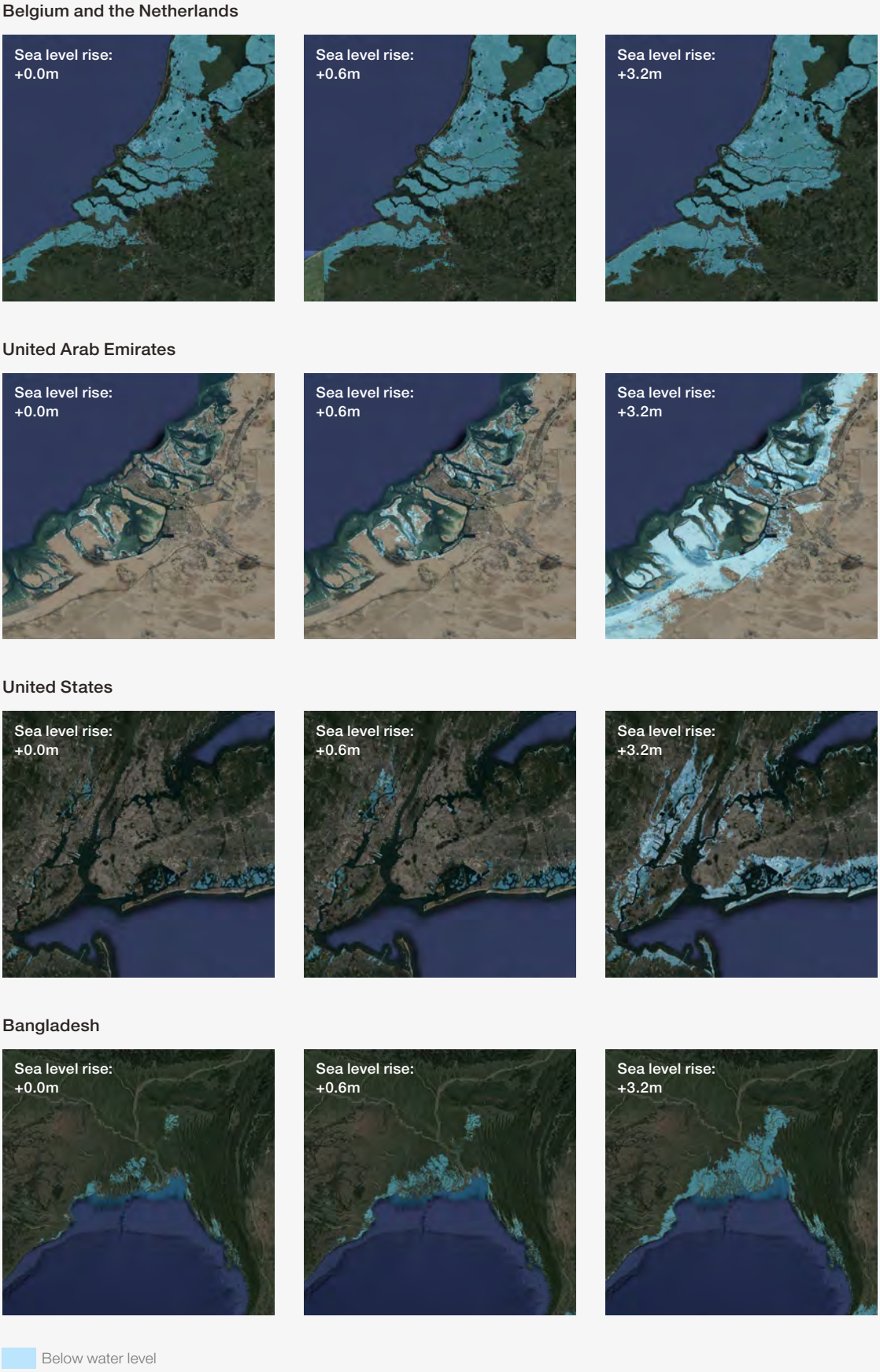
Source
UN Adaptation Gap Report, 2023.

In addition, long lead times for developing appropriate infrastructure may challenge readiness for regional or local changes that manifest abruptly. For example, the collapse of coral reef systems – which absorb more than 90% of wave energy – could leave coastal communities vulnerable to storm surges, potentially doubling annual flood damage on a global scale.[27] Extreme weather, a parallel phenomenon occurring alongside planetary changes, is mutually reinforcing: the former can push a planetary system into an alternative state (for example a heatwave collapsing coral systems), while many of the climate tipping points are anticipated to shift weather patterns and increase extreme weather in turn, creating positive feedback loops of greenhouse gas emissions.[28]

Together, these environmental and planetary changes could radically impact economic growth and insurability over the next decade,[29] driving food, water and health insecurity. Immediate impacts could reduce agricultural productivity and potentially cause simultaneous harvest failures in key regions. For example, some studies suggest that the loss of significant ice mass from the Greenland Ice Sheet could lead to droughts and agricultural loss in the Sahel region, in northern Africa, at the same time as it reduces marine primary productivity in the North Atlantic.[30] Although specific geographic impacts are highly complex due to the influence of multiple planetary systems, food and water insecurity are a key source of exposure – or leverage – for several global and regional powers. China, South Korea, Japan, Russia and Saudi Arabia are among the largest net importers of food and agricultural products, whereas Argentina, Australia, Brazil, Canada, New Zealand, Thailand and the United States comprise some of the largest exporters.[31] At a domestic level, intensifying competition for resources could spark disputes over dwindling freshwater sources, arable land and habitable areas. On the international stage, changes to agricultural productivity and water availability could alter global trade patterns and alliances, or even become a bargaining chip in the contentious management of migration flows between host countries, adding an additional layer of complexity to shifting geostrategic dynamics.

There are also clear limits to adaptation, and tipping points will induce changes that, although longer-term in nature, are likely to overwhelm even well-implemented adaptation solutions and make relocation and migration more likely.[32] For example, the Thwaites Glacier, currently held in place by the West Antarctic Ice Sheet, could slide into the ocean within the next 10 years.[33] Although research is evolving and impact time frames are highly uncertain, this could cause a sea level rise of more than half a metre, or, through the destabilization of the West Antarctic Ice Sheet, up to 3.2 metres over longer timescales according to some estimates,[34] dramatically altering coastlines and submerging some island states (Figure 2.9).[35]

FIGURE 2.9 | **Indicative sea level rise, selected countries**



Source
Climate Central, 2023.

Note
Areas lower than the selected water level and with an unobstructed path to the ocean are shaded blue. By default, areas below the water level but that appear to be protected by ridges (and in the United States, levees) are not shaded.

Ancient pandemic

The Arctic is the fastest warming region on Earth, experiencing global warming levels that are more than double those of the global average.[36] Further warming will lead to gradual reductions in the permafrost, while abrupt thawing could occur due to heatwaves, wildfires and other environmental shifts.[37] Although an "improbable" tail risk, it does not require the full collapse of the permafrost to release harmful contaminants and ancient "new" diseases, both microbial and virus-related, to which humans have little natural resistance, within the next decade.[38] Further, as both states and animals exploit the warming of the Arctic region, hosts will become more readily available, increasing the likelihood of the biological threat.[39]

Ivan Bandura, Unsplash

Technological tipping points

As critical thresholds are breached, the pressure to act fast and at scale will mount, and the focus of the Net Zero agenda will increasingly expand beyond decarbonization, to the "reversal" of climate change through frontier technological solutions, like geoengineering.[40] However, these nascent technologies could pose severe externalities of their own, raising complex questions around accountability.

Geoengineering solutions have the potential to counter key drivers to climate change and related environmental impacts. Some directly remove carbon dioxide from the atmosphere (for example, through direct air capture and carbon storage), while others intervene to cool the climate, such as solar radiation management (SRM).[41] Investment in carbon capture and storage has already doubled to hit a record high of $6.4 billion in 2023, and the United States has already granted $1.2 billion in long-term funding to two Direct Air Capture hub developments in the states of Texas and Louisiana[42] – a bipartisan move that could survive the outcomes of the 2024 elections.

Deployment of geoengineering technologies is nuanced, posing global benefits but also presenting system-wide and localized risks. First, a growing focus on "abated" emissions (fossil fuel emissions caught through technologies) could shift capital and focus away from emissions reduction and adaptation. This complacency could take hold before carbon removal is able to sufficiently scale over the next decade, given significant infrastructure and investment requirements, resulting in an overall slowdown in climate mitigation at a critical time.

Second, dependent on the specific frontier technology in question, consequences are unknown or highly uncertain. Deployment could possibly lead to unintended changes to, for example, regional precipitation.[43] In addition, geological storage of carbon risks future "venting", with potentially harmful consequences for nearby communities.[44] SRM could reduce the frequency and intensity of temperature extremes, but involves significant risks, like sudden termination shocks and large-scale salt and acid deposition.[45]

As the impacts of climate change become increasingly evident, these externalities could complicate existing questions around legal accountability for climate change. The loss and damage agenda, as well as climate-related litigation, is likely to gain speed, targeting local, state and national governments.[46] However, deployment of these technologies by select actors could challenge these legal avenues, simultaneously giving rise to additional liabilities. For example, economic damage, agricultural losses or health problems from shifting weather patterns, acid rain, changes to air quality, or the spread of communicable diseases is possible under both climate change and an "engineered" climate[47] – and modelled attribution could be challenging if both effects are in play. In some cases, engineered effects may exceed anticipated local impacts from climate change, leading to geopolitical tensions and possibly even cross-border conflict.[48]

BOX 2.4 | **The next global shock?**

Ungoverned deployment

Deliberate climate manipulation may form the next "Manhattan Project", as governments become more selective about climate-related technologies that can be scaled and delivered in policy-relevant time frames.[49] Although highly unlikely, the unilateral and ungoverned deployment of climate manipulation technology is possible within the next 10 years, including by a single country, non-state actors such as philanthropists, or by companies for commercial gain.[50] While some technologies only have temporary effects, there is a great deal of uncertainty around impacts even over a short-term time frame.

Acting today

Addressing the risk of critical changes to Earth systems requires an evolved approach to climate risk management and decision-making. While climate models are effective at illustrating potential hazards, vulnerabilities and exposures for decision-makers,[51] the current limitations of these tools means that we are still entering unchartered territory. Climate and economic modelling could be improved to fully consider the longer-term, non-linear and cascading impacts of Earth system changes through more powerful tools for analysing the Earth as an integrated whole, combining climate and ecological tipping points with broader planetary boundaries.[52] Part of these efforts will require the translation of scientific findings to inform decision-making, which has proved difficult in a climate context, but may be even more challenging when overlaid with the nature context.

Indeed, around one-half of GRPS respondents highlight the need for enhanced **Research and development** with respect to both **Critical changes to Earth systems**, but also **Adverse outcomes of frontier technologies**, including geoengineering (Figure 2.10). These efforts could be supported through the creation of a global data commons for climate science alongside further investment in relevant equipment (such as remote sensing equipment and computing power) and ecological forecasting.

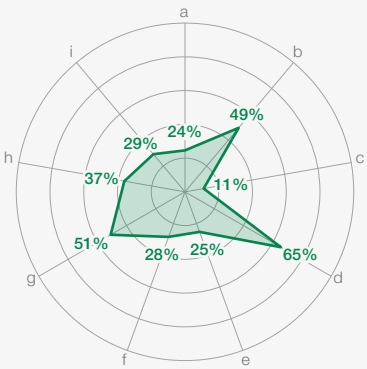
GRPS respondents feel that **Global treaties and agreements** have the most potential for driving action. More credible emissions reductions remain the fastest and most effective means to avoid or mitigate the likelihood of climate tipping points. However, with evidence suggesting that some of these tipping points are already locked in, the ratio of adaptation to mitigation efforts will need to be rebalanced through **National and local regulation**, as complementary objectives. Expanding access to existing adaptation solutions will be essential, including early-warning systems, and decentralized renewable energy (disconnected from the grid) to empower local communities. States and development banks will need to work closely together to de-risk investment for the private sector in priority areas and markets.

FIGURE 2.10 | **Risk governance: A 3°C world**

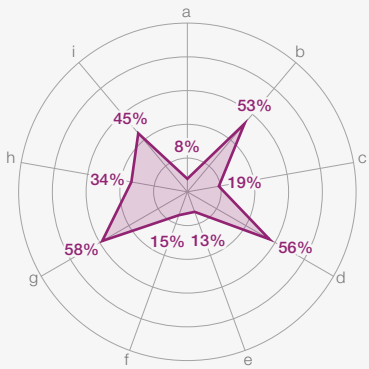
"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years? Select up to three for each risk."

Approach

a. Financial instruments
b. National and local regulations
c. Minilateral treaties and agreements
d. Global treaties and agreements
e. Development assistance
f. Corporate strategies
g. Research & development
h. Public awareness and education
i. Multi-stakeholder engagement



Critical change to Earth systems



Adverse outcomes of frontier technologies

Share of respondents

Source
World Economic Forum Global Risks Perception Survey 2023-2024.

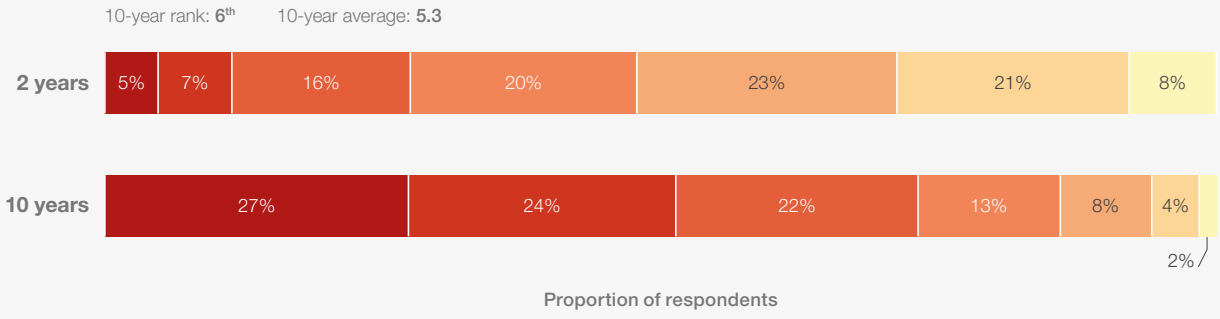
Risk categories: Economic | Environmental | Geopolitical | Societal | Technological

2.4 AI in charge

FIGURE 2.11

Severity score: Adverse outcomes of AI technologies

Intended or unintended negative consequences of advances in AI and related technological capabilities (including generative AI) on individuals, businesses, ecosystems and/or economies.



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Severity was assessed on a 1-7 Likert scale [1 – Low severity, 7 – High severity]. The percentages in the graphs may not add up to 100% because figures have been rounded up/down.

Severity
7 6 5 4 3 2 1
High Low

- Market concentration and national security incentives could constrain the scope of guardrails to AI development.
- Adverse outcomes of advanced AI could create a new set of divides between those who are able to access or produce technology resources and intellectual property (IP) and those who cannot.
- Deeper integration of AI in conflict decisions could lead to unintended escalation, while open access to AI applications may asymmetrically empower malicious actors.

Unchecked proliferation of increasingly powerful, general-purpose AI technologies will radically reshape economies and societies over the coming decade – for better and for worse. Alongside productivity benefits and breakthroughs in fields as diverse as healthcare, education and climate change, advanced AI carries major societal risks. It will also interact with parallel advancements in other technologies, from quantum computing to synthetic biology, amplifying adverse consequences posed by these frontier developments (Boxes 2.5 and 2.7). Intentional misuse is not required for the implications to be profound. Novel risks will arise from self-improving generative AI models that are handed increasing control over the physical world, triggering large-scale changes to socioeconomic structures.[53]

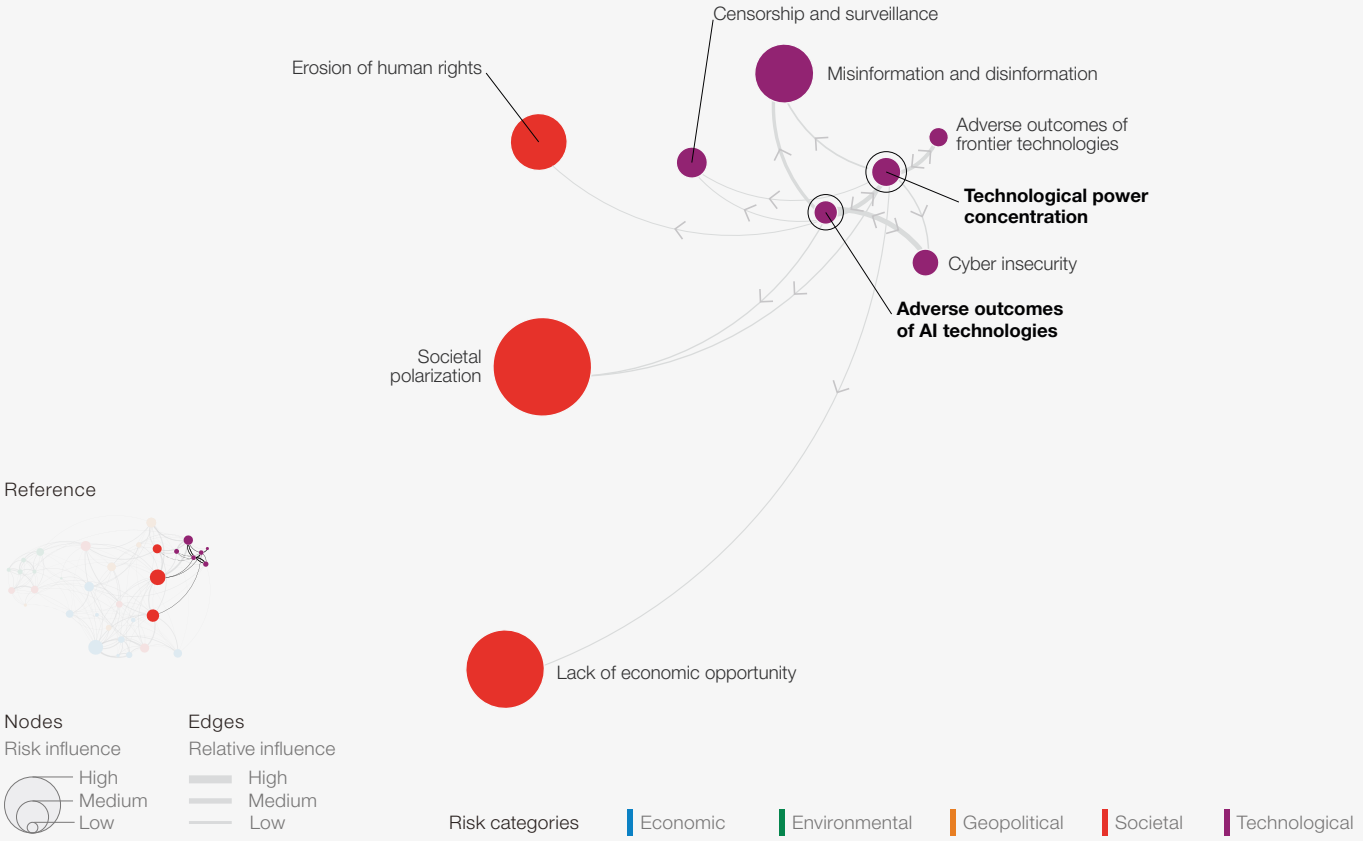
Adverse outcomes of AI technologies is another new entrant to the top 10 rankings, deteriorating significantly in perceived risk severity over the longer-term horizon (Figure 2.11). Alongside the possibility of an entity achieving artificial general intelligence (AGI) – learning to accomplish any human or animal task – key concerns cited by GRPS respondents include: misinformation and disinformation (**Chapter 1.3: False information**); job loss and displacement (**Chapter 2.5: End of development?**); criminal use and cyberattacks (**Chapter 2.6: Crime wave**); bias and discrimination; use in critical decision-making by both organizations and states; and AI's integration into weaponry and warfare.

To date, the precautionary principle (prudence in the face of uncertainty) has largely not been applied in the development of AI, as regulators erred on the side of innovation. However, rapidly evolving development of and reliance on advanced machine intelligence is outpacing our ability to adapt – both to understand the technology itself (the "Black Box Problem") and to create regulatory safeguards (the "Pacing Problem"), with regulation playing catch up to the technology.[54] The speed of advances, depth of market power and strategic importance of the industry will continue to challenge the appetite and regulatory capacity of governance institutions. Downstream risks could endanger political systems, economic markets and global security and stability.

FIGURE 2.12

Technological power

Risk interconnections: **Adverse consequences of AI technologies** and **Technological power concentration**



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

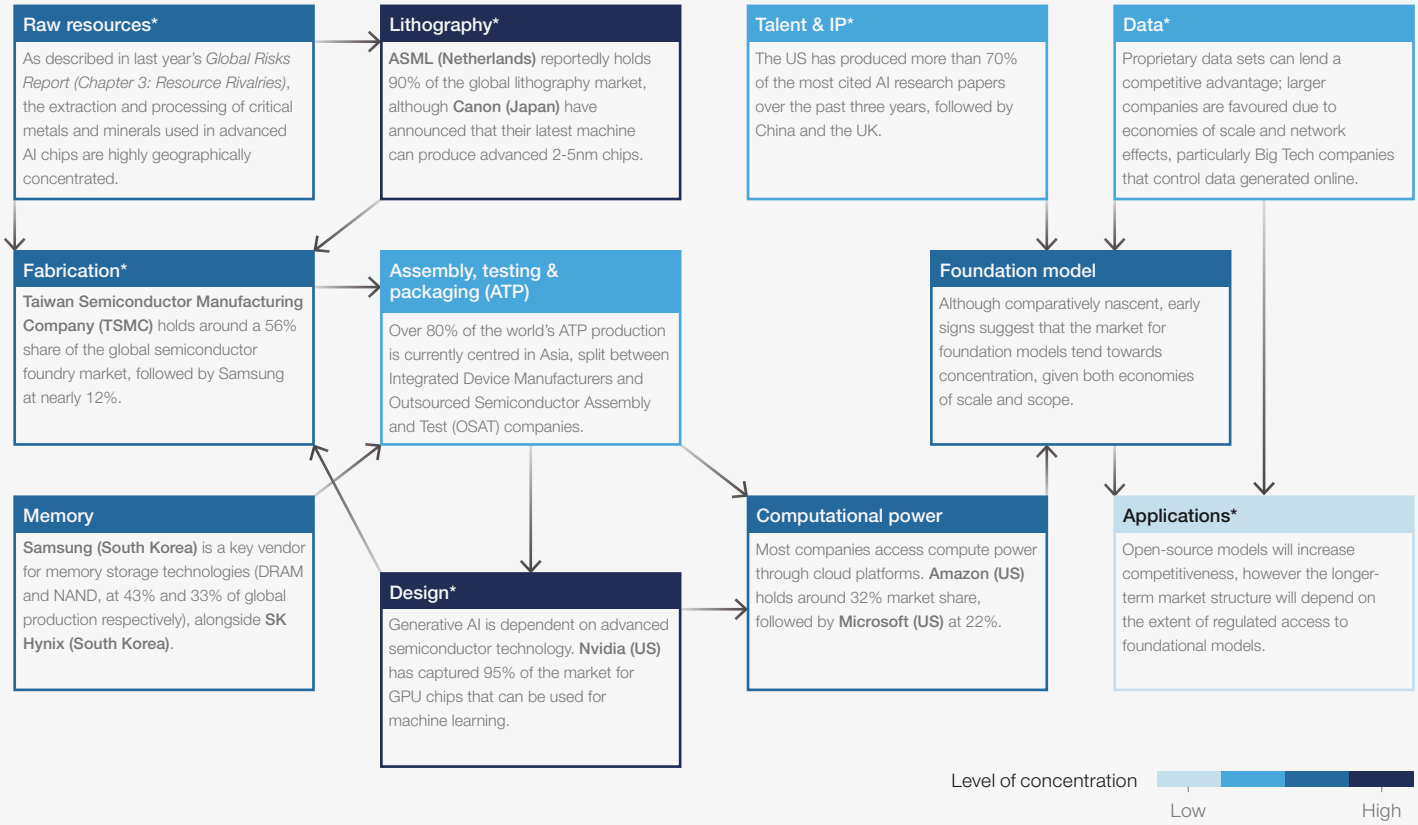
Entrenched market concentration

Private sector-led development of a powerful dual-use (both civilian and military) technology makes regulatory guardrails even more essential. However, commercial incentives and national security-driven "tech wars" may outstrip regulatory efforts to curb adverse societal and security outcomes.

GRPS respondents highlight **Cyber insecurity** and **Technological power concentration** as the only risk drivers of **Adverse outcomes of AI technologies** (Figure 2.12). The production of AI technologies is highly concentrated, in a singular, globally integrated supply chain that favors a few companies and countries (Figure 2.13).[55] This creates significant supply-chain risks that may unfold over the coming decade. For example, export controls over early stages of the supply chain (including minerals), could raise overall costs and lead to persistent inflationary pressures. Restricted access to more complex inputs (such as semiconductors) could radically alter the trajectory of advanced technological deployment within a country. The extensive deployment of a small set of AI foundation models,[56] including in finance and the public sector, or overreliance on a single cloud provider, could give rise to systemic cyber vulnerabilities, paralyzing critical infrastructure.

Given the strategic significance of AI technologies, national security objectives will likely remain the primary objective of innovation and industrial policy in several economies in response to market concentration, shaping upstream market dynamics (Figure 2.14). States will aim for securing their supply chains, onshoring and friend-shoring where possible. For example, China is pursuing a largely independent supply chain, given export controls that block access to the most advanced semiconductor chips.[57] Some states may seek to capture lucrative economic gains associated with these technologies, while others will aim to address concentration, potentially at the price of innovation. Building on a history of tackling anti-competitive practices in the tech sector,[58] the EU plans to deploy new mechanisms to disrupt the dominance of digital "gatekeepers" and is also reportedly considering an investigation into anti-competitive practices in graphics processing unit (GPU) chips.[59]

FIGURE 2.13 **Indicative value chain of generative AI technologies**



Source
World Economic Forum *Global Risks Report 2024*.

Note
*Subject to restrictions.
High-level for illustrative purposes only, does not include all relevant steps (including, for example, inference, web access, etc.).

FIGURE 2.14 **National security as a driver of industrial policy**

28 economies

ranked **"Ensure national security"** as the **top objective currently orienting policy.** Of these:

19 economies

felt **national security should be deprioritized as a top objective** in terms of innovation and industrial policy, including the United Kingdom, Türkiye, and Italy, in favour of, for example, addressing environment and education priorities.

17 economies

ranked **"Ensure national security"** as the **top challenge that should orient policy.** Of these:

9 economies

ranked **national security as the top objective and the top challenge** that orients innovation and industrial policy in their country, including the United States, Hong Kong, United Arab Emirates and Pakistan.

8 economies

felt **national security should be prioritized as a top challenge**, including Bangladesh, Mongolia and Malaysia, ahead of current economic objectives, for example.

Source
World Economic Forum Executive Opinion Survey 2023.

Note
Private sector respondents from 113 economies were asked to rank the three objectives that *currently* orient innovation and industrial policy and three challenges that *should* orient innovation and industrial policy in their country. The same seven options applied in both questions: (1) Accelerate lifelong learning and talent development; (2) Accelerate the green transition; (3) Address food and water scarcity; (4) Ensure national security; (5) Maximize economic growth and employment; (6) Protect public health and wellbeing; (7) Reduce inequality and promote diversity and inclusion. The final ranking of "Ensure national security" by country is based on a simply tally of the number of times it was selected.

However, despite substantial state intervention – and in some cases, because of offensive economic policy – production will remain heavily concentrated. Barriers to entry remain high, and there are limits to the extent to which state policies can lower them. Sizeable upfront capital expenditure for innovation and infrastructure, economies of scale and scope, a niche talent pool, information asymmetries, and proprietary data pools will continue to favor established companies.[60] Vertical integration could become more prevalent, as producers of foundation models increasingly expand to downstream uses or partner with platform companies that control online data pools or offer cloud services.[61]

Regulatory controls on downstream applications could entrench market power further. For example, the use of a licensing regime could embed the power of existing players, even as it enhances oversight of frontier AI.[62] As governments seek to manage the higher risk applications, widespread dependence on the underlying tech stack (the technologies used to develop an application) will likely lend tech leaders a disproportionate influence on legislative discourse, shaping industry norms and standards over the next decade. While downstream applications are far more competitive, upstream commercial motives – rather than public interest – could become the guiding force of AI development and deployment. This trade-off can already be seen in the distinct lack of consistent self-regulation by the industry, with responsible AI teams among the first to be subject to redundancies as the sector downsized in recent years.[63] Tech companies could be left largely in charge of prices as well as privacy, and they may hold excessive sway over preventing competitive innovation.

If monopoly- or oligopoly-led profit maximization is the primary objective of AI deployment over the next decade, the consequences for applications across healthcare, education, military, legal and financial sectors will be vast. In healthcare, for example, as the volume and granularity of health data increases exponentially, the commercialization of related data pools for downstream AI applications could compromise individual privacy and erode trust in healthcare systems. In the absence of strong ethical guardrails, medical data obtained from a fitness tracker, for instance, could individualize advertising, facilitate discriminatory profiling for health insurance, or underpin new, more invasive forms of employee monitoring. Even as data access enables new healthcare solutions and early diagnosis, medical research and development could be geared towards the wealthy – those who have the resources to afford this type of pervasive daily data collection and monitoring that is then used to train AI for various applications. Additionally, the influence of upstream companies could mean that accountability for related risks, from biased algorithms to diagnostic errors, is pushed downstream in some jurisdictions, particularly in countries with more limited market power, in return for access to these technologies.

Mohammad Rahmani, Unsplash

BOX 2.5

The next global shock?

Breakthrough in quantum computing

Quantum computing could break and remake monopolies over compute power, posing radical risks in its development.[64] Criminal actors have already launched harvest attacks (also known as "Store Now, Decrypt Later", or SNDL) in anticipation of a cryptographically significant computer. Trade secrets across multiple industries, including pharmaceuticals and technological hardware, could be compromised, alongside critically sensitive data such as electronic health records and sold to the highest bidder.[65] Large or even global infrastructure – such as banks, power grids and hospitals – could also be paralyzed. Yet it is not just widespread proliferation of this level of compute power that is concerning. Although arguably a tail risk,[66] if cryptographically-significant quantum computing capability is covertly achieved and subsequently uncovered, it may rapidly destabilize global security dynamics.

AI winners and losers

Indeed, extensive integration of AI technologies may create a new set of winners and losers across advanced and developing economies alike. The digital gap between high- and low- income countries is likely to lead to stark disparities in the societal impact – both benefits and risks – of AI technologies. The most vulnerable countries and communities in advanced and developing economies could be left further behind, digitally isolated from turbocharged AI breakthroughs in economic productivity, finance, climate, education and healthcare (**Chapter 2.5: End of development?**). Dominance of the Global North in tech stack development could perpetuate social, cultural and political biases, while resilience to risks posed by AI, from mis- and disinformation to criminal use, may also be lower in the Global South. Tech talent – and therefore the deep understanding of these technologies – is concentrated in limited markets, with the resulting knowledge gap making effective regulation challenging. Across countries, AI tools could be licensed or repurposed as tools of repression, where relevant norms or regulations are nascent or non-existent (**Chapter 1.3: False information**).[67] Imbalances in military capabilities could also be entrenched, with related applications raising significant ethical and human rights concerns around accountability.

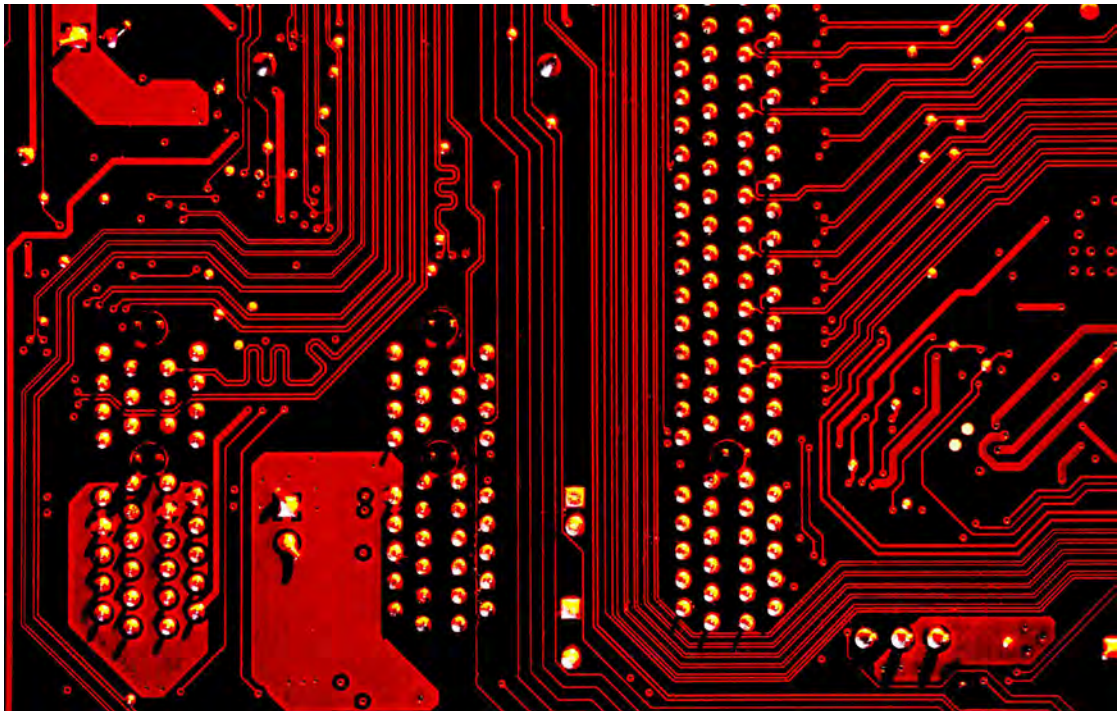
As such, access to the tech stack will become an even more critical component of soft power for rival states to cement their influence. The self-reinforcing nature of AI development is such that producers of these technologies will only become more firmly established as AI is utilized to achieve the next technological breakthrough (or the "rich-get-richer" effect).[68] However, a widening array of pivotal powers could leverage their own competitive advantages in the highly concentrated value chain to obtain access to these technologies on more favorable terms, leading to novel power dynamics. This could range from suppliers of critical minerals, including Australia, Canada, Indonesia, Morocco, Viet Nam and Chile, to those that could leverage IP, such as Japan and South Korea, or capital, like Norway and Singapore. Further, a handful of states, such as India, may soon have the scale and economic might to disrupt technology development directly, with new innovations capturing market share or key stages of the value-added supply chain.[69]

BOX 2.6

The next global shock?

The unelected billionaire

Technological power in the hands of the unelected is seen by numerous GRPS respondents to be a bigger concern than power concentrated in government. The influence of Big Tech companies is already transnational, competing with the likes of nation states,[70] and generative AI will continue to catalyse the power of these companies and associated founders. Although the influence of these companies is predominantly exercised in the regulatory sphere for now, control over dual-use, general purpose technologies will continue to confer significant and direct power to private actors. The risk of unilateral action by individuals could rise in a variety of new domains with significant consequences – such as the use of civilian satellites in the war in Ukraine.[71]



Michael Dziedzic, Unsplash

AI escalation

The application of AI technologies to military objectives could threaten global stability over the next decade, with the integration of machine intelligence into conflict decision-making posing a severe risk.[72]

AI will boost cyber warfare capabilities, enabling entire offensive and defensive systems that could act autonomously, with unpredictable impacts to networks and connected infrastructure. When it comes to kinetic warfare, global and regional powers have invested heavily in developing AI-driven weapons systems, and the degree of autonomy afforded to these is increasing: land, air and sea-based weapons can already undertake surveillance without human input.[73] Attempts have been made to establish international governance around their use; however, agreements have yet to be established.[74] Abstentions and votes against a draft UN resolution relating to autonomous weapons systems last year were notable, including China, North Korea, Iran, Israel, Türkiye, United Arab Emirates, India and Russia.[75] There remains a material chance, therefore, that these systems could be empowered to autonomously take decisions on lethal actions, including goal creation and the selection of targets.[76] The potential for miscalculation in these scenarios is high.[77] For example, AI could misinterpret the "unwritten" norms of geopolitical posturing, such as flying fighter jets close to airspace or military assets of rival powers, as a material threat, initiating conflict.

The most severe risk lies in AI applications to nuclear weapons. While governments have indicated that human control will be maintained over nuclear weapon systems, in principle AI may offer the greatest defense by condensing decision time: making decisions at silicon, not biological speed.[78] At the same time, AI-enabled launch systems could erode strategic stability, given its theoretical potential to target nuclear assets and second strike capability, combined with the near impossible detection of its development by rival states.[79] If states incorporate AI into nuclear weaponry, this would significantly raise the risk of accidental or intentional escalation over the next decade, with potentially existential consequences.

In contrast to the upstream tech stack, the downstream application of AI is a more competitive market. Despite being among the most powerful of emerging dual-use technologies, the economic and technical barriers to accessing frontier AI are significantly lower than for its technological counterparts, such as geoengineering and quantum computing. Many GRPS respondents highlight concerns around sudden and widespread access to generative AI applications, given that access to the internet effectively equates to access to these models. Malicious actors can leverage a superhuman breadth of knowledge to conceptualize and proliferate dangerous capabilities, from misinformation and malware to biological weapons (Box 2.7), threatening human rights and safety in a myriad of ways.

Alessio Soggetti, Unsplash

BOX 2.7

The next global shock?

Novel bioweapons

The attempted use of biochemical weapons by non-state actors has historically been limited, primarily due to high knowledge barriers.[80] Without regulation limiting open access to the most powerful applications of AI technologies, a combination of AI tools could enable the creation of more targeted and severe biological weapons by a wide spectrum of non-technical actors. Large language models could provide information on dual-use topics, laboratory assistance and, eventually, autonomous research, while biological design tools could allow the creation of new proteins and biological agents that overcome the trade-off between transmissibility and virulence of pathogens.[81] Impacts could be devastating, with pathogens potentially used to disable military personnel before a conflict, mimic a widespread global pandemic or even lethally target specific ethnicities.

Acting today

GRPS respondents identify **Public awareness and education** as one of the most effective mechanisms to address risk preparedness and reduction of **Adverse outcomes of AI technologies** (Figure 2.15) and as a key tool to manage local impacts as well as build governance capacity and societal resilience. Literacy in generative AI is essential, for regulators and for broader society. AI literacy could be integrated into public education systems and trainings for journalists and decision-makers to not only understand capabilities of AI systems but also to identify trustworthy sources of information.

GRPS respondents also highlight the need for **National and local regulations**. While national-level efforts will not necessarily prevent the rapid global proliferation of AI and related risks, robust but flexible standard-setting can help ensure that technological development and deployment are aligned with societal needs. The application of existing legislation around intellectual property, employment, competition policy, data protection, privacy, and human rights will need to evolve to address new challenges posed by generative AI.[82] Other key areas anticipated to be addressed by various regulatory regimes over the short term include the identification of AI-generated products, blocks or limitations to the riskiest uses, and determination of liability for AI-induced harms.[83]

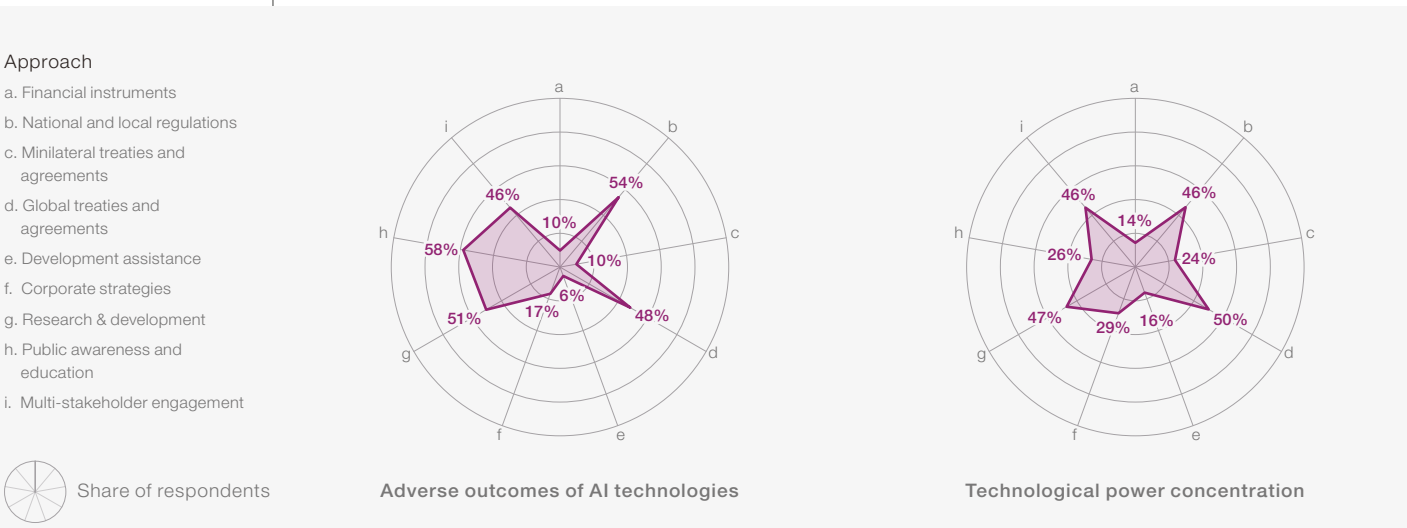
Solutions proposed include but are not limited to: registration and licensing of the most powerful versions of the technology, tiering access to computing power, implementation of provenance and/or watermarking systems, Know-Your-Customer procedures and mandatory incident disclosures, and creating a robust auditing and certification system.[84]

GRPS respondents also note the role of **Global treaties and agreements** in the management of both **Adverse outcomes of AI technologies** and **Technological power concentration**. Several AI governance frameworks have already emerged at a global level to provide high level guidance for AI development, including the latest G7 Hiroshima Process on Generative Artificial Intelligence, as well as the Bletchley Declaration. In addition, there have already been calls for an "AI version" of the IPCC.[85] This entity could, in collaboration with the private sector, enable global scientific consensus around the risks and opportunities posed by frontier AI. Similarly, it could communicate findings to decision-makers, based on best available projections of global AI hardware and software, albeit with faster assessment cycles by necessity. Oversight could also extend to a reporting database and registry of crucial AI systems. However, the most existential of these risks will require extensive cooperation between powers, to achieve mutual restraint around the proliferation of high-impact technologies, as well as the inadvertent escalation in military AI (Chapter 3: Responding to global risks).

FIGURE 2.15

Risk governance: AI in charge

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years? Select up to three for each risk."

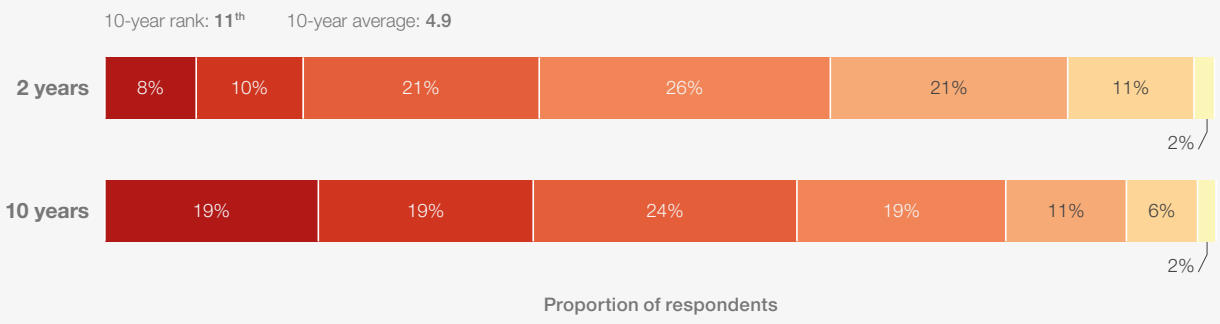


Source
World Economic Forum Global Risks Perception Survey 2023-2024.

FIGURE 2.16

Severity score: Lack of economic opportunity

Persistent barriers to the realization of economic potential and security. Includes, but is not limited to: growing or persistent poverty; present or perceived income and wealth inequality; and unequal access to educational, technological and economic opportunities.



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Severity was assessed on a 1-7 Likert scale [1 – Low severity, 7 – High severity]. The percentages in the graphs may not add up to 100% because figures have been rounded up/down.

Severity
7 6 5 4 3 2 1
High Low

- Human development and prosperity may stall as barriers to economic mobility arise from climate, technological and geopolitical constraints.
- Deeply bifurcated labour markets could widen inequality between – and create additional risks within – developed and developing economies, as demographic structures and job demand and supply diverge.
- Living standards could recede for populations suffering entrenched unemployment and economic distress, radically reshaping political dynamics.

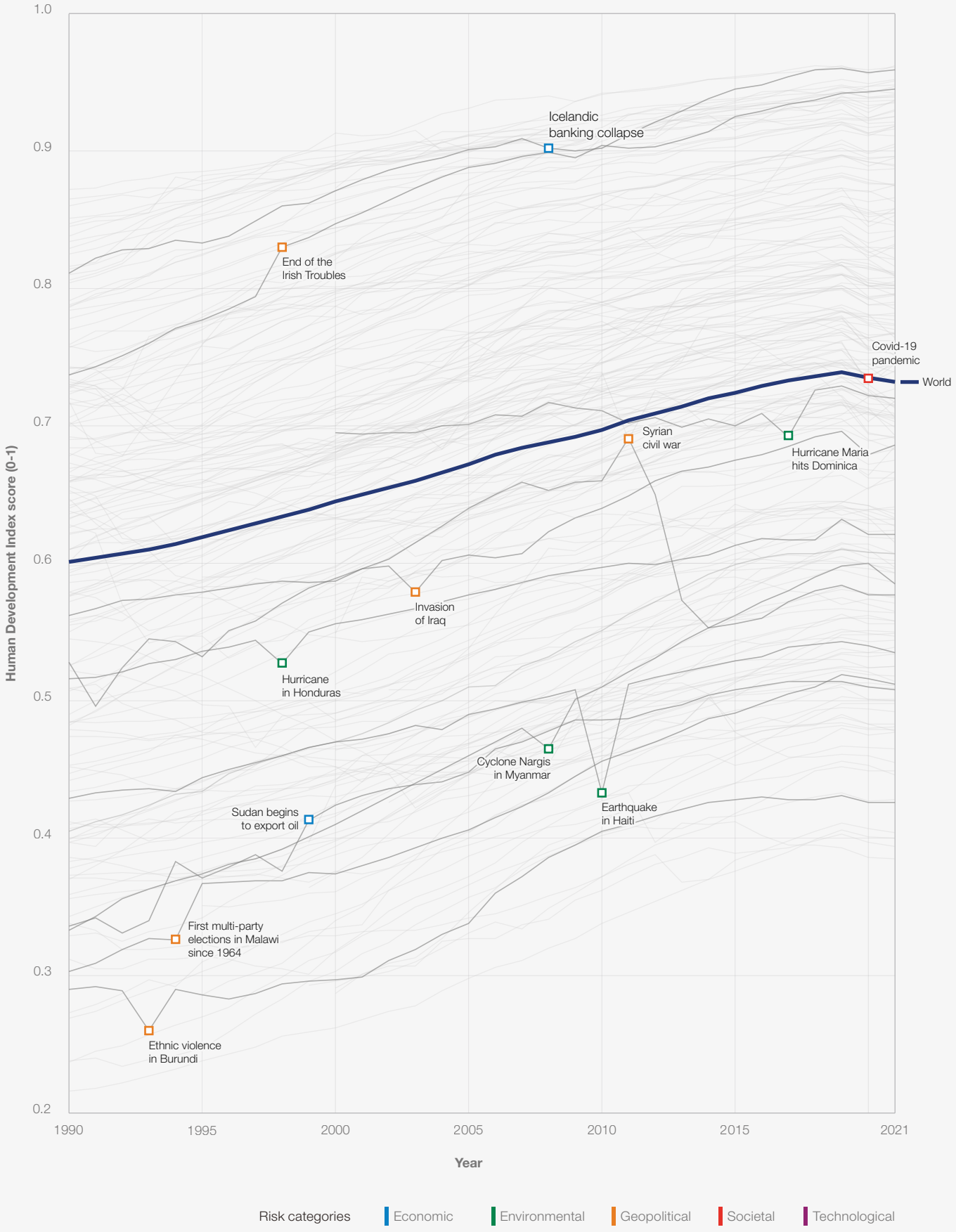
The world has made rapid strides across most human development indicators over recent decades, but the fragility of these collective gains is evident. In particular, the COVID-19 pandemic challenged global advancement, with visible reversals in 2020 across multiple economies and regions (Figure 2.17), as progress slid with respect to education, healthcare and poverty.[86] Economic mobility – or the ability to improve economic status and related outcomes – is perceived to be dwindling in developed and developing economies alike, as job markets change and current education, labour and social policies become outdated against a backdrop of changing demographics.

Lack of economic opportunity is a new entrant to the global risks list. It features in the top 10 risks list over the two-year horizon and is expected to worsen in perceived severity over the longer term (Figure 2.16). Alongside **Unemployment** as the primary driver, GRPS respondents consider a **Lack of economic opportunity** to stem from a complex mix of other global risks. This includes short-term economic risks, such as **Economic downturn** and **Inflation**, and pressing societal risks such as **Erosion of human rights**, **Intrastate violence** and **Societal polarization** (Figure 2.18).

Without careful management of the large-scale economic transformations that are taking place, economic mobility will stall and reverse. The climate transition, advances in AI, demographic shifts and geopolitical dynamics could interact over the coming decade to cement the mismatch between the demand and supply of labour between and within countries. The consequences for societal cohesion and political outcomes are wide-reaching, threatening standards of living for a large segment of the population in many economies.

Gene Butty, Unsplash

FIGURE 2.17 | **Human Development Index scores, selected economies, 1990-2020**

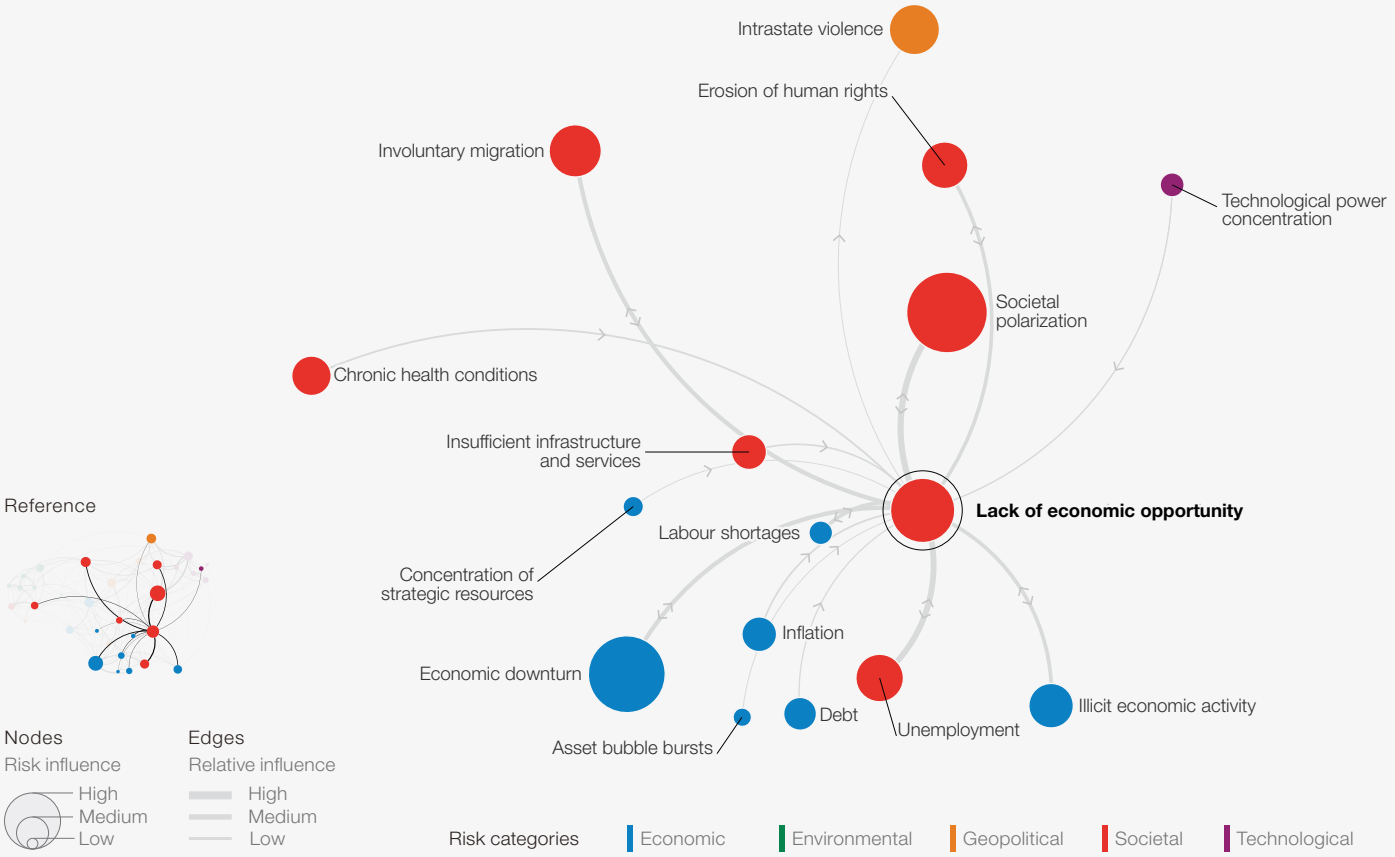


Source
UNDP, 2023.

FIGURE 2.18

Human development

Risk interconnections: **Lack of economic opportunity**



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Bifurcated markets

Disruptions to labour markets are likely to escalate worldwide as a result of the two large-scale economic transformations that are concurrently taking place, driven by climate action and AI integration. These twin transitions will dramatically reshape the quality, quantity and distribution of job creation as well as job loss, driving divergent risks. Some economies and communities, isolated from job-creation and reskilling opportunities, will encounter saturated labour markets, hindering development. In others, challenges to social and labour mobility could contribute to shortages in critical industries, slowing economic transformations and progress.

Both transitions offer valuable opportunities to tackle economic inequality through the generation of new income opportunities across a range of sectors. For example, AI and Machine Learning Specialists is anticipated to be the fastest-growing job, growing by 40% (1 million jobs) by 2027, while the green transition is estimated to lead to more than 30 million jobs by 2030.[87] Mirroring demand for renewable infrastructure, the global construction sector is expected to double in size in the 10-year period from 2020 to 2030, while related jobs, including those in trades and engineering, are among those anticipated to experience the largest growth in the coming years (Figure 2.19).[88]

However, related job churn is likely to be significant, as these transitions displace workers in parallel, potentially leading to net job loss overall. The latest estimates anticipate structural job growth of 69 million, set against job losses of 83 million, over the next five years.[89] This level of job churn will be particularly challenging to manage, as these impacts

FIGURE 2.19 | **Top 10 jobs, 2023-2027**

A. Top 10 largest growth jobs

1st	Agricultural Equipment Operators
2nd	Heavy Truck and Bus Drivers
3rd	Vocational Education Teachers
4th	Mechanics and Machinery Repairers
5th	Business Development Professionals
6th	Building Frame and Related Trades Workers
7th	University and Higher Education Teachers
8th	Electrotechnology Engineers
9th	Sheet and Structural Metal Workers, Moulders, and Welders
10th	Special Education Teachers

B. Top 10 fastest growing jobs

1st	AI and Machine Learning Specialists
2nd	Sustainability Specialists
3rd	Business Intelligence Analysts
4th	Information Security Analysts
5th	Fintech Engineers
6th	Data Analysts and Scientists
7th	Robotics Engineers
8th	Electrotechnology Engineers
9th	Agricultural Equipment Operators
10th	Digital Transformation Specialists

Source
World Economic Forum *Future of Jobs Report 2023*.

Note
A. The jobs for which employment figures are expected to increase the most in real terms from 2023 to 2027 when survey responses are normalized to labour-market statistics from the ILO.
B. The jobs which survey respondents expect to grow most quickly from 2023 to 2027 as a fraction of present employment figures.

will not be evenly distributed between or within economies. In many cases, jobs created will not be in the same location, industry or skills bracket as available or displaced workers, thus relying on labour mobility to fill them. A growing labour mismatch between countries is already evident from EOS results: **Labour shortages** feature in the top five risk rankings for 52 countries over the next two years, while, in comparison, **Unemployment** features in the top five risks in 30 countries. As shown in Figure 2.20, nearly all countries surveyed include at least one of these risks in their top 10 rankings: low- and lower-middle income countries tend to rank **Unemployment** higher, while upper-middle and high-income respondents are more concerned about **Labour shortages**.

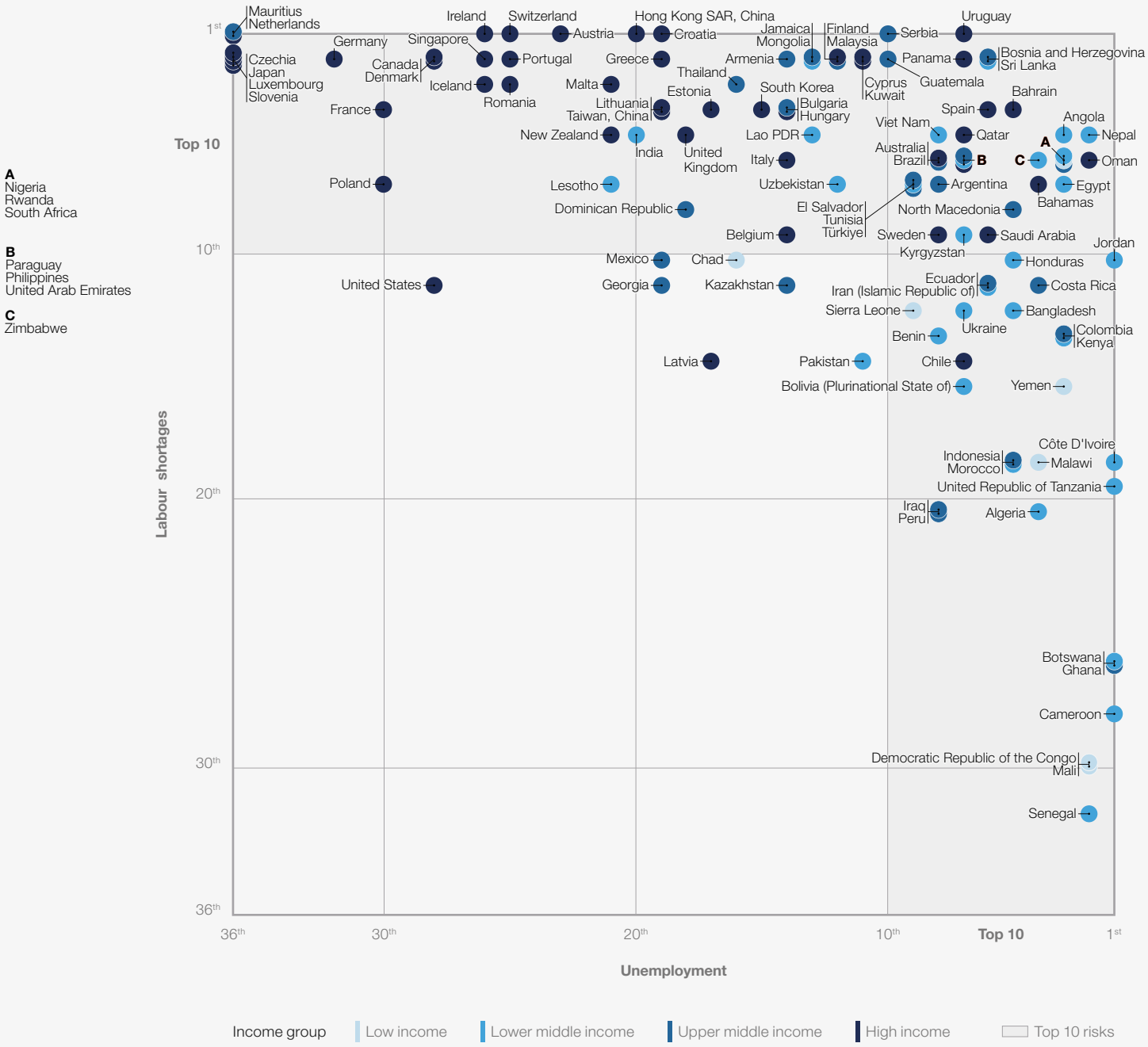
Job creation in respective economies over the coming decade will be materially shaped by access to and selected deployment of investment for the climate and tech-related transitions. For example, both are being widely supported by governments, with funding and subsidies targeted at the domestic growth of related industries (Chapter 2.4: AI in charge).

Benjamin Disinger, Unsplash

FIGURE 2.20

National risk perceptions: Employment

"Which five risks are the most likely to pose the biggest threat to your country in the next two years?"



Source

World Economic Forum Executive Opinion Survey 2023.

Note

The top right box indicates that both **Labour shortages** and **Unemployment** feature in the top 10 risks at a national level.

However, as capital – and therefore risk – remains costly, investment will likely become even more heavily concentrated in comparatively stable advanced economies. Inflows of public and private capital to accelerate the energy transition have been particularly pronounced in the United States, China and the EU, due to more sophisticated financing mechanisms and policy incentives.[90]

In contrast, relatively less stable, lower-income, conflict-prone or climate-vulnerable developing economies may be seen as too high-risk for investment or operations. With many already holding sub-investment-grade credit ratings, private interest could dry up further, given heightened political, regulatory, societal and economic instability, as well as the adverse effects of climate change.[91] Indeed, experts consulted worry that even published estimations of climate-related migration could drive capital elsewhere (**Chapter 2.3: A 3°C world**). This would exacerbate existing challenges in terms of public and development financing.[92] Many of the Least Developed Countries (LDCs), grappling with debt distress, already face

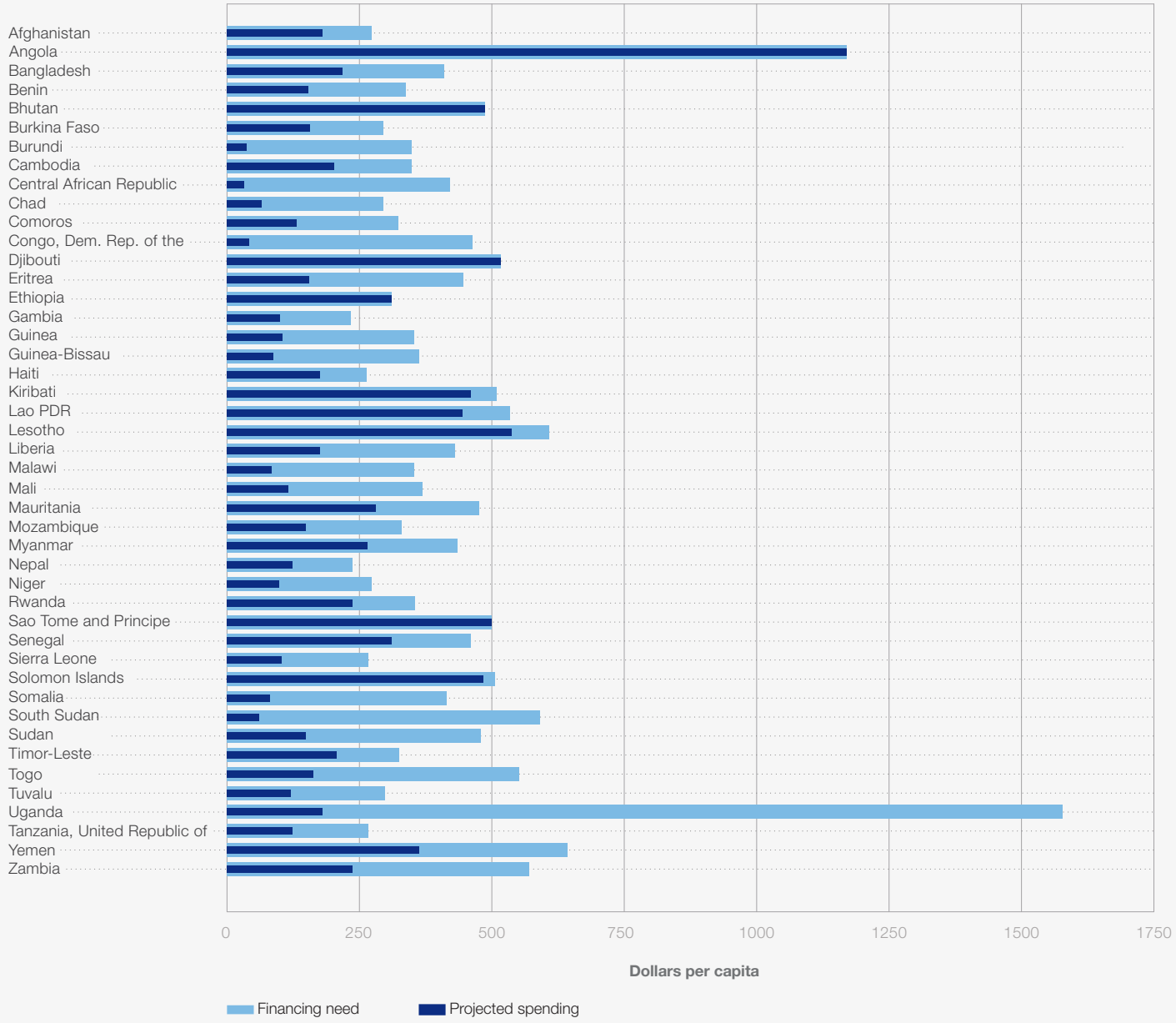
large financing gaps in reaching development goals in the medium term (Figure 2.21) – and geopolitical instability could further hinder international financial efforts to support these economies, from debt restructuring to foreign aid (Box 2.8).

This global gap between job-creating investments and willing workforces will therefore lead to divergent risks in the demand and supply of labour. The demographic dividend of some developing markets may quickly turn into a demographic dilemma in which unemployment becomes a chronic risk. In the absence of substantive domestic or foreign investment, some economies may be unable to generate sufficient green- and tech-related income opportunities to absorb a growing workforce, while other sectors also could become at risk in a low growth, high-rate, low-investment world. This is a challenge that will not be limited to the LDCs – select middle-income economies that have sought growth through an export-led model may also face substantial job erosion.[93] Mirroring trends in manufacturing, several countries have relied on rapid growth in digitally delivered services exports (Figure 2.22),[94] yet the industries and job functions most impacted by generative AI are among those most commonly outsourced and offshored, such as information technology, finance and human resources.[95] Although higher-value income opportunities will be created through AI augmentation, these jobs are likely to be

FIGURE 2.21

Funding gaps in the Least Developed Countries

Projected spending in 2025 on Sustainable Development Goals and financing needs to reach those goals by 2030, dollars per capita



Source

UNCTAD, 2023.

Note

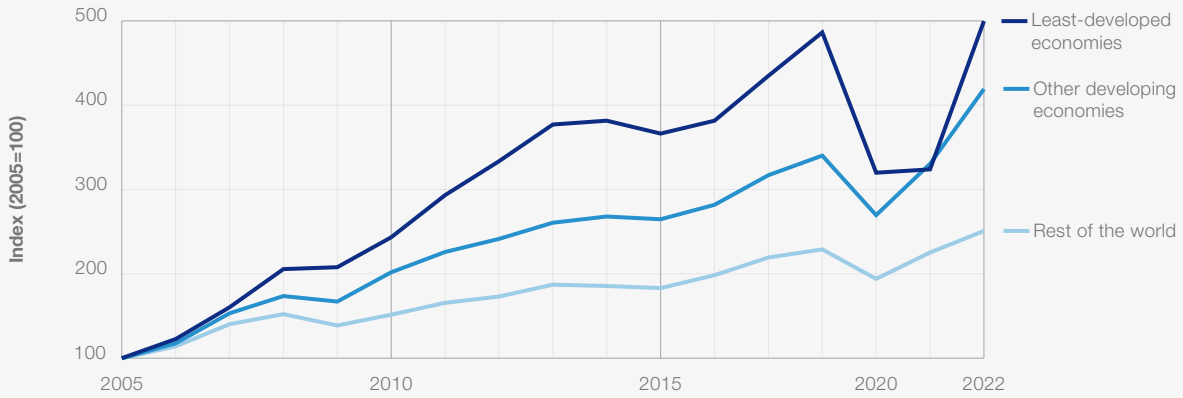
As of 31 August 2023, six Least Developed Countries (LDCs) were in debt distress and 15 were at high risk of debt distress.

concentrated in technologically advanced regions, building on existing divides in educational and digital literacy that cannot be bridged without investment (Chapter 2.4: AI in charge). The lower cost of labour may still incentivize offshoring to a degree; however, protectionism in digital services could strengthen. For example, stronger data localization requirements would effectively "reshore" these industries.[96] As such, a more fundamental question is rapidly emerging: can manufacturing- and services-led export growth remain an accessible pathway to greater prosperity for developing countries?

In most advanced economies, the creation of "boots-on-the-ground" green infrastructure jobs could exacerbate already tight labour markets.[97] This could be a severe constraint to the green transition for the largest emitters in the medium term and, given geopolitical dynamics and societal discontent, is more likely to incentivize the replacement of lower-skilled, routine jobs (muscle to machine power) than encourage immigration and improved labour mobility. Indeed, grappling with shrinking and ageing workforces, companies in advanced economies will seek to capitalize on the productivity benefits offered by AI, deploying them rapidly and at scale. Generative AI will increasingly be substituted for middle-skilled workers (biological to machine intelligence), particularly in the services sector. The rapid deployment of these technologies could crowd out human competencies within a relatively short period of time – leading to shifts from talent shortages to underemployment and unemployment in some parts of these economies and creating knock-on effects in developing economies.

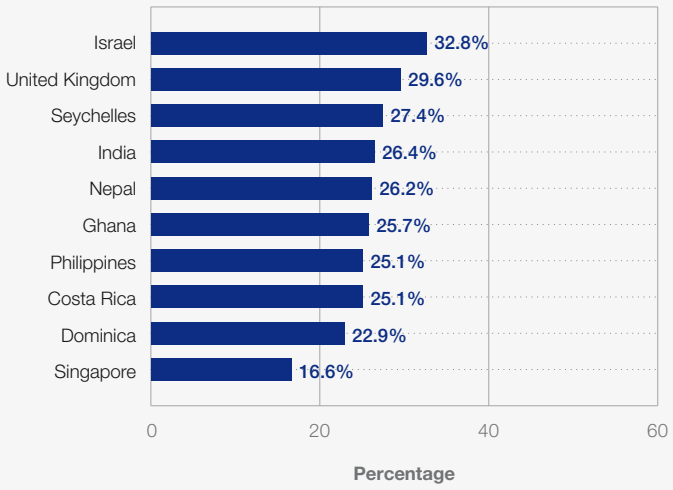
FIGURE 2.22 **Service exports, selected economies and economy groups**

A. Growth in exports of commercial services, by groups of economies, 2005-2022

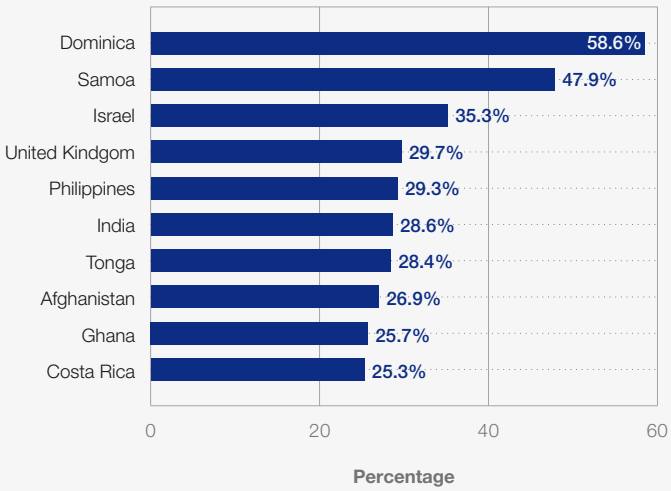


B. Share of telecommunication, computer and information services, other business services, and finance, 2019 and 2022

2019, Top 10 WTO members



2022, Top 10 WTO members



Source
WTO, 2023.

Post-SDGs

As 2030 approaches, demonstrable erosion in critical pillars of the Sustainable Development Goals (SDGs) could set the tone for the next decade, as international support for sustainable development pathways narrow. In light of domestic challenges and declining international cooperation, there is a risk of an accompanying rise in deprivation. The distribution of aid could become primarily driven by narrow security interests, rather than broader, traditional development imperatives, resulting in selective efforts to create good for a few, rather than good for all. For example, aid financing could be diverted from nature restoration or education to the building of dual-use infrastructure such as ports. Amid slowing growth, investment from China could dry up further, resulting in cancellations and delays of critical infrastructure projects, destabilizing low- and middle-income countries, particularly in sub-Saharan Africa.[98]

Stranded people

Individual pathways to economic prosperity could also diverge because of these twin economic transitions, perpetuating technological, educational and societal divides. In the absence of effective policies encouraging reskilling alongside labour and social mobility, access to income opportunities will narrow for a widening segment of the global population, creating pockets of unemployment and economic distress that impact blue- and white-collar workers alike.

This disruption is imminent but may catch the workforce by surprise. For example, four in 10 executives believe AI will lead to net job losses this year – compared to only one in 10 employees.[99] EOS results point to a potential skills gap within several countries, suggesting that domestic workers will face barriers to matching job demand within the next two years. Respondents in numerous countries selected both **Unemployment** and **Labour shortages** in their top 10 rankings (Figure 2.20). This includes a range of high-, upper-middle, and lower-middle income countries, such as the United Arab Emirates, Saudi Arabia, Qatar, Türkiye, South Africa, Australia, Brazil and Argentina.

The latest estimates suggest that three in five workers will require training before 2027. However, barriers of socioeconomic class and age may hinder economic mobility, entrenching existing inequalities. For example, despite AI-driven advances in education, not all workers – between and within countries – will have access to adequate reskilling opportunities.[100] Those with the economic resources to adapt to new industries will have a better chance at maintaining economic stability and capture higher wages. Those without access to quality retraining will be forced into less stable or secure means of employment. Additionally, the automation of entry level functions could create a higher educational barrier to entry into the workforce, magnifying challenges of social mobility. Over the longer term, the jobs of higher-skilled, more expensive workers may also come under threat from both machine intelligence and machine power, with barriers arising due to skills obsolescence and atrophy, as well as advancements in technology.

Feliphe Schiarolli, Unsplash

If adequate social protection systems are not in place, displaced workers who struggle to re-enter the workforce could face higher rates of poverty, hunger and homelessness, particularly in the near term if costs and inflation remain higher for longer. Access to basic necessities, including healthcare and housing, could become restricted. In the absence of supported pathways to safe and secure livelihoods, more individuals could also be pushed into crime, militarization or radicalization (Chapter 2.6: Crime wave). Forced economic displacement could become more common, with individuals migrating in search of better economic opportunity and, possibly, social assistance – yet even this may be a pathway that some individuals cannot afford.

While many of these consequences may be felt most acutely in developing economies, with less fiscal space to ease the transition for individuals, these risks remain a concern in advanced economies, too. For example, workers from "dirty" sectors could become stranded in fossil fuel-dependent local economies, with few other opportunities available. Displaced older workers will exacerbate the growing strain on social systems and healthcare, creating a different but related livelihood crisis: growing retirement insecurity. Anticipated job disruption could also enable knowledge, technology, income and wealth to become even more concentrated, perpetuating cycles of poverty. An individual born into a less privileged background is likely to face formidable and potentially higher barriers to reaching their full potential, undermining notions of meritocracy and fairness that underpin stable and inclusive societies.

BOX 2.9

The next global shock?

Green lash meets tech lash

Deepening frustration with economic conditions will drive societal divisions, as individuals demand better opportunities, income equality and improved living standards. The anti-tech and anti-sustainability backlash will be fueled by workers threatened by these two transitions. Related strikes and riots could grow, disrupting business continuity on a regular basis and disrupting essential infrastructure, from financial institutions to public services and transport. Both white- and blue-collar displacement could feature heavily in political platforms during election cycles, interacting to polarize electorates in some cases or align historically unlikely groupings in others. This could be a dynamic to watch in upcoming elections in both the United States and United Kingdom, where trade unions have historically represented key parts of voting coalitions, and whose electoral power could ultimately slow the rollout of the twin economic transitions.

Delia Giandeini, Unsplash

Nick Van Den Berg, Unsplash

Stalled living standards

As the livelihoods and well-being of individuals come under threat, fiscal space and political appetite will interact to shape the response of governments in both advanced and developing economies. If these economic transformations are not managed carefully, related economic hardship could mean that metrics of human development – from poverty to access to education and healthcare – recede for large swathes of the global population. And if standards of living are not preserved for the current and next generation, societal and political dynamics could radically shift in many economies.

As outlined in last year's Global Risks Report (Chapter 2.6: Economic stability), competing demands for investment mean that few countries are likely to have the fiscal headroom to invest in human capital for the longer term – in education and healthcare systems, components that are fundamental to the realization of economic opportunities. This will be felt most acutely in the most vulnerable markets, which as previously noted, could face a potential investment crisis with corrosive long-term impacts. As fiscal space is squeezed and private finance remains constrained, these markets will be increasingly forced to choose between, for instance, paying external debt, providing a strong and immediate safety net for struggling individuals, investing in the future growth dividends offered by climate action and technological development, managing and adapting to climate change, or shoring up the longer-term adaptive capacities of human capital through health and education systems.

In this environment, public demands for more interventionist governments may recalibrate fiscal policies, with governments facing increasing pressure to implement policies that prioritize generous safety nets and employment stability. Support for technological (automation or AI) taxes and wealth redistribution could grow.[101] Generally, however, given debt sustainability concerns, the ability of governments to afford to mitigate the risks of climate- and AI-related job displacement on individuals – through higher unemployment benefits, more generous minimum wages or subsidies for retraining for example – will be driven partially by related productivity enhancements, leading to growth in GDP and tax revenue. As labour markets bifurcate, the ability of governments to support their workforces through these radical transformations, and maintain developmental progress and standards of living, could diverge in turn.

In economies where government efforts are – or are seen to be – inadequate, populist movements will capitalize on the disillusionment of the lower- and middle-classes, who see very little opportunity in their own and their children's future. Although it may equally encourage innovation and entrepreneurship, an aspiration gap will fuel frustration. Digitally connected people in developing and advanced economies alike will see a better life elsewhere, but limited economic opportunities in their own environment will prevent them from accessing this level of living standards. Even small shifts in access to income and opportunity – perceived or actual – may spark protests and civil unrest and deepen anti-immigration sentiment and hate crimes against migrant populations. In the most extreme scenarios, discontent with the status quo could even push societies towards more open rebellion and calls for regime change.

Acting today

As much as the green transition and frontier AI pose radical disruptions to traditional economic models and pathways to development, they also offer substantial opportunities. With careful management and a degree of international cooperation, effective labour and social mobility can ensure that prosperity, rather than risks, are shared across borders, unleashing productivity benefits offered by both economic transformations, and enhancing human development.

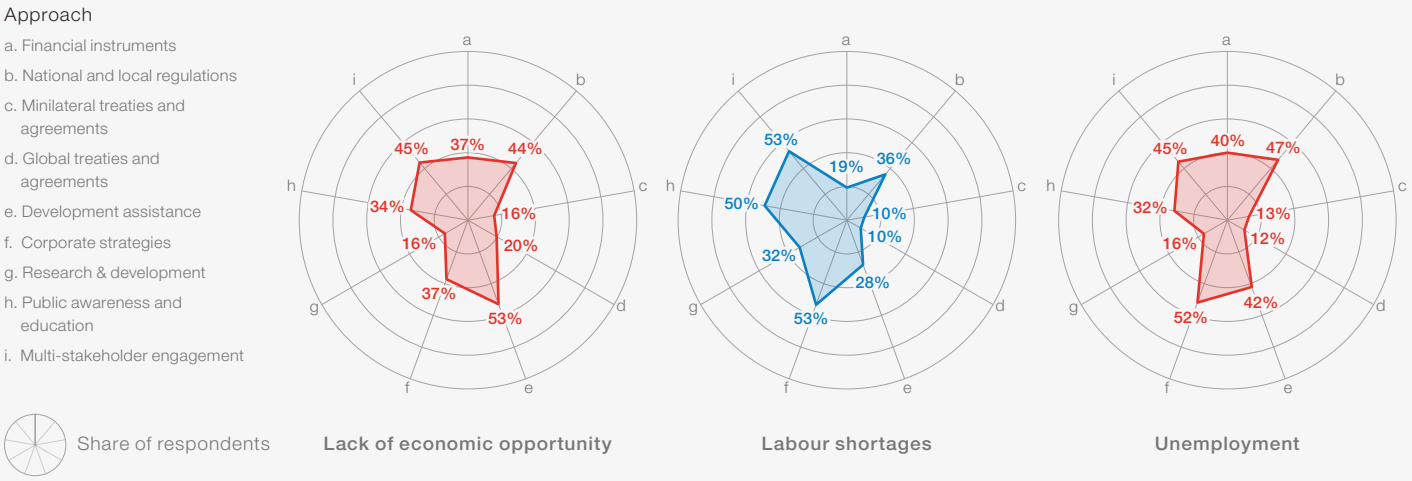
For example, while **Unemployment** is considered to be addressed primarily by **Corporate strategies** and **National and local regulations** (Figure 2.23), a rise in remote work and non-traditional employment arrangements, alongside technology and skills transfers, could help address global inequalities in access to economic opportunities. Current efforts to reshape the global tax regime should also target emerging sources of inequity and support developing markets in capturing a share of the next generation of value chains. The support of multilateral and international finance mechanisms could also reduce real and perceived risks in the most vulnerable countries to unlock financing flows. The expanded use of guarantees could broaden the potential private investor base – or blended finance structures, including with the support of philanthropic investors, could improve the perceived risk-return profile, opening these investment opportunities to institutional investors.[102]

In the face of these structural shifts to the employment landscape, very few demographic groups, industries or countries can remain complacent. Recognizing that both the impacts of climate and AI on job markets will not be uniform, solutions to improve economic mobility must be tailored to address specific vulnerabilities, such as labour shortages, on an industry- and country-level basis. For example, human capital that is "stranded" by the green transition – i.e., displaced workers from carbon-intensive industries – could help address green labour shortages if geographic, economic or skills barriers can be overcome. A stronger focus on sectors that go beyond narrow definitions of tech and green, such as health, care, education, tourism, hospitality, agriculture, personal services and culture – each of which tends to favour human traits and generate large-scale employment – can also help countries support the structural transitions of their labour markets and workforces. The public and private sector will need to work together to ensure the skills transition from sunset to sunrise roles.

FIGURE 2.23

Risk governance: End of development?

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years? Select up to three for each risk."



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

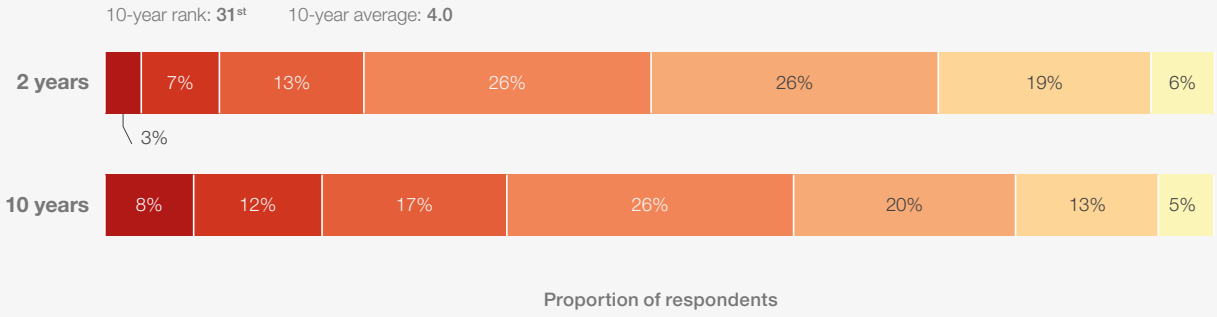
Risk categories: Economic, Environmental, Geopolitical, Societal, Technological

2.6 Crime wave

FIGURE 2.24

Severity score: Illicit economic activity

Global proliferation of organized crime or the illicit activities of businesses that undermine economic advancement and growth. Includes, but is not limited to: illicit financial flows (e.g. tax evasion, sanctions evasion, money laundering) and illicit trade and trafficking (e.g. counterfeiting, human trafficking, wildlife trade, weapons).



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Severity was assessed on a 1-7 Likert scale [1 – Low severity, 7 – High severity]. The percentages in the graph may not add up to 100% because figures have been rounded up/down.

Severity
7 6 5 4 3 2 1
High Low

- State fragility, fueled by climate change, conflict and economic hardship, will create or widen a governance gap in which transnational organized crime can flourish.
- Technological advances will open new markets and allow crime networks to spread, and the human and economic cost of crime may rise in tandem.
- As the ease and attractiveness of these parallel economies grows, the lines between criminals and the state likely will blur.

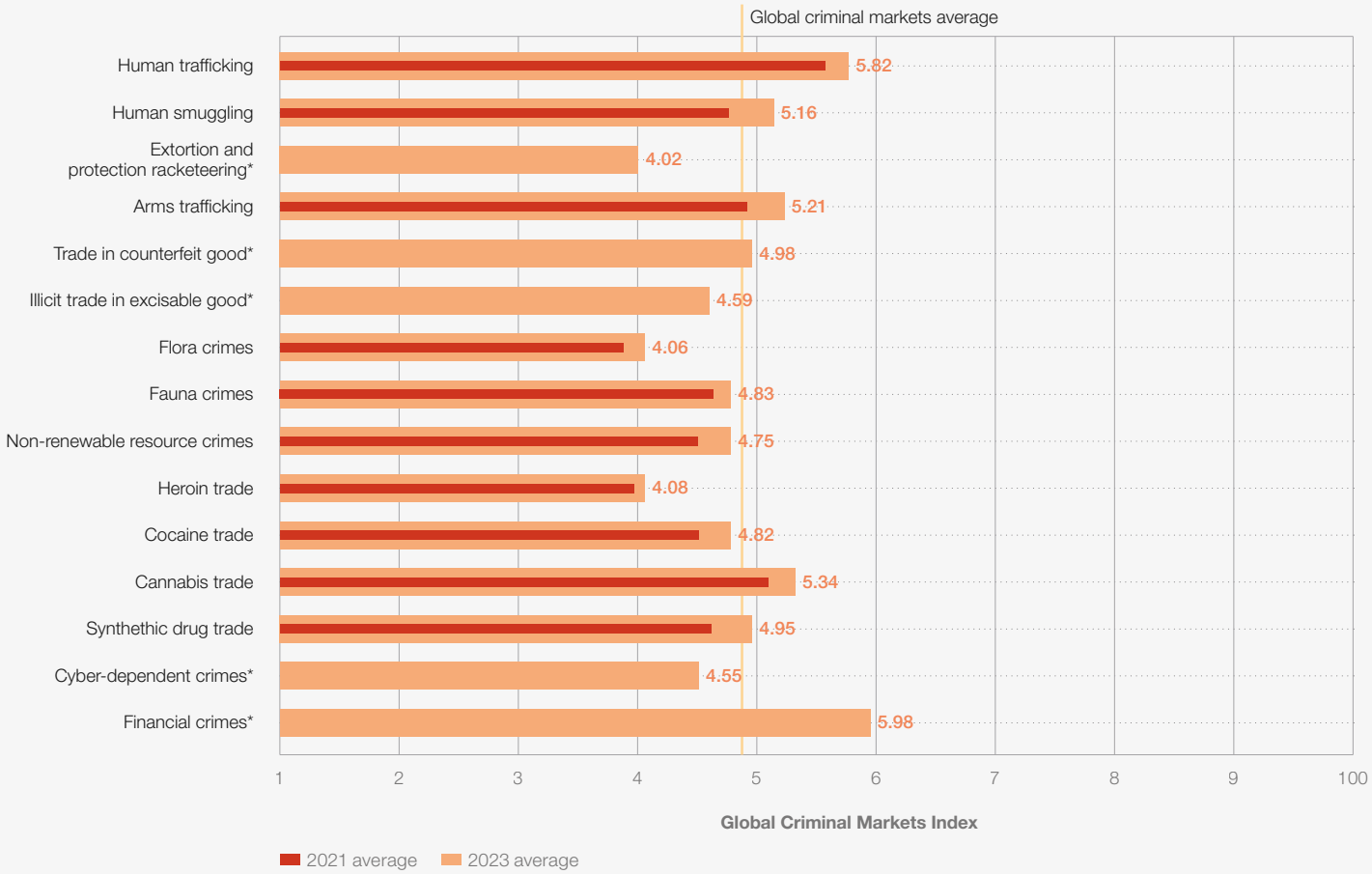
Organized crime may continue to globalize in terms of both targets and operations, and in doing so, could become a powerful and destabilizing presence in a wider set of countries. The latest data suggests that activity has already started to rise across all criminal markets and actors (Figure 2.25).[103] Notwithstanding a drop in homicide rates, organized crime remains a significant contributor to lethal violence: between 2000 and 2019, it resulted in roughly the same number of killings as all armed conflicts across the world combined, at a rate of approximately 65,000 deaths per year.[104]

Illicit economic activity is an under-the-radar risk – it ranks comparatively low in terms of perceived severity over both the two- and 10-year time horizons, at #28 and #31 respectively (Figure 2.24). While narrower than the definition adopted by the GRPS, this section will focus specifically on organized crime in light of these recent data trends to explore whether emerging geostrategic, environmental, demographic and technological forces could turn the already-chronic risk of organized crime into a pressing crisis over the next decade. Indeed, many of the perceived drivers to **Illicit economic activity** are among the most severe perceived risks over the short- and longer-term horizon. It is among the top 10 most connected risks in the network, seen to be driven by **Economic downturn**, **Lack of economic opportunity**, **Cyber insecurity** and **Involuntary migration**, together with **Unemployment**, **Intrastate violence** and **Geoeconomic confrontation**, among others (Figure 2.26).

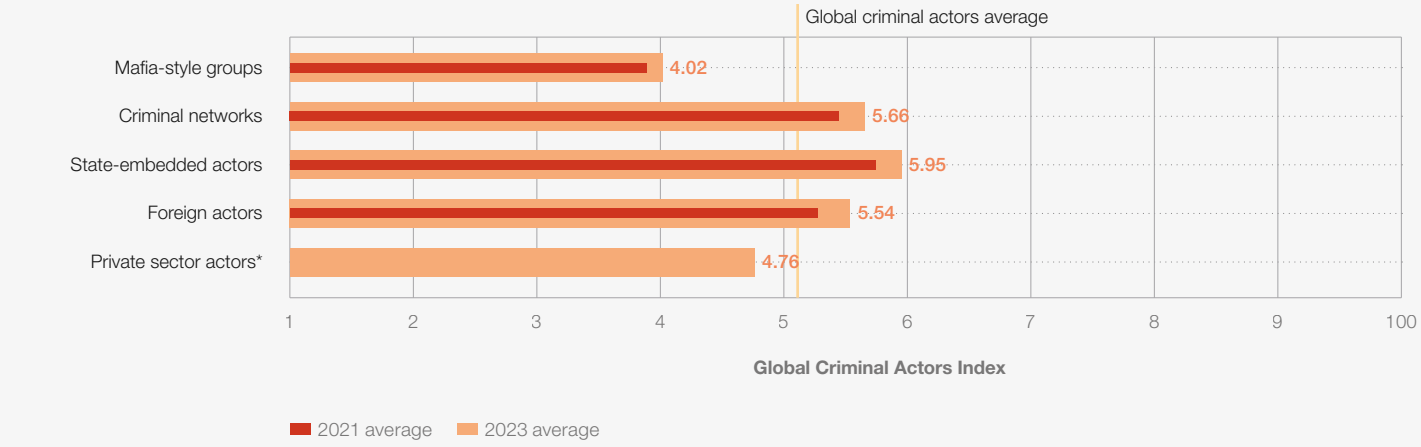
There are three concurrent trends that will fuel crime syndicates and related illicit markets over the next decade. First, societal fragility, arising from geopolitical, socioeconomic and environmental vulnerabilities, may drive an expansion in illicit markets. In parallel, advances in technology will break down barriers to entry – borders, languages, skill sets – opening alternate revenue streams, particularly in the cyber domain, and allowing transnational criminal networks to spread. Finally, the erosion of legitimate governance may create a vacuum of power for criminal organizations to flourish, contesting fragile regimes for territorial control, or capitalizing on lucrative partnerships with state actors.

FIGURE 2.25 | **Criminal markets and actors, 2021 vs 2023**

A. Global criminal markets



B. Global criminal actors



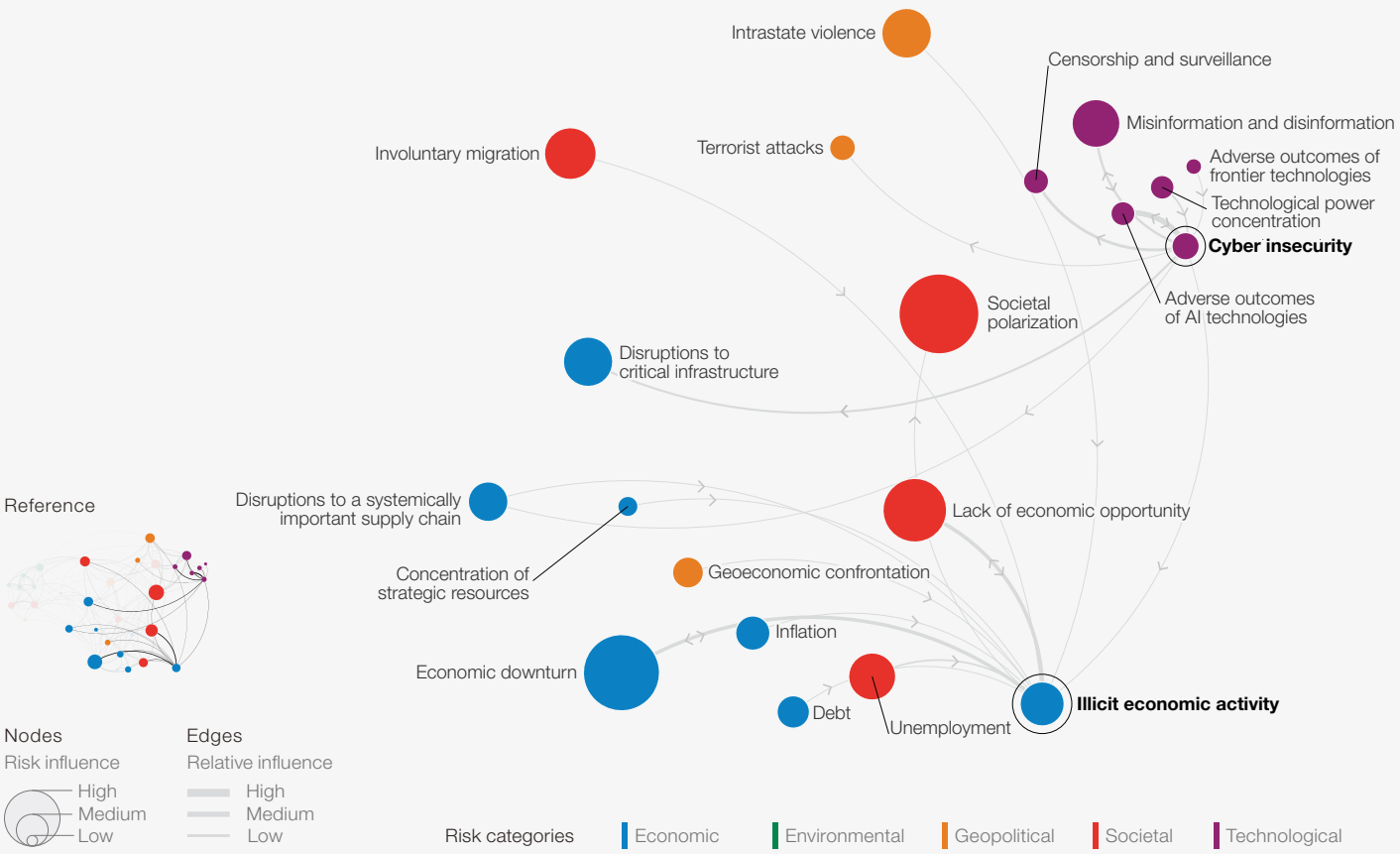
Source
Global Initiative Against Transnational Organized Crime, 2023.

Source
Global averages 2021 versus 2023. A number of new indicators were added to the Global Organized Crime Index in 2023, identified by an asterisk. Financial crimes refers to organized crime that results in a financial loss to the state, entity and / or private individuals through a range of activities. However, given overlap with other categories, where such activities are attributable to another criminal market under the index, financial crimes fall under their respective market indicator (for example, procurement fraud for logging contracts falls under flora crime).

FIGURE 2.26

Organized crime

Risk interconnections: **Illicit economic activity** and **Cyber insecurity**



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Vulnerable markets

Over the coming decade, parallel economies (or black markets)[105] are likely to proliferate, creating lucrative revenue streams and recruitment pools for organized crime networks, as the costs of crime spread more widely to citizens.

Resource stress, conflict and economic hardship will interact to drive more pervasive demand for smuggling as well as vulnerability to criminal activities.[106] Demand for illegal smuggling of drugs, weapons, resources, cash, pharmaceuticals and people will increase in tandem with geopolitical, economic and environmental developments. Expanded sanctions regimes (Chapter 1.4: Rise in conflict), offensive geoeconomic policies, climate-related involuntary migration, and even anticipated price volatility in the licit economy – in food, fuel, health or critical minerals – could all drive an expansion in illegal smuggling in new geographic markets or in new products.[107] For example, ongoing market concentration in the tech value chain means that technology-related smuggling, including in semiconductors, is likely to continue to expand (Chapter 2.4: AI in charge).[108] Illegal mining of critical resources will be a major source of instability across multiple regions, from South-East Asia to Latin America, driving violence, corruption, the displacement of Indigenous populations and environmental destruction.[109] As scarcity drives up resource value, environmental crimes such as illegal logging could drive forced labour and human rights abuses, and accelerate broader environmental impacts in turn.[110] Similarly, the fisheries sector could increasingly attract the interest of organized crime groups. Illegal, unreported and unregulated fishing is a revenue stream that can be engaged in with relative impunity, with jurisdictional challenges hampering enforcement. The practice also complements other forms of marine trafficking, including drugs and people.[111]

At the same time, socioeconomic vulnerabilities arising from these same trends will heighten exposure to criminal networks. Conflict- or climate-related migration will likely drive exploitation by criminal actors engaging in, for example, child labour and cyber slavery.[112] Additionally, social disintegration, urban segregation, poverty and economic inequalities are all well-known

potential drivers of criminal activity and could lead more people towards criminal activity.[113] **Unemployment** is seen to be the strongest driver of **Illicit economic activity** (selected by more than 40% of GRPS respondents). If poverty and unemployment become chronic concerns in countries vulnerable to livelihood crises (**Chapter 2.5: End of development?**), crime may become the predominant source of income and the only way to access necessities for some communities.

Cyber vulnerabilities

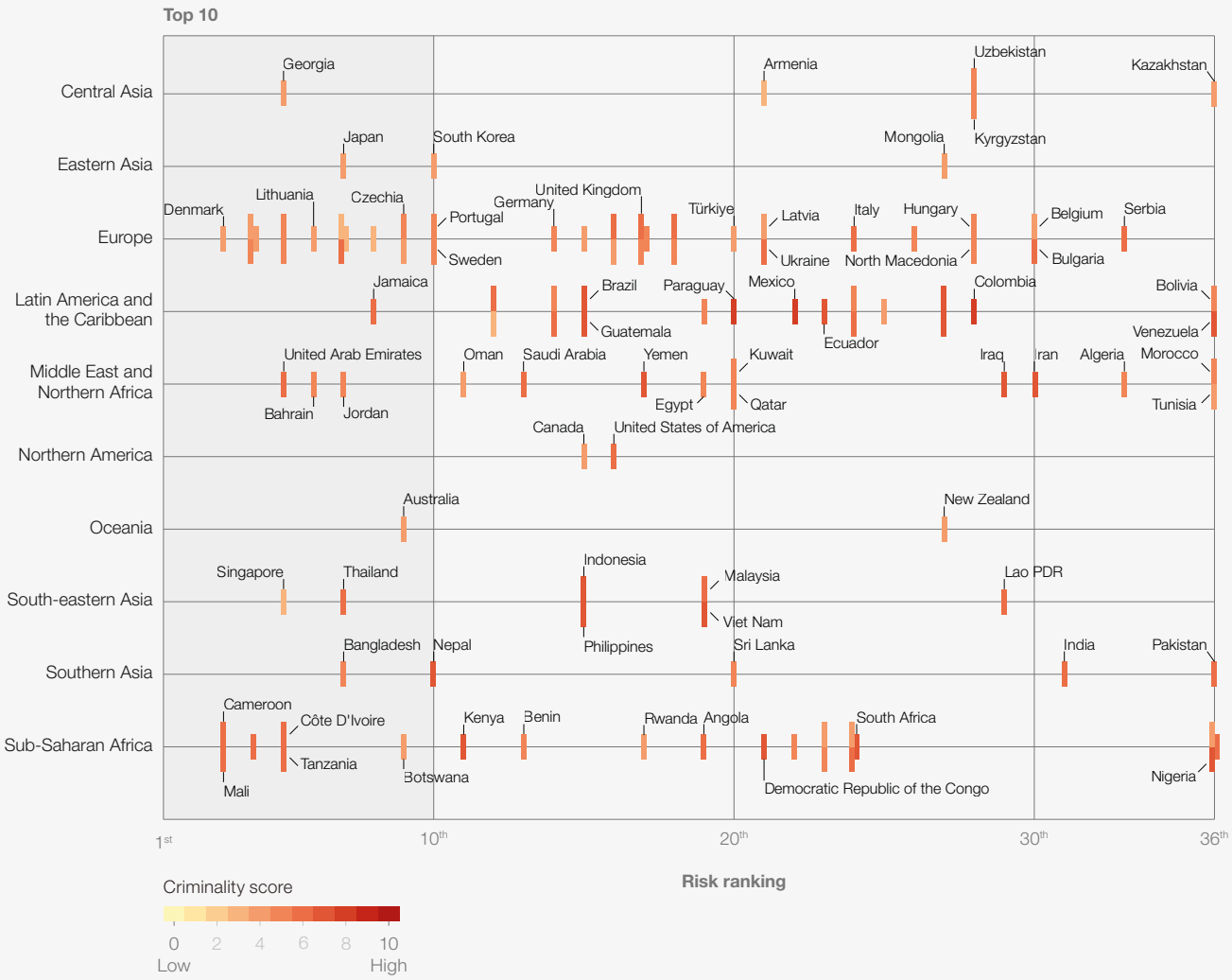
In parallel, rapid integration of advanced technologies are exposing a broader subset of the global population to potential digital and physical exploitation. Organized crime networks will increasingly adopt blended business models utilizing new technologies to diversify illicit funding and fragment the physical presence of organized crime. This will pose significant risks to individuals and legal businesses – and has the potential to lead to violence that challenges the power of governments and threatens the territorial control of states.[114]

New tools and capabilities will open new markets for criminal networks, with cybercrime offering an increasingly low-risk and low-cost revenue stream for organized crime.[115] Phishing attacks, for example, can now be easily and accurately translated into minority languages using generative AI. Over the coming years, more sophisticated cyber defenses will shift targets towards less digitally literate individuals or less secure infrastructure and systems. Already prevalent in Latin America, cybercrime will continue to spread to parts of Asia and West and Southern Africa, as affluency grows and internet connectivity brings large swathes of the global population online.[116]

FIGURE 2.27

National risk perceptions, by region: Cybercrime and cyber insecurity

"Which five risks are the most likely to pose the biggest threat to your country in the next two years?"



Source

World Economic Forum Executive Opinion Survey 2023; Global Initiative Against Transnational Organized Crime, 2023.

Note

The colour of the data points reflects countries' criminality scores, which are based on the Global Organized Crime Index 2023. The score consists of the average of 10 criminal markets and four criminal actor types. A higher score (red) indicates a greater degree of severity of its criminality conditions. The x-axis displays the comparative ranking of **Cybercrime and cyber insecurity** in national risk perceptions, as captured by the EOS survey.

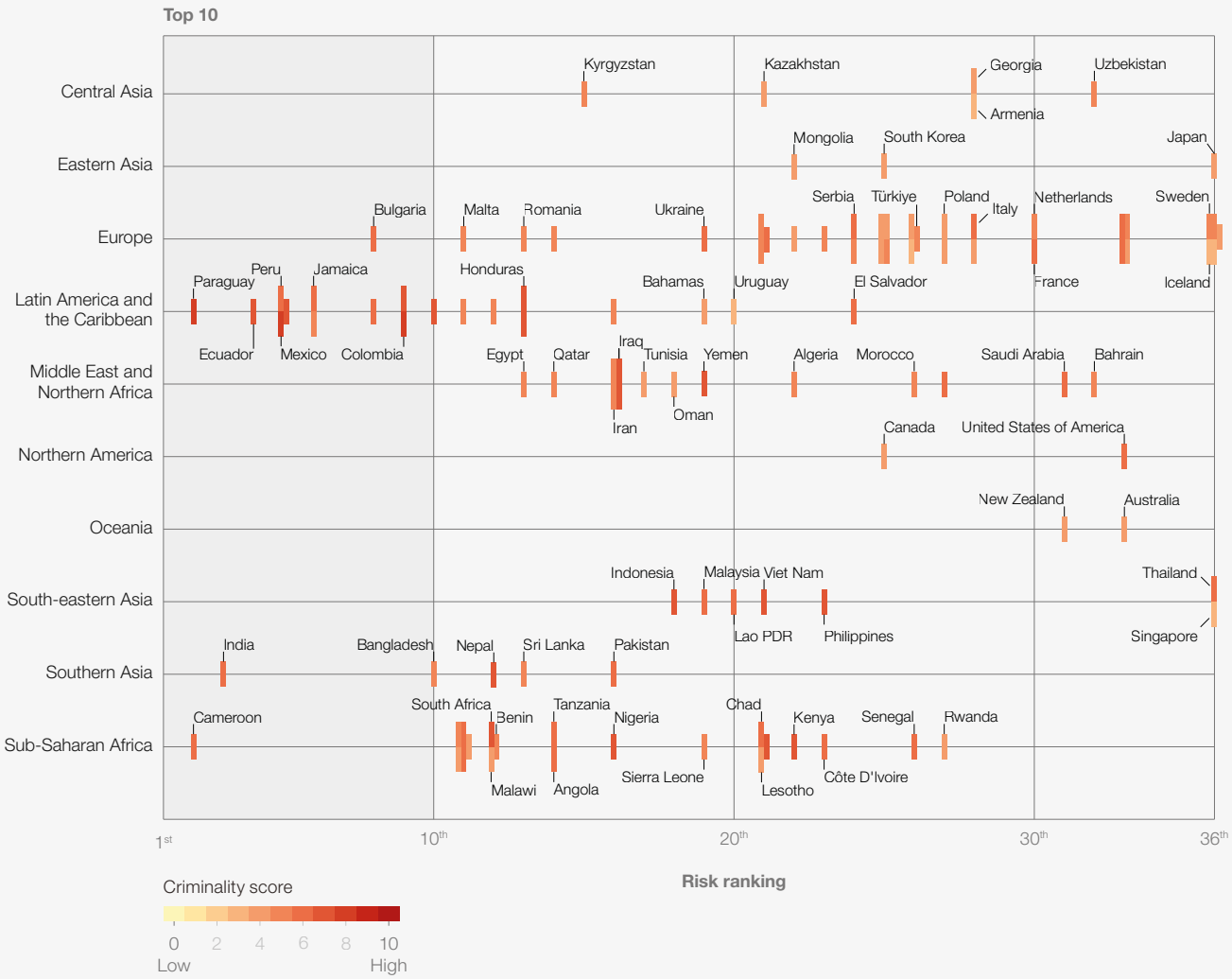
Figure 2.27 outlines a growing concern around the risk of **Cybercrime and cyber insecurity** among business leaders in developing regions. It ranks among the top 10 risks over the next two years for markets already grappling with higher levels of criminality, such as Cameroon, Mali, Thailand and the United Arab Emirates. The adoption of these digitally blended models, leveraging cyber and physical revenue streams, was seen by some experts consulted to potentially lead to a drop in violence if these activities supersede alternate forms of illicit revenue, such as drug trafficking. Notably, however, the destructive influence of cybercrime puts more civilians at risk than when concentrated between criminal actors in intergang warfare, in addition to being associated with other forms of physical violence, such as human trafficking.[117]

Organized crime groups will also increasingly utilize technologies[118] to enable geographic expansion of their networks to strengthen strategic footholds of economic and political activity. Enabled by technology, crime networks can spread to exploit heightened demand, regulatory and enforcement gaps, and negative public perceptions of police and state legitimacy, with financing, suppliers, customers and violence originating in separate markets.[119] EOS results suggest that this may be an underappreciated risk among business perceptions, with more traditional forms of crime – including illicit trade and trafficking – anticipated to remain largely concentrated in Latin America and the Caribbean over the next two years (Figure 2.28). Of note are several economies, such as Nigeria, Kenya, Türkiye and Indonesia, that are already experiencing higher levels of criminality (shaded darker orange), despite **Illicit economic activity** not ranking as highly in risk perceptions.

FIGURE 2.28

National risk perceptions, by region: Illicit economic activity

"Which five risks are the most likely to pose the biggest threat to your country in the next two years?"



Source

World Economic Forum Executive Opinion Survey 2023; Global Initiative Against Transnational Organized Crime, 2023.

Note

The colour of the data points reflects countries' criminality scores, which are based on the Global Organized Crime Index 2023. The score consists of the average of 10 criminal markets and four criminal actor types. A higher score (red) indicates a greater degree of severity of its criminality conditions. The x-axis displays the comparative ranking of **Illicit economic activity** in national risk perceptions, as captured by the EOS survey.

Technology-enabled proliferation of illicit activities in new markets and geographies could have numerous implications at a state, company and individual level. Alongside cybersecurity concerns, it could expose businesses to a range of heightened risks, from reputational threats and regulatory scrutiny relating to financial flows and supply chains to impacts on the long-term viability and success of legitimate markets. In more extreme scenarios, geographic expansion of these criminal syndicates could also lead to political violence that challenges the power of governments, mirroring recent developments throughout Latin America and the Caribbean, such as in Haiti.[120] A rise in "ungoverned" spaces will also likely be seen in the growth of armed and radicalized groups and disenchanted youths in many cities throughout the developed world, threatening public safety and security.

BOX 2.10

The next global shock?

Global fentanyl epidemic

Enforcement of the Taliban's ban and the near eradication of poppy production in Afghanistan could have widespread implications for the global drug trade.[121] Historically accounting for around 80% of opium production, Afghanistan's rapid shortfall in supply could be largely met through synthetic drugs. Fentanyl, for example, offers significant advantages to crime groups: it is less labour-intensive, requires smaller volumes of precursor materials and offers a lower cost revenue stream. Some experts consulted referenced early signs of on-shored production in industrialized economies, enabled by "crime as a service" construction of illicit laboratories. Concerningly, however, fentanyl is far more potent than natural opium, with severe health implications if it were to penetrate markets more broadly. It is the leading cause of death in young adults in the United States, with overdose deaths attributable to fentanyl use reaching almost 110,000 in 2022 – although the United States and China recently reached a deal to limit the export of pre-cursor chemicals.[122]

Randy Laybourne, Unsplash

State-enabled criminality

Growing state fragility will strengthen the ease and attractiveness of these parallel economies for a broader set of actors, either because of reduced state capacity to respond or, in some cases, blurring of the lines between criminals and the state. Indeed, the state itself could support or become susceptible to organized crime over the next decade.[123]

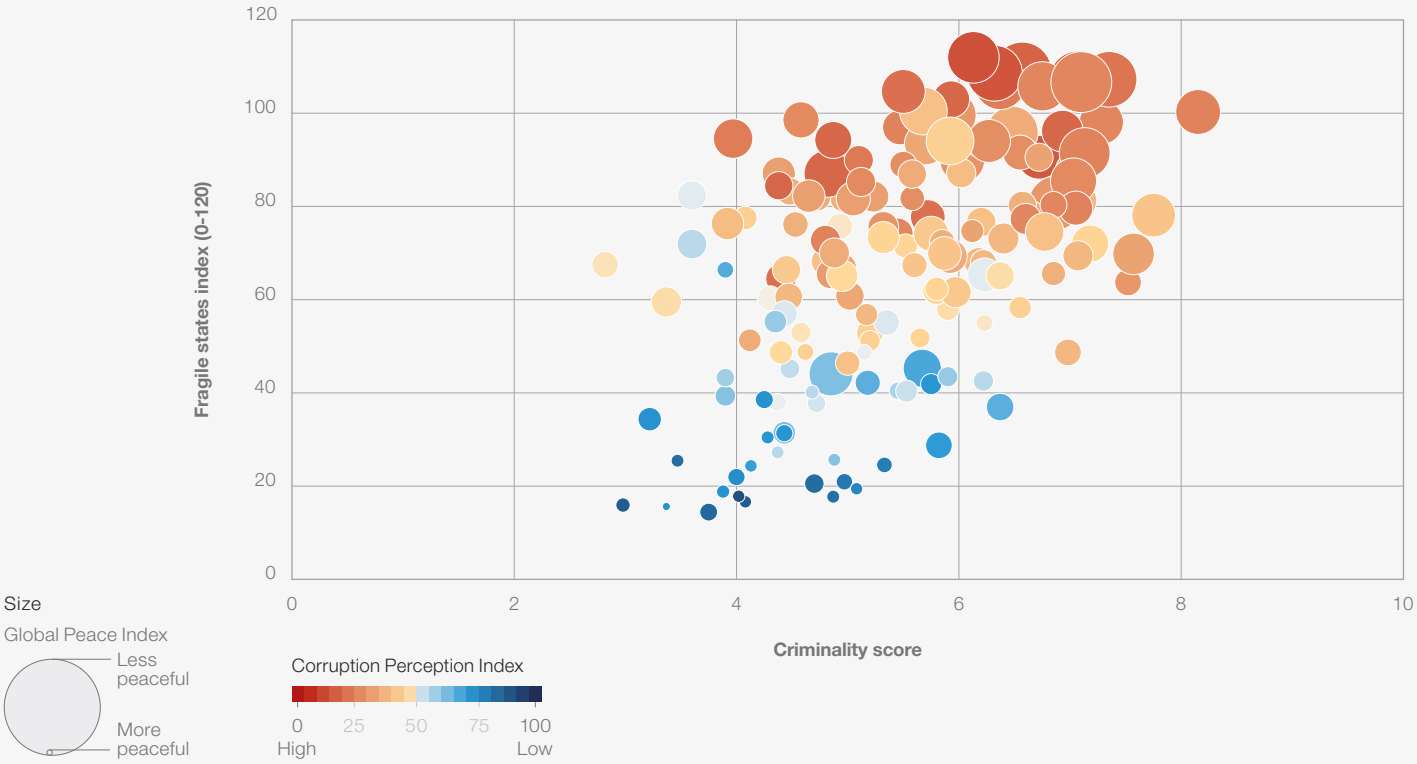
Fueled by fragility, more widespread corruption could create a vicious cycle whereby states are unable to rebuild the resilience to effectively counter organized crime and could instead be captured by criminal networks. For example, corruption could effectively lead to control of transportation hubs, law enforcement and parts of the public sector by organized crime groups.[124] This in turn would undermine the rule of law, distort competition and weaken economic growth further, eroding both societal trust and enforcement capacities. Figure 2.30[125] depicts this symbiotic relationship, whereby criminality is generally found hand-in-hand with fragile states that have higher levels of conflict and corruption.

State "sponsorship" of illicit activities may also become more common (Box 2.11). In cyberspace, for example, commodified products (including ransomware) and services-for-hire (such as money laundering) are now easily accessible for less technically competent actors.[126] This includes

procurement by states and state-backed actors to conduct espionage and foreign interference.[127] The lines between organized crime, private militia and terrorist groups will also blur. Symbiotic partnerships between states and organized crime could grow, such as in acquiring the data of investigative journalists amid a broader crackdown on information flows (Chapter 1.3: False information), in return for concessions and bilateral agreements.

State-sponsored groups may increasingly adopt blended business models, undertaking both licit and illicit activities. For example, the Wagner Group is a private military company that has been designated as a "transnational criminal organization" by the United States. The organization has a network of economic entities, including mining companies, particularly across Africa.[128] The presence of these groups could further fuel the cycle between conflict, fragility, corruption and crime, particularly where the state does not have the capacity to enforce legal rights. Not only can the presence of these groups drive lethal violence, but they also offer an economic pathway for illicit activities as other pathways stall. For example, climate change has led to a decline in arable land and fish stocks in Lake Chad, prompting some individuals to join armed groups as an alternative source of income.[129]

FIGURE 2.29 **Crime and state fragility**



Source
Global Initiative Against Transnational Organized Crime, 2023; Fund for Peace, 2023; Institute for Economics & Peace, 2023; Transparency International, 2023.

Note
Large, red dots in the top right indicate countries with high levels of fragility, corruption and criminality, and low levels of peacefulness. The y-axis depicts countries' fragility scores, which are based on 12 key political, social and economic indicators outlined in the Fragile States Index 2023. A higher score (top) indicates a higher level of relative fragility. The x-axis reflects countries' criminality scores, which are based on the Global Organized Crime Index 2023. A higher score (right) indicates more severe criminality conditions. The colour of data points represents countries' perceived levels of public-sector corruption, based on the Corruptions Perceptions Index 2022. Low scores (shaded red), then, can be interpreted as indicating a highly corrupt country. The size of the dots depicts countries' level of peacefulness, based on 23 qualitative and quantitative indicators outlined in the Global Peace Index 2023. A high score (large dot) can be interpreted as a country having a lower state of peace.

BOX 2.11 | **The next global shock?**

State criminal

In a more extreme scenario, the state itself may become the criminal. Cybercrime could create lucrative illicit funding streams that are difficult to attribute to any particular state and that can be used for government services, illegal political activities (such as assassinations or disinformation campaigns) or even political campaigns. For example, North Korea stole $200 million in cryptocurrencies over an eight-month period last year, allegedly to fund their nuclear weapons programme.[130] Autocratic governments, fragile regimes and "ungoverned states" are more susceptible to such capture.

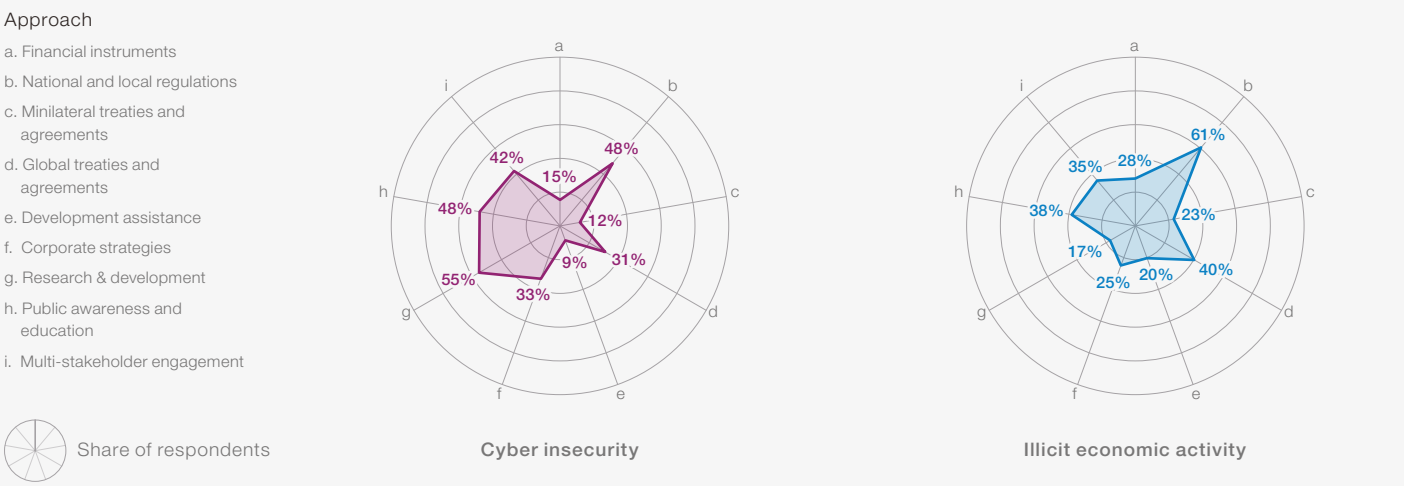
Acting today

To effectively prevent the spread of illicit activity across both geographic and economic markets, three key areas could be tackled: the capability to launder illicit profits; communications that enable extensive criminal networks; and corruption.[131] For example, while the counter-risk of surveillance needs to be handled carefully, the dismantling of encrypted communications could be a radical tool to disrupt transnational crime networks. The takedown of EncroChat, for instance, led to 6,558 arrests and close to EUR900 million in criminal funds seized or frozen.[132] All three pillars can be tackled at multiple layers of governance; however, GRPS respondents feel that **National and local regulations** have the most potential for driving action on risk reduction and preparedness with respect to **Illicit economic activity** (Figure 2.30).

With constraints to international cooperation, there may be a shift towards unilateral, bilateral and regional agreements on crime, although these may prove less effective at addressing transnational criminal networks that transcend political alliances and country borders. GRPS respondents recognize the continued need for **Global treaties and agreements** to boost local efforts. While it was considered comparatively less important in the context of **Cyber insecurity**, the development of a UN treaty on cybercrime is seen by some to be an encouraging step, notwithstanding that it is accompanied by deep concerns around related government repression of human rights.[133] If adopted, it would be the first framework for international cooperation on a cyber issue, addressing the prevention, investigation and prosecution of cybercrime.[134] Alongside these efforts, a focus on socioeconomic drivers will also be essential to reduce entry pathways into, and demand for, criminal activities.

FIGURE 2.30 **Risk governance: Crime wave**

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years? Select up to three for each risk."



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Risk categories: Economic | Environmental | Geopolitical | Societal | Technological

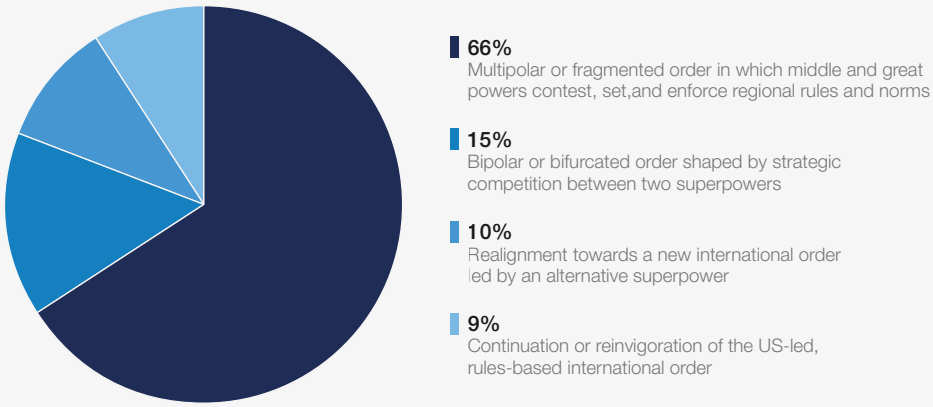
2.7 Preparing for the decade ahead

When asked about the global political outlook for cooperation on risks over the next decade, two-thirds of respondents (66%) believe that we will face a multipolar or fragmented order, in which middle and great powers contest, set and enforce regional rules and norms (Figure 2.31). Cooperation on urgent global issues, from an interrelated environmental crisis to high-speed technological advances, could be in increasingly short supply, requiring new approaches to addressing global risks. The next chapter (**Chapter 3: Responding to global risks**) explores different types of global risks and how to address them ahead of the next decade in a new multipolar context.

FIGURE 2.31

Global political outlook

"Which of the following best characterizes the global political environment for cooperation on global risks in 10 years?"



Source
World Economic Forum Global Risks Perception Survey 2022-2023.

Endnotes

1. Severity scores of 3.9 for the two-year and 4.7 for the 10-year horizon in 2024, compared to 5.3 and 5.2, respectively, in 2023.
2. Institute for Economics & Peace, *Global Terrorism Index 2023*, 2023, https://www.visionofhumanity.org/wp-content/uploads/2023/03/GTI-2023-web-170423.pdf.
3. Longer-term, macro, structural trends and uncertainties are often used in conducting strategic foresight exercises. For example, the EU's 2023 Strategic Foresight outlines a set of key social and economic challenges, including the rise of geopolitics and reconfiguration of globalization. The US National Intelligence Council's *Global Trends 2024 Report* outlines four "structural forces", defined as "conditions and trends that are somewhat knowable or forecastable with data because of existing conditions of patterns", and includes a detailed set of predictions relating to demographics and human development, environment, economics and technology. The structural forces adopted for the purposes of this report build on and adapt these concepts, to define the most material longer-term shifts in the systemic elements of the global landscape, identified through expert stakeholder consultation. For more information, see: National Intelligence Council, *Global Trends 2040: A more contested world*, March 2021, https://www.dni.gov/index.php/gt2040-home, and European Commission, *2023 Strategic Foresight Report*, 6 July 2023, https://commission.europa.eu/strategy-and-policy/strategic-planning/strategic-foresight/2023-strategic-foresight-report_en.
4. The global population is projected to increase by nearly 0.7 billion people over the next decade, but population growth has been slowing over the past 50 years, with the global growth rate hitting 0.82% in 2021. This reflects rapidly falling fertility rates over the same period, dropping to around 2.3 births per woman, globally, in 2021. In contrast, life expectancy globally grew by almost nine years since 1990. See the following for further details: PRB, *Africa's Future: Youth and the Data Defining Their Lives*, https://ourworldindata.org/world-population-update-2022; https://www.prb.org/resources/africas-future-youth-and-the-data-defining-their-lives/#:~:text=By%202030%2C%20young%20Africans%20are,critical%20now%20more%20than%20ever, accessed 30 November, 2023; Rotman, David, "We're not prepared for the end of Moore's law", *MIT Technology Review*, 24 February 2020, https://www.technologyreview.com/2020/02/24/905789/were-not-prepared-for-the-end-of-moores-law/; Singh, Anuraag, Giorgio Triulzi and Christopher L. Magee, "Technological improvement rate predictions for all technologies: Use of patent data and an extended domain description", *Research Policy*, vol. 50 ,issue 9, November 2021, https://www.sciencedirect.com/science/article/pii/S0048733321000950; World Meteorological Association, *WMO Global Annual to Decadal Climate Update*, May 2023, https://library.wmo.int/index.php?lvl=notice_display&id=22272#.ZGZbQqXMK5c; Diffenbaugh, Noah S. and Elizabeth A. Barnes, "Data-driven predictions of the time remaining until critical global warming thresholds are reached", *PNAS*, 30 January 2023, vol. 120, no. 6, https://www.pnas.org/doi/10.1073/pnas.2207183120; IPCC, *Climate Change 2022: Impacts, Adaptation and Vulnerability*, 27 February 2022, https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/.
5. The IPCC defines a tipping point as a "critical threshold beyond which a system reorganises, often abruptly and/or irreversibly". IPCC, *IPCC Sixth Assessment Report (AR6)*, https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_Annex-I.pdf, accessed 30 November, 2023.
6. At the current level of global warming (~1.1°C), five climate systems could have passed tipping points in theory, including: low-latitude coral reefs; the permafrost; the Greenland and West Antarctic ice sheets; and the Labrador-Irminger Seas Convection. At 1.5°C of warming, another five could be placed at risk: the Boreal Forests (North and South); Atlantic M.O. Circulation (AMOC); Barents Sea ice; and Mountain Glaciers. Notably, however, this is the minimum temperature level in what can be quite large uncertainty bandings. See: McKay, David I. Armstrong, et. al., "Exceeding 1.5°C global warming could trigger multiple climate tipping points", *Science*, vol. 377, iss 6611, 9 September 2022, https://www.science.org/doi/10.1126/science.abn7950.
7. Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2022: Impacts, Adaptation and Vulnerability*, 27 February 2022, https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/.
8. McKay, et. al., 2022.
9. Lenton, Timothy M., et. al., *Global Tipping Points*, December 2023, https://global-tipping-points.org/.
10. Tollefson, Jeff, "Catastrophic change looms as Earth nears climate 'tipping points', report says", *Nature*, 6 December 2023, https://www.nature.com/articles/d41586-023-03849-y.
11. Diffenbaugh, Noah S. and Elizabeth A. Barnes, "Data-driven predictions of the time remaining until critical global warming thresholds are reached", *PNAS*, vol. 120, no. 6, 30 January 2023, https://www.pnas.org/doi/10.1073/pnas.2207183120; Naughten, Kaitlin, A., Paul R. Holland and Jan De Rydt, "Unavoidable future increase in West Antarctic ice-shelf melting over the twenty-first century", *Nature Climate Change*, vol. 13, 23 October 2023, pp. 1222-1228, https://www.nature.com/articles/s41558-023-01818-x; Lenton, et. al., 2023.
12. Lenton, et. al., 2023.
13. Wunderling, et. al., "Interacting tipping elements increase risk of climate domino effects under global warming", *Earth System Dynamics*, vol. 12, 3 June 2021, pp. 601-619, https://esd.copernicus.org/articles/12/601/2021/esd-12-601-2021.pdf.
14. Lenton, et. al., 2023.

15. Minimum thresholds for some tipping points could be as low as 0.8°C. See: McKay, et. al., 2022.

16. McKay, et. al., 2022.

17. Organisation for Economic Co-operation and Development (OECD), *Climate Tipping Points: Insights for Effective Policy Action*, Paris: OECD, 2022, https://www.oecd-ilibrary.org/environment/climate-tipping-points_abc5a69e-en.

18. Boers, Niklas, "Observation-based early-warning signals for a collapse of the Atlantic Meridional Overturning Circulation", *Nature Climate Change*, vol. 11, 5 August 2021, pp. 680-688, https://www.nature.com/articles/s41558-021-01097-4; Caesar, L., et. al., "Current Atlantic Meridional Overturning Circulation weakest in last millennium", *Nature Geoscience*, vol. 14, 17 February 2022, pp. 118-120, https://www.nature.com/articles/s41561-021-00699-z; Lenton, et. al., 2023.

19. OECD, 2022; Lenton, et. al., 2023.

20. Brovkin, Victor, et. al., "Past abrupt changes, tipping points and cascading impacts in the Earth system", *Nature Geoscience*, vol. 14, 29 July 2021, pp. 550-558, https://www.nature.com/articles/s41561-021-00790-5.

21. University of Notre Dame, *ND-Gain: Notre Dame Global Adaptation Initiative*, https://gain.nd.edu/our-work/country-index/rankings/, accessed 27 October 2023.

22. Ibid.

23. UN Environment Programme (UNEP), *Adaptation Gap Report 2023*, 2 November 2023, https://www.unep.org/resources/adaptation-gap-report-2023.

24. Nagano, Takato and Takashi Sekiyama, "Review of Vulnerability Factors Linking Climate Change and Conflict", *Climate*, vol. 11, no. 5, 9 May 2023, https://www.mdpi.com/2225-1154/11/5/104.

25. Co-Designing the Assessment of Climate Change Costs (OACCH), *The Economic Cost of Climate Change in Europe: Climate and Socio-Economic Tipping Points*, 2021, https://www.coacch.eu/wp-content/uploads/2018/03/COACCH_Policy-Brief-3_Tipping-PointsWEB_REV.pdf.

26. United Nations University – Institute for Environment and Human Security (UNU EHS), *2023 Interconnected Disaster Risks*, 2023, https://interconnectedrisks.org/.

27. OECD, 2022; Beck, Michael W., et. al., "The global flood protection savings provided by coral reefs", *Nature Communications*, vol. 9, 12 June 2018, https://www.nature.com/articles/s41467-018-04568-z.

28. Also worth noting is the contribution of climate tipping points to climate change more broadly. Over the next century, alongside methane, the collapse of permafrost could release more than double the remaining carbon budget for maintaining warming below 1.5°C (888 Gt against 400 Gt), which also represents three-quarters of the budget for maintaining warming below 2°C. See: OECD, 2022.

29. WTW, *The potential for rate-induced climate tipping points in insurance markets*, 26 October 2023, https://www.wtwco.com/en-gh/insights/2023/10/the-potential-for-rate-induced-climate-tipping-points-in-insurance-markets.

30. Kwiatkowski, Lester, et. al, "Decline in Atlantic Primary Production Accelerated by Greenland Ice Sheet Melt", *Geophysical Research Letters*, vol. 46, no. 20, 23 October 2019, pp. 11347-11357, https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2019GL085267; Defrance, Dmitri, Gilles Ramstein, Syvlie Sylvie Charbit and Jean-Paul Vanderlinden, "Consequences of rapid ice sheet melting on the Sahelian population vulnerability", *PNAS*, vol. 114, no. 25, 5 June 2017, pp. 65333-6538, https://www.pnas.org/doi/full/10.1073/pnas.1619358114.

31. Huang, Jikun, Martín Piñeiro and Valeria Piñeiro, "BRIEF 2: Global food security and market stability: The role and concerns of large net food importers and exporters", *International Food Policy Research Institute*, 2018, https://www.ifpri.org/publication/brief-2-global-food-security-and-market-stability-role-and-concerns-large-net-food.

32. Surminski, Swenja, "Staying Above Water: A Systemic Response to Rising Flood Risk", *Marsh McLennan*, February 2023, https://www.marshmclennan.com/insights/publications/2023/february/staying-above-water-a-systemic-response-to-rising-flood-risk.html.

33. Gramling, Carolyn, "The 'Doomsday' glacier may soon trigger a dramatic sea-level rise", *Science News Explores*, 24 January 2022, https://www.snexplores.org/article/antarctica-thwaites-glacier-ice-shelf-collapse-climate-5-years; Fox, Douglas, "Antarctica's Collapse Could Begin Even Sooner Than Anticipated", *Scientific American*, 1 November 2022, https://www.scientificamerican.com/article/antarcticas-collapse-could-begin-even-sooner-than-anticipated/#:~:text=The%20Thwaites%20Glacier%20itself%20holds,meters%E2%80%94more%20than%2010%20feet.; Luhn, Alec, "'Doomsday' glacier in Antarctica isn't as vulnerable as feared", *NewScientist*, 8 June 2023, https://www.newscientist.com/article/2377267-doomsday-glacier-in-antarctica-isnt-as-vulnerable-as-feared/; Naughten, et al., 2023; Chowdjury, Joie, "At Historic ITLOS Hearings, States Stake Out Positions on Climate Duties and Ocean Protection", *Center for International Environmental Law*, https://www.ciel.org/at-historic-itlos-hearings-states-stake-out-positions-on-climate-duties-and-ocean-protection/, accessed 30 October 2023.

34. Gramling, 2022; Fox, 2022; Luhn, 2023; Naughten, et al., 2023; Chowdjury, 2023.

35. Climate Central, *Coastal Risk Screening Tool*, https://coastal.climatecentral.org/map/10/101.3975/14.0894/?theme=water_level&map_type=water_level_above_mhhw&basemap=roadmap&contiguous=true&elevation_model=best_available&refresh=true&water_level=0.0&water_unit=m, accessed 6 November 2023.

36. OECD, 2022.

37. de Bruin, Jelte G. H., Victor F. Bense and Martine J. van der Ploeg, "Inferring Permafrost Active Layer Thermal Properties From Numerical Model Optimization", *Geophysical Research Letters*, vol. 48, no. 16, 16 July 2021, https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2021GL093306; Miner, Kimberley R., et. al., "Permafrost carbon emissions in a changing Arctic", *Nature Reviews Earth & Environment*, vol. 3, 11 January 2022, pp. 55-67, https://www.

nature.com/articles/s43017-021-00230-3.

38. Lemieux, Audrée, et. al., "Viral spillover risk increases with climate change in High Arctic lake sediments", *Proceedings of the Royal Society B: Biological Sciences*, 19 October 2022, https://royalsocietypublishing.org/doi/10.1098/rspb.2022.1073; Miner, Kimberley, et. al., "Emergent biogeochemical risks from Arctic permafrost degradation", *Nature Climate Change*, vol. 11, October 2021, pp. 811-819, https://www.nature.com/articles/s41558-021-01162-y.epdf?sharing_token=1lQrLZoEAZpmBtUsUpUBotRgN0jAjWel9jnR3ZoTv0Pjhsh49EkPfNM8CfwtqRog4DeRF4tchrdaO9TbkQzrpKzauUxHOoaBSK_B3rBXK__e9elk7NvOLd1-LydkUP0w4J6TSV0Mr5KsOOzegbKfzPS-SJEF3wyR-4_ewU8hlrwWPLVaYgr0fjQqL9jBw9cttuljuSfDFl9DlB4gBFn3pw_beEV1FNI49ztDNfe2iAE%3D&tracking_referrer=edition.cnn.com.

39. Boren, Zach, "The permafrost pandemic: could the melting Arctic release a deadly disease?", *Unearthed*, 3 July 2020, https://unearthed.greenpeace.org/2020/07/03/arctic-permafrost-pandemic-life-uh-finds-a-way/.

40. Defined as the intentional, large-scale manipulation of an environmental process on Earth to counteract the effects of climate change. See: Grisé, Michelle, et. al., *Climate Control: International Legal Mechanisms for Managing the Geopolitical Risks of Geoengineering, Santa Monica: Rand Corporation*, 2021, https://www.rand.org/pubs/perspectives/PEA1133-1.html; Kulkarni, Sanjana, "Reversing Climate Change with Geoengineering", *Harvard University*, 3 January 2022, https://sitn.hms.harvard.edu/flash/2022/reversing-climate-change-with-geoengineering/.

41. Technologies that would reduce or stop global warming by increasing the amount of incoming sunlight that is reflected by the atmosphere back to space, such as stratospheric aerosol injection, the release of highly reflective fine particles into the stratosphere, and marine cloud brightening. See: Felgenhauer, Tyler et. al., *Solar Radiation Modification: A Risk-Risk Analysis, Carnegie Climate Governance Initiative*, March 2022, https://www.c2g2.net/wp-content/uploads/202203-C2G-RR-Full.pdf.

42. U.S. Department of Energy, *Biden-Harris Administration Announces Up To $1.2 Billion For Nation's First Direct Air Capture Demonstrations in Texas and Louisiana*, [Press release], 11 August 2023, https://www.energy.gov/articles/biden-harris-administration-announces-12-billion-nations-first-direct-air-capture, accessed 30 October 2023; Bloomberg, "Carbon Capture Investment Hits Record High of $6.4 Billion", *BloombergNEF blog*, 15 February 2023, https://about.bnef.com/blog/carbon-capture-investment-hits-record-high-of-6-4-billion/.

43. Walsh, Alistair, "Solar geoengineering — climate-solution or Pandora's box?", *DW*, 24 July 2023, https://www.dw.com/en/solar-geoengineering-the-controversial-climate-change-solution/a-66240255; Abatayo, Anna Lou, "Solar geoengineering may lead to excessive cooling and high strategic uncertainty", *PNAS*, vol. 117, no. 24, 1 June 2020, pp. 13393-13398, https://www.pnas.org/doi/full/10.1073/pnas.1916637117.

44. Sovacool, Benjamin and Chad M. Baum, *Ensuring the environmental sustainability of emerging technologies for carbon dioxide removal*, EPFL International Risk Governance Center, 2022, https://www.epfl.ch/research/domains/irgc/wp-content/uploads/2022/12/IRGC-2022-Ensuring-the-environmental-sustainability-of-emerging-technologies-for-carbon-dioxide-removal.pdf.

45. Swiss Re, *Solar radiation management – risks from reversing climate change*, 14 June 2023, https://www.swissre.com/institute/research/sonar/sonar2023/solar-radiation-risks-climate-change.html.

46. Smyth, Jamie and Aime Williams, "California accuses Big Oil of covering up climate change risks in lawsuit", *Financial Times*, 17 September 2023, https://www.ft.com/content/3b655443-5721-4524-9e8f-ffbf314b06a7?desktop=true&segmentId=7c8f09b9-9b61-4fbb-9430-9208a9e233c8#myft:notification:daily-email:content; Sands, Philippe, "A momentous climate case could force countries to do more", *Financial Times*, 1 September 2023, https://www.ft.com/content/9da70dde-5904-4469-90bf-1248e906b721?desktop=true&segmentId=7c8f09b9-9b61-4fbb-9430-9208a9e233c8#myft:notification:daily-email:content.

47. Grisé, et. al., 2021.

48. Felgenhauer, et. al., 2022, Swiss Re, 2023.

49. Climate Overshoot Commission, *Reducing the Risks of Climate Overshoot*, September 2023, https://www.overshootcommission.org/_files/ugd/0c3b70_bab3b3c1cd394745b387a594c9a68e2b.pdf.

50. Temple, James, "A startup says it's begun releasing particles into the atmosphere, in an effort to tweak the climate", *MIT Technology Review*, 24 December 2022, https://www.technologyreview.com/2022/12/24/1066041/a-startup-says-its-begun-releasing-particles-into-the-atmosphere-in-an-effort-to-tweak-the-climate/; europorter, *George Soros: 'We must refreeze the Arctic to save civilisation'*, 16 February 2023, https://www.eureporter.co/world/germany/2023/02/16/george-soros-we-must-refreeze-the-arctic-to-save-civilization/.

51. For example, see Surminski, Swenja, et. al., "Flood Risk Index", *Marsh McLennan*, https://www.marshmclennan.com/insights/publications/2021/september/marsh-mclennan-flood-risk-index.html, accessed 25 November 2023.

52. Richardson, Katherine, et. al., "Earth beyond six of nine planetary boundaries", *Science Advances*, vol. 9, iss 37, 13 September 2023, https://www.science.org/doi/10.1126/sciadv.adh2458.

53. Taeihagh, Araz, "Governance of artificial intelligence", *Policy and Society*, vol. 40, iss 2, 4 June 2021, pp. 137-157, https://academic.oup.com/policyandsociety/article/40/2/137/6509315.

54. Feldstein, Steven, "Evaluating Europe's push to enact AI regulations: how will this influence global norms?", *Taylor & Francis*, 27 April 2023, https://www.tandfonline.com/doi/full/10.1080/13510347.2023.2196068.

55. Ye, Josh, "How Huawei plans to rival Nvidia in the AI chip business", *Reuters*, 7 November 2023, https://www.reuters.com/technology/how-huawei-plans-rival-nvidia-ai-chip-business-2023-11-07/; Leswing, Kif, "Meet the $10,000 Nvidia chip powering the race for A.I.", *CNBC*, 23 February 2023, https://www.cnbc.com/2023/02/23/nvidias-a100-is-the-

10000-chip-powering-the-race-for-ai-.html; Nellis, Stephen and Max A. Cherney, "US curbs AI chip exports from Nvidia and AMD to some Middle East countries", *Reuters*, 1 September 2023, https://www.reuters.com/technology/us-restricts-exports-some-nvidia-chips-middle-east-countries-filing-2023-08-30/; Nellis, Stephen, "U.S. denies blocking chip sales to Middle East", *Reuters*, 31 August 2023, https://www.reuters.com/technology/us-says-it-has-not-blocked-chip-sales-middle-east-2023-08-31/; Kharpal, Arjun, "Canon, known for its cameras, launches ASML challenge with machine to make the most advanced chips", *CNBC*, 13 October 2023, https://www.cnbc.com/2023/10/13/canon-launches-asml-challenge-with-machine-to-make-most-advanced-chips.html; Sun, Leo, "Could Canon Become the Next ASML", *The Motley Fool*, 18 October 2023, https://www.fool.com/investing/2023/10/18/could-canon-become-the-next-asml/#:~:text=That's%20why%20ASML%20controls%20more,to%20perfect%20its%20EUV%20technology;, Carrara, S., et. al., Supply chain analysis and material demand forecast in strategic technologies and sectors in the EU – a foresight study, *European Commission*, 2023, https://single-market-economy.ec.europa.eu/system/files/2023-03/Raw%20Materials%20Foresight%20Study%202023.pdf; Richter, Felix, "Amazon maintains lead in the cloud market", *Statista*, 8 August 2023, https://www.statista.com/chart/18819/worldwide-market-share-of-leading-cloud-infrastructure-service-providers/; Vipra, Jai and Anton Korinek, "Market Concentration Implications of Foundation Models: The Invisible Hand of ChatGPT", *Brookings*, September 2023, https://arxiv.org/ftp/arxiv/papers/2311/2311.01550.pdf; Benaich, Nathan, *State of AI Report 2023*, Air Street Capital, 12 October 2023, https://www.stateof.ai/; Tomoshige, Hideki, "CHIPS+ and Semiconductor Packaging", *Center for Strategic & International Studies*, 7 November 2022, https://www.csis.org/blogs/perspectives-innovation/chips-and-semiconductor-packaging.

56. A foundation model is a large-scale AI model that has been trained on a large set of data that can be adapted to many applications, such as GPT-3.

57. Allen, Gregory C., "China's New Strategy for Waging the Microchip Tech War", *Center for Strategic & International Studies*, 3 May 2023, https://www.csis.org/analysis/chinas-new-strategy-waging-microchip-tech-war.

58. Haeck, Pieter, "With Apple's iPhone 15, the EU wins the charger war", *Politico*, 12 September 2023, https://www.politico.eu/article/apple-iphone-15-european-union-regulations-charger-usbc-lightning/#:~:text=proprietary%20Lightning%20solution.-,It's%20an%20adaptation%20that%20Apple%20was%20pressured%20into%20after%20European,saying%20it%20would%20stifle%20innovation.

59. Stolton, Samuel and Benoit Berthelot, "EU Begins Early-Stage Probe Into AI Chip Market Abuses that Nvidia Dominates", *Bloomberg*, 29 September 2023, https://www.bloomberg.com/news/articles/2023-09-29/eu-begins-early-stage-probe-into-ai-chip-market-abuses-that-nvidia-dominates#xj4y7vzkg; Hancock, Edith, "5 things to know as the Digital Markets Act ramps up", *Politico*, 5 September 2023, https://www.politico.eu/article/eu-5-things-to-know-digital-market-act-gatekeepers-big-tech/; Martens, Bertin, "Pro- and Anti-Competitive Provisions in the Proposed European Union Data Act", *Brugel*, working paper no. 1, 9 January 2023, https://www.bruegel.org/sites/default/files/2023-01/WP%2001.pdf.

60. Whyman, Bill, "AI Regulation is Coming – What is the Likely Outcome?", *Center for Strategic & International Studies*, 10 October 2023, https://www.csis.org/blogs/strategic-technologies-blog/ai-regulation-coming-what-likely-outcome.

61. Vipra and Korinek, 2023; Bertuzzi, Luca, "Are EU regulators ready for concentration in the AI market?", *Euractiv*, 3 November 2023, https://www.euractiv.com/section/artificial-intelligence/news/are-eu-regulators-ready-for-concentration-in-the-ai-market/.

62. Malgieri, Gianclaudio and Frank Pasquale, "Licensing high-risk artificial intelligence: Toward ex ante justification for a disruptive technology", *Computer Law & Security Review*, vol. 52, April 2024, https://www.sciencedirect.com/science/article/pii/S0267364923001097, accessed 9 November 2023; Curi, Maria, "The battle brewing over AI licensing", *Axios Pro*, 10 July 2023, https://www.axios.com/pro/tech-policy/2023/07/10/battle-brewing-over-ai-licensing.

63. Hogarth, Ian, "We must slow down the race to God-like AI", *Financial Times*, 13 April 2023, https://www.ft.com/content/03895dc4-a3b7-481e-95cc-336a524f2ac2?desktop=true&segmentId=7c8f09b9-9b61-4fbb-9430-9208a9e233c8#myft:notification:daily-email:content; Criddle, Cristina and Madhumita Murgia, "Big tech companies cut AI ethics staff, raising safety concerns", *Financial Times*, 29 March 2023, https://www.ft.com/content/26372287-6fb3-457b-9e9c-f722027f36b3?desktop=true&segmentId=7c8f09b9-9b61-4fbb-9430-9208a9e233c8#myft:notification:daily-email:content.

64. H., John, "Migrating to post-quantum cryptography", *National Cyber Security Centre*, 3 November 2023, https://www.ncsc.gov.uk/blog-post/migrating-to-post-quantum-cryptography-pqc; The White House, *National Security Memorandum on Promoting United States Leadership in Quantum Computing While Mitigating Risks to Vulnerable Cryptographic Systems* [Press release], 4 May 2022, https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/04/national-security-memorandum-on-promoting-united-states-leadership-in-quantum-computing-while-mitigating-risks-to-vulnerable-cryptographic-systems/; Vipra, Jai and Sarah Myers West, "Computational Power and AI", *AI Now Institute*, 27 September 2023, https://ainowinstitute.org/publication/policy/compute-and-ai#h-what-is-compute-and-why-does-it-matter.

65. SandboxAQ, "Safeguarding Healthcare: The Urgent Need for Post-Quantum Cryptography and Zero Trust Architectures", 18 October 2023, https://www.sandboxaq.com/post/safeguarding-healthcare-the-urgent-need-for-post-quantum-cryptography-and-zero-trust-architectures.

66. It has been argued that it will be very difficult to keep this level of progress in quantum computing secret. See: Parker, Edward, "When a Quantum Computer Is Able to Break Our Encryption, It Won't Be A Secret", *RAND Corporation*, 13 September 2023, https://www.rand.org/pubs/commentary/2023/09/when-a-quantum-computer-is-able-to-break-our-encryption.html; Grumbling, Emily and Mark Horowitz (eds.), *Quantum Computing: Progress and Prospects*, Washington, DC: National Academies Press, 2019.

67. Wang, Yuehan Grace, "Effective AI governance requires global awareness of local problems", *LSE*, 28 September

2023, https://blogs.lse.ac.uk/medialse/2023/09/28/effective-ai-governance-requires-global-awareness-of-local-problems/; Wall, P.J., Deepak Saxena and Suzana Brown, "Artificial intelligence in the Global South (AI4D): Potential and risks", *Conference: Proceedings of the 1st Virtual Conference on Implications of Information and Digital Technologies for Development*, May 2021, https://www.researchgate.net/publication/352362394_Artificial_Intelligence_in_the_Global_South_AI4D_Potential_and_Risks.

68. Rotman, David, "AI is reinventing the way we invent", *MIT Technology Review*, 15 February, 2019, https://www.technologyreview.com/2019/02/15/137023/ai-is-reinventing-the-way-we-invent/; Fernando, Chrisantha, et. al., "Promptbreeder: Self-Referential Self-Improvement Via Prompt Evolution", *Cornell University*, 28 September 2023, https://arxiv.org/abs/2309.16797.

69. Hook, Leslie, Harry Dempsey and Ciara Nugent, "The new commodity superpowers", *The Financial Times*, 8 August 2023, https://www.ft.com/content/0d2fba79-940f-4a28-8f4f-68f1e755200f?desktop=true&segmentId=7c8f09b9-9b61-4fbb-9430-9208a9e233c8#myft:notification:daily-email:content.

70. Woollacott, Emma, "Apple Threatens To Pull FaceTime and iMessage From The UK", *Forbes*, 21 July 2023, https://www.forbes.com/sites/emmawoollacott/2023/07/21/apple-threatens-to-pull-facetime-and-imessage-from-the-uk/?sh=77938a5d6425.

71. Roza, David, "Experts Warn of Blurring Line Between Military, Commercial Satellites", *Air & Space Forces*, 27 July 2023, https://www.airandspaceforces.com/military-commercial-satellites-blurring-line/.

72. United Nations, "Without Adequate Guardrails, Artificial Intelligence Threatens Global Security in Evolution from Algorithms to Armaments, Speaker Tells First Committee", *Seventy-Eighth Session*, 20th & 21st Meeting, New York, 24 October 2023, https://press.un.org/en/2023/gadis3725.doc.htm; Bremmer, Ian and Mustafa Suleyman, "The AI Power Paradox", *Foreign Affairs*, 16 August 2023, https://www.foreignaffairs.com/world/artificial-intelligence-power-paradox; Andersen, Ross, "Never give artificial intelligence the nuclear codes", *The Atlantic*, June 2023, https://www.theatlantic.com/magazine/archive/2023/06/ai-warfare-nuclear-weapons-strike/673780/.

73. Adler, Nils, "Are killer robots the future of war?", *Aljazeera*, 16 May 2023, https://www.aljazeera.com/features/2023/5/16/are-killer-robots-the-future-of-war.

74. The urgent need to address autonomous weapons systems has been discussed in the UN, and provisionally tabled for the 79th session of the UN General Assembly to be held later this year: *Agenda item 99: General and complete disarmament*, 12 October 2023, https://documents-dds-ny.un.org/doc/UNDOC/LTD/N23/302/66/PDF/N2330266.pdf?OpenElement. The development of a UN treaty on cybercrime, the first framework for international cooperation on a cyber issue, is discussed further in **Chapter 2.6: Crime wave**.

75. United Nations, "First Committee Approves New Resolution on Lethal Autonomous Weapons, as Speaker Warns 'An Algorithm Must Not Be in Full Control of Decisions Involving Killing'", *Seventy-Eighth Session*, 28th Meeting 1 November 2023, https://press.un.org/en/2023/gadis3731.doc.htm.

76. United Nations Office for Disarmament Affairs, *Lethal Autonomous Weapons Systems (LAWS)*, https://disarmament.unoda.org/the-convention-on-certain-conventional-weapons/background-on-laws-in-the-ccw/, accessed 9 November 2023.

77. Paoli, Giacomo Persi, et. al., *Modernizing Arms Control: Exploring responses to the use of AI in military decision-making*, UNIDIR, 2020, https://unidir.org/files/2020-09/Modernizing%20Arms%20Control%20-%20Final.pdf.

78. Parke, Melissa, "Preventing AI Nuclear Armageddon", *Project Syndicate*, 8 November 2023, https://www.project-syndicate.org/commentary/dangers-of-artificial-intelligence-ai-applications-nuclear-weapons-by-melissa-parke-2023-11?barrier=accesspaylog.

79. Johnson, James and Eleanor Krabill, "AI, Cyberspace and Nuclear Weapons", *War on the Rocks*, 31 January 2020, https://warontherocks.com/2020/01/ai-cyberspace-and-nuclear-weapons/.

80. Zhen, Liu, "Chinese criminal gangs spreading African swine fever to force farmers to sell pigs cheaply so they can profit", *South China Morning Post*, 14 December 2019; Olson, Kyle B., "Aum Shinrikyo: Once and Future Threat", *Emerging Infectious Diseases*, July-August 1999, https://www.ojp.gov/ncjrs/virtual-library/abstracts/aum-shinrikyo-once-and-future-threat#:~:text=The%20document%20questions%20whether%20the,time%2C%20seven%20people%20were%20dead.

81. Sandbrink, Jonas B., "Artificial intelligence and biological misuse: Differentiating risks of language models and biological design tools", *Cornell University*, 29 October 2023, https://arxiv.org/abs/2306.13952.

82. Turner, Jacob, "Amsterdam court upholds appeal in algorithmic decision-making test case: Drivers vs. Uber and Ola", *Fountain Court*, 6 April 2023.

83. Bastit, Bruno, "The AI Governance Challenge", *S&P Global*, 29 November 2023, https://www.spglobal.com/en/research-insights/featured/special-editorial/the-ai-governance-challenge.

84. Waters, Richard, "Can AI be regulated?", *Financial Times*, 19 May 2023, https://www.ft.com/content/8446842c-537a-4fc4-9e02-667d719526ae?desktop=true&segmentId=7c8f09b9-9b61-4fbb-9430-9208a9e233c8#myft:notification:daily-email:content; Harris, David Evan, "How to Regulate Unsecured 'Open-Source' AI: No Exemptions", *Tech Policy*, 4 December 2023, https://www.techpolicy.press/how-to-regulate-unsecured-opensource-ai-no-exemptions/.

85. Suleyman, Mustafa and Eric Schmidt, "Mustafa Suleyman and Eric Schmidt: We need an AI equivalent of the IPCC", *The Financial Times*, 19 October 2023, https://www.ft.com/content/d84e91d0-ac74-4946-a21f-5f82eb4f1d2d.

86. United Nations Development Programme (UNDP), *Human Development Index (HDI)*, https://hdr.undp.org/data-center/human-development-index#/indicies/HDI, accessed 11 November 2023.

87. Cozzi, Laura and Brian Motherway, "The importance of focusing on jobs and fairness in clean energy transitions", *International Energy Agency*, 6 July 2021, https://www.iea.org/commentaries/the-importance-of-focusing-on-jobs-and-fairness-in-clean-energy-transitions; World Economic Forum, *Future of Jobs Report 2023*, May 2023, https://www3.weforum.org/docs/WEF_Future_of_Jobs_2023.pdf.

88. Statista Research Department, "Size of the global construction market from 2020 to 2021, with forecasts from 2022 to 2030", *Statista*, 31 August 2023, https://www.statista.com/statistics/1290105/global-construction-market-size-with-forecasts/.

89. World Economic Forum, *Future of Jobs Report 2023*, May 2023, https://www3.weforum.org/docs/WEF_Future_of_Jobs_2023.pdf.

90. D'Olier-Lees, Trevor, et. al., "Renewable Energy Funding in 2023: A 'Capital Transition' Unleashed", *S&P Global*, 14 September 2023, https://www.spglobal.com/en/research-insights/featured/special-editorial/renewable-energy-funding-in-2023-a-capital-transition-unleashed.

91. International Monetary Fund (IMF), *Global Financial Stability Report: Financial and Climate Policies for a High-Interest-Rate Era*, October 2023, https://www.imf.org/-/media/Files/Publications/GFSR/2023/October/English/text.ashx.

92. United Nations Conference on Trade and Development (UNCTAD), *Least Developed Countries Report 2023: Climate-resilient development finance*, 2023, https://unctad.org/system/files/official-document/ldc2023_en.pdf.

93. Korinek, Anton and Joseph E. Stiglitz, "Artificial intelligence, globalization, and strategies for economic development", NBER Working Paper #28453, *National Bureau of Economic Research*, February 2021, https://www.nber.org/system/files/working_papers/w28453/w28453.pdf.

94. World Trade Organization (WTO), *Trade in services for development*, 2023, https://www.wto.org/english/res_e/booksp_e/trade_in_services_and_development_e.pdf.

95. World Economic Forum, *Future of Jobs Report 2023*, May 2023, https://www3.weforum.org/docs/WEF_Future_of_Jobs_2023.pdf; ZipDo, *Essential Jobs Sent Overseas Statistics In 2023*, 21 June 2023, https://zipdo.co/statistics/jobs-sent-overseas/; Jesuthasan, Ravin, et. al., "Generative AI will transform three key HR roles", *Mercer*, https://www.mercer.com/en-us/insights/people-strategy/future-of-work/generative-ai-will-transform-three-key-hr-roles/, accessed 5 December 2023.

96. Cornelli, Giulio, Jon Frost and Saurabh Mishra, *Artificial intelligence, services globalisation and income inequality*, BIS Working Papers No 1135, BIS, October 2023, https://www.bis.org/publ/work1135.pdf; Korinek and Stiglitz, 2021.

97. Ragsdale, Julie and Adam Hall, "The global impact of labor shortages across the construction industry", *WTW*, 26 September 2023, https://www.wtwco.com/en-ch/insights/2023/09/the-global-impact-of-labor-shortages-across-the-construction-industry; European Labour Authority, *Labour shortages report 2022*, 29 March 2023, https://www.ela.europa.eu/sites/default/files/2023-09/ELA-eures-shortages-surpluses-report-2022.pdf; Zuwang, Fang and Kelly Wang, "China's Jiangsu province eases age limit for construction workers", *Nikkei Asia*, 30 May 2023, https://asia.nikkei.com/Spotlight/Caixin/China-s-Jiangsu-province-eases-age-limit-for-construction-workers; LaRocco, Lori Ann and Natalie Rose Goldberg, "The iconic American hard hat job that has the highest level of open positions ever recorded", *CNBC*, 29 July 2023, https://www.cnbc.com/2023/07/29/the-hard-hat-job-with-highest-level-of-open-positions-ever-recorded.html.

98. Muggah, Robert, "Opinion: As Chinese aid slows down, the whole world will feel the pinch", *Devex*, 20 April 2023, https://www.devex.com/news/opinion-as-chinese-aid-slows-down-the-whole-world-will-feel-the-pinch-105359.

99. Mercer, *Global Talent Trends study*, February 2024 [pre-release findings, data gathered October 2023].

100. World Economic Forum, *Future of Jobs Report 2023*, May 2023, https://www3.weforum.org/docs/WEF_Future_of_Jobs_2023.pdf.

101. Agyemang, Emma and Chris Giles, "Big government is back. How will we pay for it?", *The Financial Times*, 5 September 2023, https://www.ft.com/content/b7b7a315-46ce-483d-b374-5eff371aa30c?desktop=true&segmentId=7c8f09b9-9b61-4fbb-9430-9208a9e233c8#myft:notification:daily-email:content.

102. IMF, 2023.

103. Global Initiative Against Transnational Organized Crime, *Global Organized Crime Index 2023: A fractured world*, 2023, https://ocindex.net/report/2023/0-3-contents.html.

104. Institute for Economics & Peace, *Global Peace Index 2023*, https://www.visionofhumanity.org/wp-content/uploads/2023/06/GPI-2023-Web.pdf; United Nations Office on Drugs and Crime (UNODC), *Global Study on Homicide*, July 2019, https://www.unodc.org/documents/data-and-analysis/gsh/Booklet1.pdf.

105. "Parallel economy" refers to the functioning of black markets, while the definition of a "shadow economy" extends beyond black markets to incorporate the informal economy.

106. The net amplification of the relative power and economic clout, and therefore overall threat, of organized crime is covered extensively in Bastrup-Birk, Julien, Erik Frinking, Linde Arentze, Eline de Jong and Frank Bekkers, *Next Generation Organized Crime: Systemic change and the evolving character of modern transnational organised crime*, May 2023, https://hcss.nl/wp-content/uploads/2023/05/Next-Generation-Organised-Crime-HCSS-2023-V2.pdf.

107. International Energy Agency (IEA), *Critical Minerals Market Review 2023: Key market trends, 2023*, https://www.iea.org/reports/critical-minerals-market-review-2023/key-market-trends; Free Malaysia Today, *Cops bust diesel, food smuggling syndicates*, 21 October 2023, https://www.freemalaysiatoday.com/category/nation/2023/10/21/cops-bust-diesel-food-smuggling-syndicates/.

108. Fist, Tim and Erich Grunewald, "Preventing AI Chip Smuggling to China: A Working Paper", *Center for a New American*

Security, 24 October 2023, https://www.cnas.org/publications/reports/preventing-ai-chip-smuggling-to-china.

109. Bandura, Romina and Austin Hardman, *Environmental, Social, and Governance Best Practices Applied to Mining Operations*, Center for Strategic and International Studies, 16 November 2023, https://www.csis.org/analysis/environmental-social-and-governance-best-practices-applied-mining-operations.

110. Walk Free, *Global Slavery Index 2023*, June 2023, https://cdn.walkfree.org/content/uploads/2023/05/17114737/Global-Slavery-Index-2023.pdf.

111. Urbina, Ian, "The Crimes Behind The Seafood You Eat", *The New Yorker*, 9 October 2023, https://www.newyorker.com/magazine/2023/10/16/the-crimes-behind-the-seafood-you-eat; INTERPOL, *Fisheries Crime*, accessed 12 December 2023, https://www.interpol.int/en/Crimes/Environmental-crime/Fisheries-crime.

112. Goodkind, Nicole, "Illegal child labor is on the rise in a tight job market", *CNN*, 30 July 2023, https://edition.cnn.com/2023/07/30/economy/child-labor-louisiana-texas/index.html; Turner, Mark and Anthea McCarthy-Jones, "Cyber slavery starts up in Southeast Asia", *East Asia Forum*, 14 June 2023, https://www.eastasiaforum.org/2023/06/14/cyber-slavery-starts-up-in-southeast-asia/; UNICEF, *Children recruited by armed forces or armed groups*, https://www.unicef.org/protection/children-recruited-by-armed-forces, accessed 26 October 2023.

113. Sugiharti, Lilik, Rudi Purwono, Miguel Angel Esquivias and Hilda Rohmawati, "The Nexus between Crime Rates, Poverty, and Income Inequality: A Case Study of Indonesia", *Economies Special Issue: Nexus between Politics and Economics in the Emerging Countries* – II, vol. 11, no. 2, 13 February 2023, https://www.mdpi.com/2227-7099/11/2/62; Global Initiative Against Transnational Organized Crime, *How Globalisation Affects Transnational Crime: A CFR discussion with Network Member, Phil Williams*, 31 May 2012, https://globalinitiative.net/analysis/how-globalisation-affects-transnational-crime/; Bastrup-Birk, et al., 2023.

114. Economist Intelligence Unit, *Democracy Index 2022: Frontline democracy and the battle for Ukraine*, 2023, https://www.eiu.com/n/campaigns/democracy-index-2022/; Bastrup-Birk, et al., 2023.

115. It should be noted that cyber-dependent criminal activity may operate under a different organizational model, compared to cyber-enabled or cyber-assisted criminal activity. For an overview, see United Nations Office on Drugs and Crime (UNODC), *Digest of Cyber Organized Crime*, October 2021, https://www.unodc.org/documents/organized-crime/tools_and_publications/21-05344_eBook.pdf; Di Nicola, Andrea, "Towards digital organized crime and digital sociology of organized crime", *Trends in Organized Crime*, 30 May 2022, https://link.springer.com/article/10.1007/s12117-022-09457-y.

116. There is a positive nexus between crime, income and inequality, which suggests that even countries becoming more affluent face a higher crime risk. Notably, however, low-income countries will remain largely excluded as targets, as weak economic conditions tend to contain the pervasiveness of criminal activity, even though deeper poverty levels may trigger more criminal actions. See: Global Initiative Against Transnational Organized Crime, 2023, and Sugiharti, et al., 2023.

117. Doyle, Sean, "Cybercrime and violent crime are converging: here's how to deal with it", *World Economic Forum*, 31 October 2023, https://www.weforum.org/agenda/2023/10/cybercrime-violent-crime/.

118. The interaction of technology with crime can be differentiated into three categories: cyber-assisted crimes are facilitated by information communication technologies (ICT); cyber-enabled crimes are traditional crimes that are magnified by ICT; and cyber-dependent crimes are those that can only be committed using computers, computer networks or other forms of ICT. See: UNODC, 2021, and Di Nicola, 2022.

119. UNODC, 2019.

120. Economist Intelligence Unit, 2023; Bastrup-Birk, et al., 2023.

121. Limaye, Yogita, "Inside the Taliban's war on drugs – opium poppy crops slashed", *BBC*, 6 June 2023, https://www.bbc.com/news/world-asia-65787391; Felbab-Brown, Vanda, "How the Taliban Supressed Opium in Afghanistan – and Why There's Little to Celebrate", *Time*, 17 July 2023, https://time.com/6294753/taliban-opium-suppression-afghanistan/.

122. Debusmann Jr., Bernd, "Can Joe Biden's plan stop the flow of fentanyl to the US?", *BBC News*, 22 November 2023, https://www.bbc.com/news/world-us-canada-67489395; Murray, Christine, "How fentanyl changed the game for Mexico's drug cartels", *Financial Times*, 25 July 2023, https://www.ft.com/content/5d030731-4625-4521-81e4-b492108a87d7?emailId=f3a86169-2892-41dd-a199-92d84f841019&segmentId=22011ee7-896a-8c4c-22a0-7603348b7f22; Yousif, Nadine, "How the fentanyl crisis' fourth wave has hit every corner of the US", *BBC*, 17 September 2023, https://www.bbc.com/news/world-us-canada-66826895.

123. Global Initiative Against Transnational Organized Crime, 2023.

124. European Union Agency for Law Enforcement Cooperation (Europol), *European Financial and Economic Crime Threat Assessment 2023: The Other Side of the Coin: An Analysis of Financial and Economic Crime*, 2023, https://www.europol.europa.eu/cms/sites/default/files/documents/The%20Other%20Side%20of%20the%20Coin%20-%20Analysis%20of%20Financial%20and%20Economic%20Crime%20%28EN%29.pdf.

125. Transparency International, *Corruptions Perception Index 2022*, https://www.transparency.org/en/cpi/2022, accessed 6 November 2023.

126. Europol, 2023.

127. Kurmanath, K. V., "Beware, your email box can become target of stealth cyber attacks", *The Hindu Businessline*, 23 September 2023, https://www.thehindubusinessline.com/info-tech/beware-your-email-box-can-become-target-of-stealth-cyber-attacks/article67334570.ece; Martin, R., "Thinking about the security of AI systems", *National Cyber Security Centre*, 30 August 2023, https://www.ncsc.gov.uk/blog-post/thinking-about-security-ai-systems.

128. Stanyard, Julia, Thierry Vircoulon, and Julian Rademeyer, *The Grey Zone: Russia's military, mercenary and criminal engagement in Africa*, Global Initiative Against Transnational Organized Crime, February 2023, https://globalinitiative.net/wp-content/uploads/2023/02/Julia-Stanyard-T-Vircoulon-J-Rademeyer-The-grey-zone-Russias-military-mercenary-and-criminal-engagement-in-Africa-GI-TOC-February-2023-v3-1.pdf.

129. UNODC, 2019.

130. Chiang, Sheila, "North Korean hackers have allegedly stolen hundreds of millions in crypto to fund nuclear programs", *CNBC*, 5 September 2023, https://www.cnbc.com/2023/09/06/north-korea-hackers-stole-crypto-to-fund-nuclear-program-trm-chainalysis.html.

131. Adapted from Europol, 2023.

132. Europol, *Dismantling encrypted criminal EncroChat communications leads to over 6 500 arrests and close to EUR 900 million seized* [Press release], https://www.europol.europa.eu/media-press/newsroom/news/dismantling-encrypted-criminal-encrochat-communications-leads-to-over-6-500-arrests-and-close-to-eur-900-million-seized, accessed 26 October 2023.

133. Rodriguez, Katitza, "UN Cybercrime Treaty: A Menace in the Making", *Human Rights Watch*, 16 October 2023, https://www.hrw.org/news/2023/10/16/un-cybercrime-treaty-menace-making#:~:text=In%20requiring%20mutual%20legal%20assistance,through%20an%20unprecedented%20multilateral%20tool..

134. Wilkinson, Isabella, "What is the UN cybercrime treaty and why does it matter?", *Chatham House*, 2 August 2023, https://www.chathamhouse.org/2023/08/what-un-cybercrime-treaty-and-why-does-it-matter#:~:text=In%20August%202023%2C%20state%20representatives,General%20Assembly%20in%20September%202024.

3

Responding to global risks

The previous chapters outlined a global landscape where a myriad of vulnerabilities are stretching our capacity to respond to key global challenges. This chapter considers the ways in which we can address global risks, given increasingly complex and non-linear aspects of how they will evolve, against a backdrop of a fragmented geopolitical environment where cooperation may be in short supply.

Managing a volatile risk landscape in a low cooperation world

Some of the challenges we face are risks familiar to human history – pandemics and geopolitical conflicts – while others are new and fast-evolving, such as Earth system changes or the adverse effects of new technologies. Many global risks are inherently interconnected and may have far reaching consequences to human development - eroding resilience and reducing our collective capacity to respond.

While collaborative effort remains the cornerstone of addressing global risks, not all require deep global cooperation as the only viable solution. In an increasingly fragmented world, examining alternative paths with varying degrees of cooperation can provide a broader mental model to support planning and preparation.

Implementing global risk reduction measures is equivalent to providing a global public good.[1] These goods are defined as non-excludable and non-rivalrous, which means that, unlike common goods, use by one country neither prevents access nor reduces availability to others. For example, if a single national government implements a policy that slows the spread of an infectious disease, the entire global community will benefit from it.

As with global public goods, risk reduction efforts tend to suffer from the "free rider problem." In a world characterized by different and at times competing power centres pursuing their own interests, governments may be incentivized to transfer the burden of prevention or preparedness to others, while reaping the benefits of others' investments without incurring the costs. Similarly, not all efforts of risk reduction require the same level of cooperation to be implemented, falling along a spectrum ranging from those that require the effort of only one country or stakeholder, to those that demand the collaboration of all.[2]

Building upon established notions of public goods,[3] there are four broad categories of approaching global risk reduction, based on the level of cooperation required: localized strategies; breakthrough endeavors; collective actions; and cross-border coordination.

Both the degree of complexity and the speed of the global risks discussed in this report will demand flexible and agile approaches that employ all available levers at our disposal. There are actions that can be taken individually or collectively to implement preparedness measures for the risks we cannot avoid – and to come together to prevent or lessen the likelihood of the risks that we can.

Mika Baumeister, Unsplash

3.1 Localized strategies

Localized strategies that address global risks at a local level require little or no cross-border coordination. They are concerned mainly with increasing a community's preparedness to bear the effects of inevitable global risks, but do not significantly mitigate their impact beyond national borders.

With looming urgency to adapt to avoid the worst impacts of a changing climate, local measures present a relatively agile response to risk, unencumbered by lengthy processes that are common to global agreements. Measures range from instigating more resilient building codes to making investments in wildfire management, flood defenses and heatwave mitigation. Infrastructure investment can also enhance a country's preparedness to tackle pandemics. When COVID-19 hit, it was the capacity of national health systems – i.e., availability of hospital beds, intensive care units and medical personnel – that largely dictated its local impact. While localized strategies are generally associated with boosting preparedness, there are some cases where they prevent global risks from materializing altogether. Local compliance with vaccine guidance, for example, can eliminate diseases such as polio.

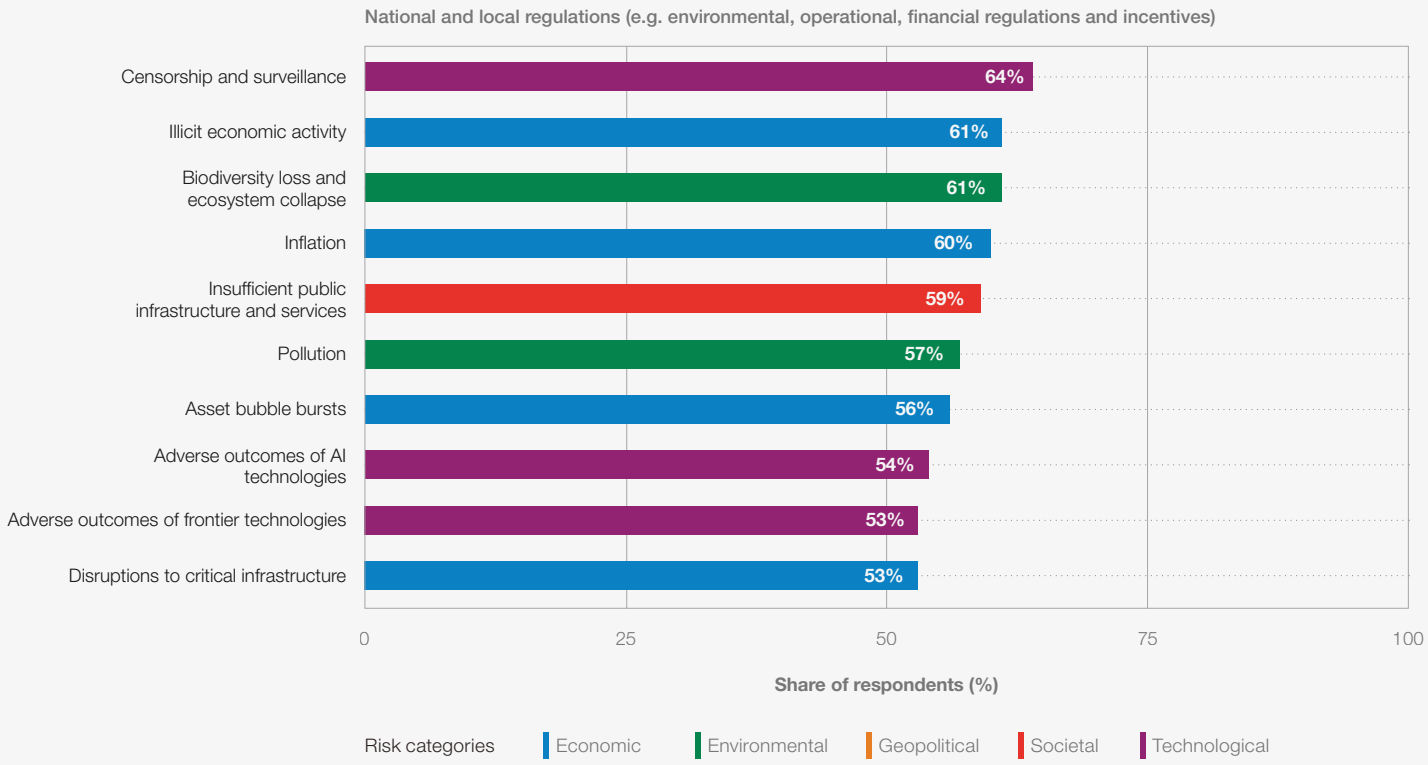
There are several global risk governance approaches highlighted within the GRPS that would fall under local measures: **Public awareness and education**, **Financial instruments** and **National and local regulations**. Public awareness and education initiatives can be effective in reducing the impact of AI-enabled misinformation on local media environments. While it is difficult for single countries to control the diffusion of AI-generated content, it is in their power to include AI-literacy in public education systems and to prioritize the issues of understanding AI's capabilities and identifying trustworthy sources of information. Financial instruments – including insurance, catastrophe bonds or public-risk pools – can alleviate the effects of natural disasters and geoeconomic shocks, while social safety nets and pensions represent important tools in managing longer-term risks associated with demographic trends and societal polarization.

National and local regulations are identified by the majority of GRPS respondents as key for driving action on a number of economic risks (Figure 3.1). Appropriate fiscal and monetary

FIGURE 3.1

Top global risks addressed by National and local regulations

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years?"



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Respondents could select up to three responses from the following nine options: Financial instruments, National and local regulations, Minilateral treaties and agreements, Global treaties and agreements, Development assistance, corporate strategies, Research & development, Public awareness and education, Multi-stakeholder engagement.

policies are employed to control **Inflation** and build resilience against **Asset bubble bursts**. National governments also have the power to act against **Illicit economic activity** and reduce their countries' vulnerability to organized crime. Protection against **Biodiversity loss and ecosystem collapse** as well as **Pollution** can also be managed via local or national environmental regulation.

Localized strategies can be enacted independently, and thus face fewer hurdles in terms of cooperation requirements. However, they are not free from challenges. Investment to boost resilience is costly and not all countries or jurisdictions have the same resources, technology and capacity. In an environment of rising costs and narrow approaches to international investment, the capacity and financing for implementing effective local measures tend to be more concentrated in higher-income countries, perpetuating rather than addressing inequality. They may also have unintended spillover effects across borders; for example, economic levers to tackle inflation in one economy can lead to debt concerns in another (**Chapter 1.5: Economic uncertainty**).

The public and private sectors, alone and in partnership, can play a role in scaling local responses, bringing down costs and expanding risk reduction capabilities to all. Businesses are key developers, testers and early adopters of new technologies, such as foods that rapidly grow in extremely adverse environments or AI tools to spot nascent wildfires.[4] Likewise, governments have the ability to step in and de-risk investments to help close the gap in economic opportunity and bolster resilience (**Chapter 2.5: End of development?**). Novel approaches to ownership of local infrastructure, involving regulator intervention and community ownership, can allow projects to become more bankable, feasible and targeted, while local action groups can often mobilize effective disaster response as well as direct funds to prevention.[5]

3.2 Breakthrough endeavors

In some cases, the action of an individual or entity can be enough to provide a "breakthrough" development to address risk or to serve as the positive tipping point to an alternate "safe state." These breakthrough endeavors are as equally relevant for preventing or mitigating the likelihood of risk as they are for lessening the impact.

Many breakthrough endeavors fall under the approach of **Research & development** (R&D), encompassing activities such as medical breakthroughs, new technologies or a novel approach to quantifying and governing risk. A prominent example of the latter is the formation of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations Environment Programme and the World Meteorological Association in 1988, endorsed by the UN the same year. There are also examples of industrial transformations that have pivoted based on a single idea or action, such as the targeted effort of eliminating chlorofluorocarbons (CFCs) to protect the ozone layer, resulting in a significant impact on a global problem.

GRPS respondents note that R&D can play a key role in addressing health, environmental and technological risks (Figure 3.2). During the COVID-19 pandemic, the concentrated efforts of a few pharmaceutical companies made a difference for the global community. Supported by significant funding from governments, their innovations to develop a novel vaccine in record time was crucial to lowering death rates, demonstrating the immense potential of scientific breakthroughs on reducing the impact of health-related risks like **Infectious diseases**.

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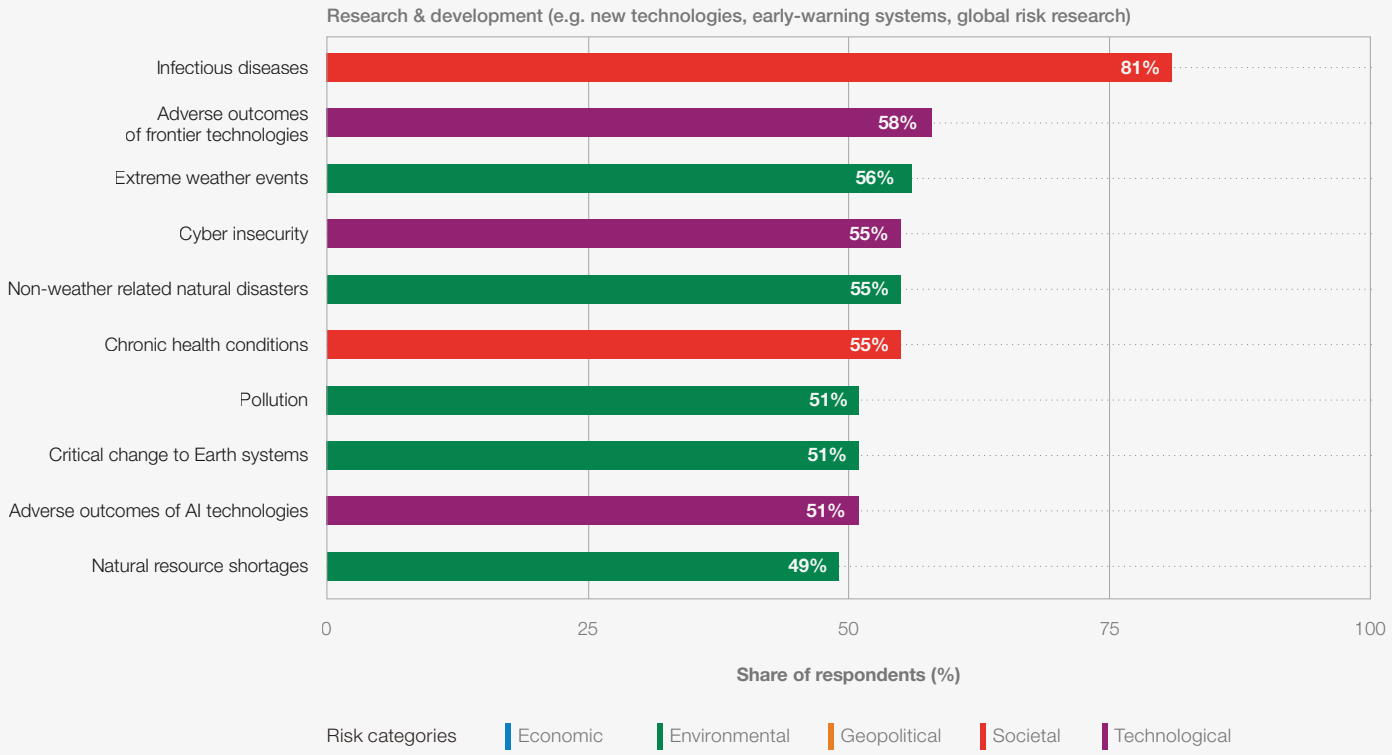
FIGURE 3.2

Top global risks addressed by Research and development

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years?"



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Respondents could select up to three responses from the following nine options: Financial instruments, National and local regulations, Minilateral treaties and agreements, Global treaties and agreements, Development assistance, corporate strategies, Research & development, Public awareness and education, Multi-stakeholder engagement.

R&D can boost preparedness for inevitable environmental risks such as **Extreme weather events** and **Non-weather related natural disasters**, as well as allowing us to reduce the likelihood of **Critical changes to Earth systems** and **Natural resources shortages**. A significant leap forward in research leading to viable nuclear fusion power generation for example, could represent a turning point, providing clean energy and accelerating the transition to Net Zero, at the same time as reducing the risk of **Pollution**.[6] As discussed in Chapter 2.3: A 3°C world, however, the unilateral application of climate mitigation technologies also carry risks.

There are other hurdles to overcome. Despite potentially being on the precipice of a "golden age" of scientific discovery, the strategic importance of emerging technologies, such as AI and quantum computing, is resulting in a fragmentation of R&D initiatives, with some opting for political isolationism to safeguard technological advancements. The formation of a new body equivalent to the IPCC to synthesize key perspectives relating to AI risk has been mooted; to be effective, it would need to overcome the challenges of ensuring balance of representation and of being nimble enough to address rapidly emerging scientific developments. And while R&D can result in game-changing solutions, the institutions involved often lack the funds or political might needed to translate into impact. With carbon capture and storage (CCS) for example, the sheer scale of the costs associated with deployment act as barriers, alongside limited confidence in the success of the outcomes.

Technology is seen as both a source of risk and as part of the solution. **Adverse outcomes of AI technologies** is viewed as a top risk that can be addressed by R&D. However, AI may also prove to be the key to unlocking a multitude of the world's problems. Recent research, for example, suggests that it could revolutionize materials science, allowing us to make leaps forward in terms of batteries, solar panels, computer chips and other vital technologies that will be required in efforts to address a multitude of risks.[7]

Strengthening global research networks that connect researchers, institutions and industries worldwide can facilitate communication and the sharing of resources. Public-sector support remains crucial. Healthcare companies alone would not have been able to roll out an effective vaccine for COVID-19 in such a short time frame had they not been co-funded, and this model of governments de-risking liability to fast-track deployment could be extended to other challenges, potentially coupled with enhanced conditionalities

to ensure returns are more equally shared. Fiscal incentives can be deployed to encourage further innovation within the private sector, while acceptance of new technologies and approaches would be bolstered by governance and oversight. The role of philanthropy, should also not be overlooked as a key source of funding for ambitious projects to eradicate disease and boost climate resilience, for example.[8]

Policy-makers need to adopt a dual vision, harnessing the power of innovation to address present challenges, while keeping an eye on the future. Investing in breakthrough endeavors is often a long-term bet, involving some degree of risk-taking and failure, but coupled with wins that boost our ability to mitigate or adapt in the face of global risks.

3.3 Collective actions

When the sum of individual actions are directed towards a common goal, change can be effected on a global scale. Collective action is not the result of collaboration, but of the aggregate and independent effort of single citizens, companies and countries.

Examples include expanding the adoption of a vegetarian diet or reducing combustion-engine cars and air travel to slash carbon emissions. These changes in lifestyle or consumption patterns are insignificant when pursued by a single individual. But if a material number of people take such actions concurrently, such aggregate efforts have the power to alter market dynamics and move the dial on climate-change mitigation.

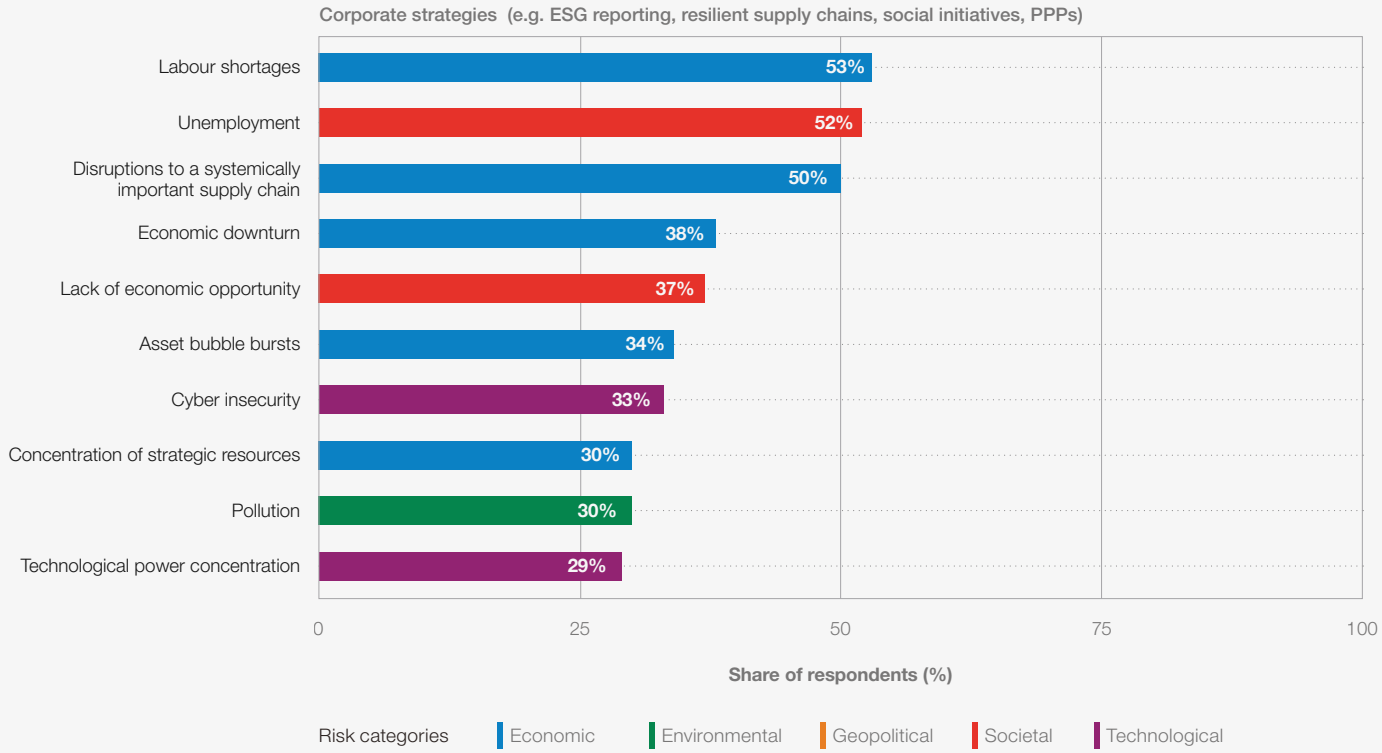
The same is true for business actions. If a critical number of companies commit to building ethical supply chains, respect for human rights and labour standards will improve worldwide.

Collective action can also play a role in terms of preparing for global risks. Japan's Community-Based Disaster Risk Management[9] and Bangladesh's Cyclone Preparedness Program[10] both demonstrate the power of collective preparedness to address inevitable environmental risks and how communities can be mobilized to mitigate their impacts. Borne out of the necessity to prepare for environmental risks in one of the most seismically active regions in the world, a

FIGURE 3.3

Top global risks adressed by Corporate strategies

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years?"



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Respondents could select up to three responses from the following nine options: Financial instruments, National and local regulations, Minilateral treaties and agreements, Global treaties and agreements, Development assistance, corporate strategies, Research & development, Public awareness and education, Multi-stakeholder engagement.

OCG Saving the Ocean, Unsplash

core component of Japan's preparedness strategy centres on building momentum for a nationwide movement from local preparedness and resilience measures. Likewise, ensuring rapid dissemination of official cyclone warning signals across communities encourages collective preparedness measures to be implemented along Bangladesh's coast. Technology can act as an enabler for collective action. Information and communication technologies, including social media, have transformed the speed and the way in which information is shared, and while there are risks associated with this (Chapter 1.3: False information), there are also benefits in terms of mass mobilization for public good.

There are several risk governance approaches identified within the GRPS that would fall under collective action: **Public awareness and education**, **Multistakeholder engagement**, and **Corporate strategies**. Public awareness and education campaigns amplify (grassroot) initiatives that have yet to reach a critical mass in order to make an impact. In some cases, governments have established specific units to effect change through encouraging collective behaviours, such as those to prevent the spread of disease.[11] Multistakeholder engagement platforms favour knowledge and best practice sharing to support and guide individual efforts towards a common goal.

GRPS respondents recognize **Corporate strategies** as having the most potential to reduce economic risks relating to financial and labour markets (Figure 3.3). If companies adopt responsible business practices and investment decisions, they will reap reputational and performance benefits[12] while making the wider economic and financial system more resilient and prepared to face the risk of **Economic downturn**. Businesses can also contribute to shoring up the labour market, both locally and globally, by addressing **Labour shortages** and **Unemployment** risks through investing in skills development, upholding workers' rights and granting contract security.

In order for collective action to be sufficiently effective, there must be some degree of consensus on the nature and urgency of the risk, the type of action required to address it and the intended outcome. This is no small feat in a world increasingly subject to societal polarization and where short-term cost-of-living pressures continue to bite.

It is crucial therefore to build platforms that set standards and favour knowledge-sharing, channeling individual efforts towards a common goal. Tax incentives can strengthen collective action by business and individuals. Policy-makers can also strengthen regulation on environmental, social and corporate governance (ESG) reporting to ensure transparency on corporate social responsibility strategies. This contributes to creating a positive cycle where investors can recognize and reward the businesses that act, which in turns incentivizes more and more companies to align.

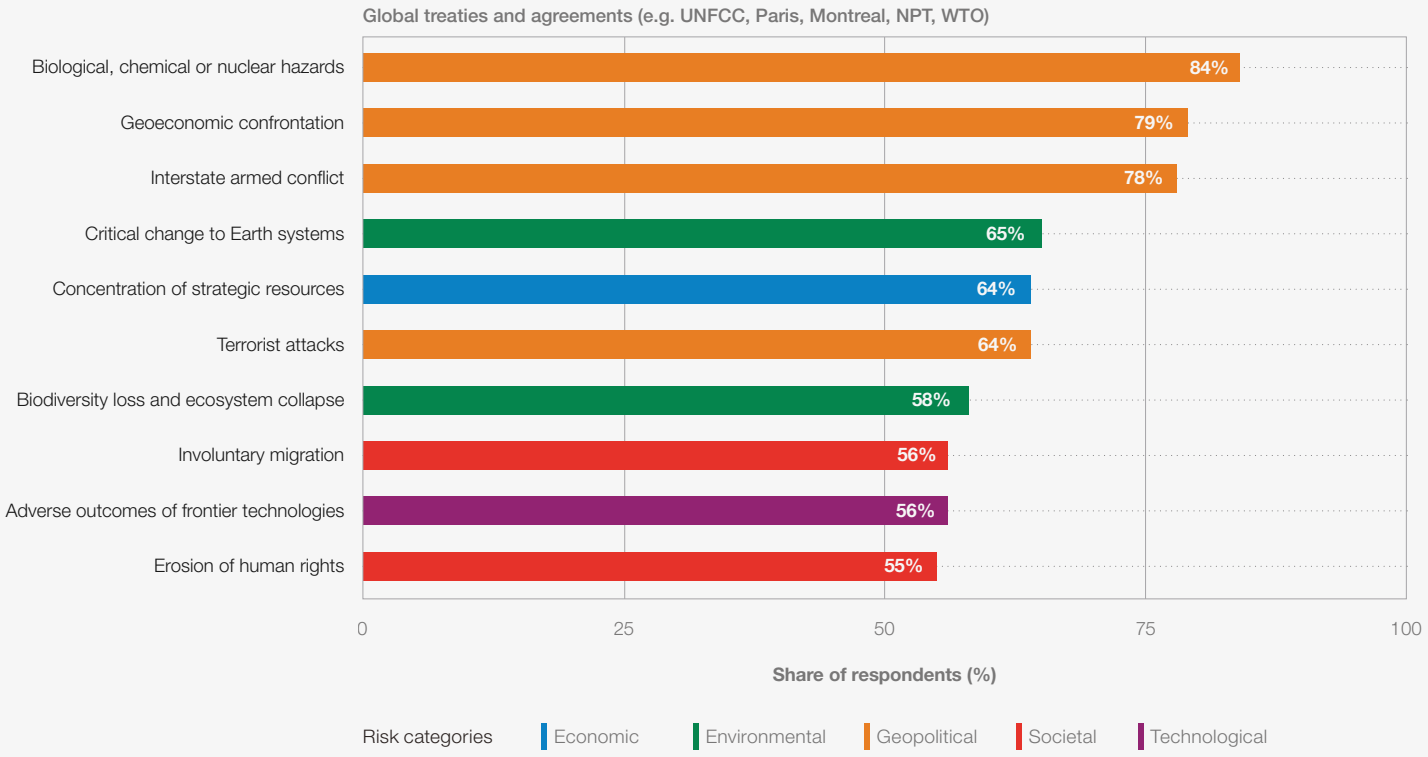
3.4 Cross-border coordination

Cooperation may be constrained in an increasingly fragmented world, but it remains imperative to solve the biggest, most existential risks. Cross-border coordination for risk reduction takes many forms and is typically centred on mitigating likelihood. It ranges from mutual restraint (agreement between two or more parties that possess dangerous capabilities to refrain from using them), to addressing the weakest link in a system (enforcing commitment to minimum standards and guardrails or by investing in a country that has the potential to destabilize others), to international agreements (such as those that aim to limit global warming, maintain security and ensure free trade).

FIGURE 3.4

Top global risks addressed by Global treaties and agreements

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years?"



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Respondents could select up to three responses from the following nine options: Financial instruments, National and local regulations, Minilateral treaties and agreements, Global treaties and agreements, Development assistance, corporate strategies, Research & development, Public awareness and education, Multi-stakeholder engagement.

Pressing risks requiring mutual restraint often involve the proliferation and malign use of advanced and potentially destructive technologies. Restraining the use of weapons of mass destruction or restricting the incorporation of AI into lethal weapons and nuclear decision-making systems are needed to avoid the risk of inadvertent conflict escalation (Chapter 2.4: AI in charge).

When it comes to global risks such as terrorism or pandemic outbreaks, it is often the weakest link that dictates the risk. Technological advances in AI mean that bio-engineered pathogens have become a reality, and a security breach of a high-containment bio-laboratory or bio-foundry, for example, is a global concern.

GRPS respondents highlight **Minilateral treaties and agreements** and **Global treaties and agreements** as risk governance approaches within the category of cross-border coordination. Minilateral treaties – or agreements involving a smaller number of parties and often backed by regional financing – represent a feasible solution to many global risks faced by a fragmented world, where it is difficult to have a large number of countries endorsing the same cause.

Global treaties and agreements, the result of constructive dialogue, negotiation and compromise, are fundamental to mitigating and preparing for many global risks. They enable involved parties to identify common ground and cooperate towards shared objectives. GRPS respondents recognize such treaties as the most appropriate lever to manage key geopolitical risks such as **Interstate armed conflict**; **Geoeconomic confrontation**; and **Biological, chemical or nuclear hazards**; as well as inherently globalized environmental risks such as **Critical changes to Earth systems** (Figure 3.4).

Amid growing geopolitical rifts, global treaties and agreements face numerous challenges. Agreements regarding global trade and financial integration are under pressure from trade conflicts between China and the United States, Brexit and national post-COVID-19 economic recovery efforts. While there is emerging consensus on the need for a universal regulatory framework for AI to address concerns surrounding ethical standards, data privacy and potential misuse, the first steps in this arena seem to be faltering, with the EU's landmark AI Act coming under pressure from governments[13] and technology companies[14] alike. Striking a balance between fostering innovation and addressing

ethical concerns within an international framework is proving complicated, given varying perspectives and economic interests.

Yet cross-border coordination remains a necessary – and, in some cases, the only – path to address the global risks that threaten human prosperity and security. Minilateral treaties and agreements may be increasingly appropriate to resolve conflict and ensure economic prosperity at a regional level; but they are unlikely to replace wider agreements in maintaining global security.

Progress has been made through international collaboration in addressing climate change; but action needs to be deepened, widened and, most crucially, sped up. National representatives that attended the 2023 United Nations Climate Change Conference (COP28) approved for the first time a roadmap for "transitioning away from fossil fuels" – but the deal stopped short of a long-demanded call for a "phaseout" of oil, coal and gas.[15] "Climate Clubs", or coalitions of the willing,[16] represent a practical path for progress given the challenges of traditional multilateralism. These coalitions of countries commit to ambitious climate goals and adopt measures to enforce compliance, while offering incentives for membership.

When it comes to security, much momentum is with the private sector, where applications with dual use potential are being developed.[17] As technology evolves faster than regulation, private producers must take responsibility to not only be transparent, but to show restraint when releasing new frontier models.

Markus Spiske, Unsplash

3.5 Conclusion

The world is undergoing multiple long-term structural transformations: the rise of AI, climate change, a shift in the geopolitical distribution of power, and demographic transitions. These structural forces are global, pervasive and charged with momentum. Against this backdrop, known and newly emerging risks need preparation and mitigation (see Figure 3.5 for the full picture of GRPS responses regarding drivers of risk reduction and preparedness).

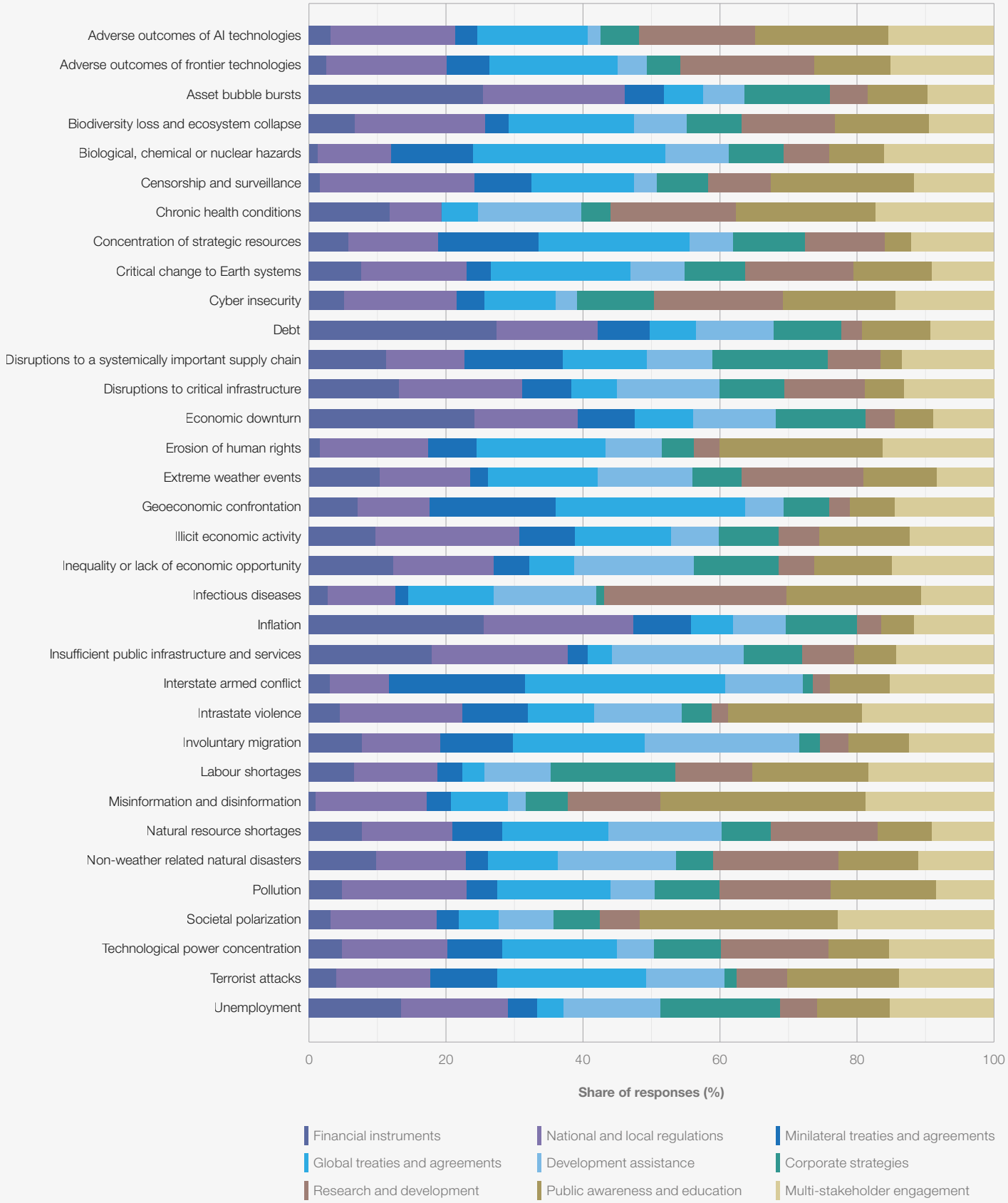
Localized strategies, breakthrough endeavours, collective actions and cross-border coordination all play a part in addressing these risks.

Localized strategies, leveraging investment and regulation, are critical for reducing the impact of global risks, and both the public and private sector can play a key role in extending benefits to all. Through prioritizing the future and focusing on breakthrough research and development, the efforts of single entities can make the world a safer place. The actions of individual citizens, companies and countries – while perhaps insignificant on their own – can move the needle on global risk reduction if they reach a critical mass. Finally, cross-border coordination remains the only viable pathway for the most critical risks to human security and prosperity.

FIGURE 3.5

Risk governance

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years?"



Source

World Economic Forum Global Risks Perception Survey 2023-2024.

Note

Respondents could select up to three responses from the following nine options: Financial instruments, National and local regulations, Minilateral treaties and agreements, Global treaties and agreements, Development assistance, corporate strategies, Research & development, Public awareness and education, Multi-stakeholder engagement.

Endnotes

1. Bostrom, Nick, "Existential Risk Prevention as Global Priority", *Global Policy*, vol. 1, iss.2, 2013, pp., 15-31, https://existential-risk.com/concept.pdf.
2. Barrett, Scott, "Why Cooperate? The Incentive to Supply Public Good", *International Journal of Social Economics*, vol. 31, no. 11, 2009, pp. 1113-1115, https://philarchive.org/archive/ANOWC.
3. Ibid.
4. Denkenberger, David, and Joshua Pearce, *Feeding everyone no matter what: Managing food security after global catastrophe*, Cambridge, MA: Academic Press, 2014.
5. The Flood Hub, *Community Flood Action Groups*, *https://thefloodhub.co.uk/community/*, accessed 12 December 2023.
6. Elton, Charlotte, "World-first nuclear fusion plant could generate carbon free energy by 2040, *UK government claims", Euronews*, 4 October 2022, https://www.euronews.com/green/2022/10/04/world-first-nuclear-fusion-plant-could-generate-carbon-free-energy-by-2040-uk-government-c.
7. Wilkins, Alex, "Crystal-hunting DeepMind AI could help discover new wonder material", *New Scientist*, 29 November 2023, https://www.newscientist.com/article/2404929-crystal-hunting-deepmind-ai-could-help-discover-new-wonder-materials/.
8. Bill & Melinda Gates Foundation, *Polio: At a glance*, https://www.gatesfoundation.org/our-work/programs/global-development/polio, accessed 12 December 2023.
9. Shaw, Rajib, Mikio Ishiwatari and Margaret Arnold, *Knowledge Note 2.1, Cluster 2: Nonconstructional measures: Community-based Disaster Risk Management*, World Bank, https://openknowledge.worldbank.org/server/api/core/bitstreams/78ba6020-8714-5e9c-85cf-192438a55422/content, accessed 12 December 2023.
10. Bangladesh Red Crescent Society (BDRS), *Cyclone Preparedness Program (CPP)*, https://bdrcs.org/cyclone-preparedness-programm-cpp/, accessed 12 December 2023.
11. Rutter, Jill, "Nudge Unit", *Institute for Government*, 11 March 2020, https://www.instituteforgovernment.org.uk/article/explainer/nudge-unit.
12. McKinsey & Company, *The triple play: Growth, profit, and sustainability*, 9 August 2023, https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/the-triple-play-growth-profit-and-sustainability.
13. Henshall, Will, "E.U.'s AI Regulation Could Be Softened After Pushback From Biggest Members", *Time*, 22 November 2023, https://time.com/6338602/eu-ai-regulation-foundation-models/.
14. Associated Press, "The EU's AI Act: Could Europe's landmark bid to regulate AI fall at the last hurdle? ", *Euronews*, 4 December 2023, https://www.euronews.com/next/2023/12/04/the-eus-ai-act-could-europes-landmark-bid-to-regulate-ai-fall-at-the-last-hurdle.
15. United Nations, *COP28 ends with call to 'transition away' from fossil fuels*; *UN's Guterres says phaseout is inevitable* [Press release], 13 December 2023, https://news.un.org/en/story/2023/12/1144742.
16. Government of Germany Federal Ministry for Economic Affairs and Climate Action, *G7 establishes Climate Club* [Press release], 12 December 2022, https://www.bmwk.de/Redaktion/EN/Pressemitteilungen/2022/12/20221212-g7-establishes-climate-club.html.
17. Organisation for Economic Co-operation and Development (OECD) OECD.stats, *Gross domestic expenditure on R&D by sector of performance and source of fund*, https://stats.oecd.org/Index.aspx?DataSetCode=GERD_SOF, accessed 12 December 2023.

Appendix A

Definitions and Global Risks List

Definitions

For the purposes of this report, **"Climate change"** is a *structural force* that encompasses the trajectories of global warming and possible consequences to Earth systems, reflecting anthropogenic actions and environmental changes.

"Demographic bifurcation" is a *structural force* that refers to changes to the size, growth and structure of national, regional or global populations, and the resulting impact on socioeconomic and political structures. It includes, but is not limited to, migration, fertility and ageing rates.

"Geostrategic shifts" is a *structural force* that refers to changing geopolitical power dynamics. It encompasses global and regional alliances and relations, the offensive and defensive projection of different sources of power (including economic), and national attitudes relating to key actors, governance mechanisms and strategic goals.

"Global risk" is the possibility of the occurrence of an event or condition which, if it occurs, would negatively impact a significant proportion of global GDP, population or natural resources.

"Structural force" is the long-term shift in the arrangement of and relation between the systemic elements of the global landscape. These shifts are not risks in and of themselves, but have the potential to materially influence the speed, spread and scope of *global risks*. These include but are not limited to: *geostrategic shifts, technological acceleration, climate change* and *demographic bifurcation*.

"Technological acceleration" is a *structural force* that refers to technological developments enabled by exponential growth in computing power and analysis. It has the potential to blur boundaries between technology and humanity, and rapidly give rise to novel and unpredictable *global risks*.

"Under-the-radar risk" is a *global risk* where new intelligence, a marked deterioration, key decision point or similar suggests that the severity of the risk (likelihood or impact) is increasing and/or is higher than indicated by global risk perceptions.

Global risk list

Table A.1 presents the list of 34 global risks and definitions adopted in the Global Risks Perception Survey 2023-2024.

To ensure legibility, the names of some of the global risks have been abbreviated in the figures throughout the report. The portion of the full name used in the abbreviation is in bold in Table A.1.

TABLE A.1 **Definitions of global risks**

ECONOMIC	
Asset bubble bursts	Prices for housing, investment funds, shares and other assets become increasingly disconnected from the real economy, leading to a severe drop in demand and prices. Includes, but is not limited to: cryptocurrencies; housing prices; and stock markets.
Concentration of strategic resources (minerals, materials)	Concentration of strategically important resources and materials among a small number of individuals, businesses or states that can control access and dictate discretionary pricing.
Debt (public, corporate, household)	Corporate, household or public finances struggle to service debt accumulation, resulting in mass bankruptcies or insolvencies, liquidity crises or defaults and sovereign debt crises.
Disruptions to a systemically important supply chain	Major disruption or collapse of a systemically important global supply chain or industry with an impact on the global economy, financial markets or society leading to an abrupt shock to the supply and demand of systemically important goods and services at a global scale. Includes, but is not limited to: energy; technological hardware; medical supplies; and fast-moving consumer goods.

TABLE A.1 **Definitions of global risks**

Disruptions to critical infrastructure	Overload or shutdown of physical and digital infrastructure (including satellites) or services underpinning critical systems, including the internet, telecommunications, public utilities, financial system or energy. Stemming from, but not limited to: cyberattacks; intentional or unintentional physical damage; extreme weather events; and natural disasters.
Economic downturn (recession, stagnation)	Near-zero or slow global growth lasting for several years or a global contraction (recession or depression).
Illicit economic activity	Global proliferation of organized crime or the illicit activities of businesses that undermine economic advancement and growth. Includes, but is not limited to: illicit financial flows (e.g. tax evasion, sanctions evasion, money laundering) and illicit trade and trafficking (e.g. counterfeiting, human trafficking, wildlife trade, weapons).
Inflation	Sustained increases in the price of goods and services. Includes the potential for broad sections of the population being unable to maintain current lifestyle with declining purchasing power.
Talent and/or **labour shortages**	Global, geographical or industry mismatches between labour and skills supply and demand.
ENVIRONMENTAL	
Biodiversity loss and ecosystem collapse	Severe consequences for the environment, humankind and economic activity due to destruction of natural capital stemming from a result of species extinction or reduction, spanning both terrestrial and marine ecosystems.
Critical change to Earth systems (climate tipping points)	Long-term, potentially irreversible and self-perpetuating changes to critical planetary systems, as a result of breaching a critical threshold or 'tipping point', at a regional or global level, that have abrupt and severe impacts on planet health or human welfare. Includes, but is not limited to: sea level rise from collapsing ice sheets; carbon release from thawing permafrost; and disruption of ocean or atmospheric currents.
Extreme weather events	Loss of human life, damage to ecosystems, destruction of property and/or financial loss due to extreme weather events. Inclusive of land-based (e.g. wildfires), water-based (e.g. floods), and atmospheric and temperature-related (e.g. heat-waves) events, including those exacerbated by climate change.
Natural resource shortages (food, water)	Supply shortages of food or water for human, industry or ecosystem use. Manifesting as food and water insecurity at a local, regional or global level as a result of human overexploitation and mismanagement of critical natural resources, climate change (including drought, desertification), and/or a lack of suitable infrastructure.
Non-weather-related natural disasters	Loss of human life, damage to ecosystems, destruction of property and/or financial loss due to non-weather-related natural disasters. Inclusive of land-based (e.g. earthquakes, volcanos), water-based (e.g. tsunamis), and extra-terrestrial based (e.g. asteroid strikes and geomagnetic storms).
Pollution (air, soil, water)	Introduction of harmful materials into the air, water and soil stemming from human activity, resulting in impacts to and loss of human life, financial loss and/or damage to ecosystems. Inclusive of household and industrial activities and accidents, oil spills and radioactive contamination.
GEOPOLITICAL	
Biological, chemical or nuclear hazards	Intentional or accidental release of biological, chemical, nuclear or radiological hazards, resulting in loss of life, destruction and/or international crises. Includes accidents at or sabotage of biolaboratories, chemical plants and nuclear power plants, as well as the intentional or accidental release of biological, chemical and nuclear weapons.
Geoeconomic confrontation (sanctions, tariffs, investment screening)	Deployment of economic levers by global or regional powers to reshape economic interactions between nations, restricting goods, knowledge, services or technology with the intent of building self-sufficiency, constraining geopolitical rivals and/or consolidating spheres of influence. Includes, but is not limited to: currency measures; investment controls; sanctions; state aid and subsidies; and trade controls.

TABLE A.1 **Definitions of global risks**

Interstate armed conflict (hot war, proxy wars)	Bilateral or multilateral use of force between states, manifesting as proxy war or open, hot war.
Intrastate violence (civil strikes, riots, coups)	Destructive behaviour, interpersonal violence and/or use of force that takes place within a country or community, by state or non-state actors. Includes, but is not limited to: internal civil unrest manifesting as violent riots and strikes; gang violence; mass shootings; civil wars; guerrilla warfare; genocide; assassinations; and coups.
Terrorist attacks	Use of force by non-state actors with ideological, political or religious goals, resulting in loss of life, severe injury or material damage caused by conventional and non-conventional weapons or other means.
SOCIETAL	
Inflation	Chronic physical and mental health conditions that last one year or more and require ongoing medical attention and/or limit activities of daily living. Includes, but is not limited to: conditions linked to ageing; excessive consumption habits; and climate change and pollution.
Erosion of human rights and/or civic freedoms	Loss of protections for rights inherent to all human beings, regardless of individual status, and/or the freedoms that underpin civic space. Includes, but is not limited to the right to: life and liberty; work and education; freedom of expression; peaceful assembly; discrimination based on gender, race ethnicity and other characteristics; and privacy.
Inequality or **lack of economic opportunity**	Persistent barriers to the realization of economic potential and security. Includes, but is not limited to: growing or persistent poverty; present or perceived income and wealth inequality; and unequal access to educational, technological and economic opportunities.
Infectious diseases	Spread of viruses, parasites, fungi or bacteria leading to a widespread loss of life and economic disruption. Includes, but is not limited to: zoonotic diseases; releases of natural or man-made pathogens; the resurgence of pre-existing diseases due to lower levels of immunity; the rise of antimicrobial resistance; and the impact of climate change and environmental degradation on pathogens and their vectors.
Insufficient public infrastructure and services	Non-existent, inadequate or inequitable public infrastructure and services. Includes, but is not limited to: unaffordable or inadequate social security and benefits; housing; public education; child and elderly care; healthcare; and sanitation and transportation systems.
Involuntary migration	Forced movement or displacement across or within borders. Drivers include, but are not limited to: persistent discrimination and persecution; lack of economic advancement opportunities; human-made disasters; natural disasters and extreme weather events, including the impacts of climate change; and internal or interstate conflict.
Societal polarization	Ideological and cultural divisions within and across communities leading to declining social stability, gridlocks in decision-making, economic disruption, and increased political polarization.
Unemployment	Structural deterioration of work prospects or standards of work. Includes, but is not limited to: erosion of workers' rights; stagnating wages; rising unemployment and underemployment; displacement due to automation or the green transition; and stagnant social mobility.
TECHNOLOGICAL	
Adverse outcomes of AI technologies	Intended or unintended negative consequences of advances in AI and related technological capabilities (including generative AI) on individuals, businesses, ecosystems and/or economies.
Adverse outcomes of frontier technologies (quantum, biotech, geoengineering)	Intended or unintended negative consequences of advances in frontier technologies on individuals, businesses, ecosystems and/or economies. Includes, but is not limited to: brain-computer interfaces; biotechnology; geo-engineering; and quantum computing.
Censorship and surveillance	Broad and pervasive observation of a place or person and/or suppression of communication, information and ideas, physically or digitally, to the extent that it significantly infringes on human and civil rights (e.g. privacy, freedom of speech and freedom of expression).

TABLE A.1 **Definitions of global risks**

Cyber insecurity	Use of cyber weapons and tools to conduct cyberwarfare, cyberespionage and cybercrime to gain control over a digital presence and/or cause operational disruption. Includes: ransomware, data fraud or theft.
Misinformation and disinformation	Persistent false information (deliberate or otherwise) widely spread through media networks, shifting public opinion in a significant way towards distrust in facts and authority. Includes, but is not limited to: false, imposter, manipulated and fabricated content.
Technological power concentration (digital assets, knowledge, strategic technologies)	Concentration of critical technological assets, capabilities or knowledge among a small number of individuals, businesses or states that can control access to key technologies. Stemming from, but not limited to: the failure of anti-trust regulation; inadequate investment in the innovation ecosystem; or state control over key technologies.

Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Appendix B

Global Risk Perception Survey 2023-2024

The Global Risks Perception Survey (GRPS) is the World Economic Forum's source of original risks data, harnessing the expertise of the Forum's extensive network of academic, business, government, civil society and thought leaders. Survey responses were collected from 4 September to 9 October 2023 from the World Economic Forum's multistakeholder communities.

Updates to the GRPS 2023-2024

The list of 34 global risks included in the survey was updated in 2023 as follows.

Seven new risks were added in response to observed trends across all five categories (economic, environmental, geopolitical, societal and technological):

1. Censorship and surveillance
2. Critical change to Earth systems (climate tipping points)
3. Concentration of strategic resources (minerals, materials)
4. Erosion of human rights and/or civic freedoms
5. Inequality or lack of economic opportunity
6. Intrastate violence (civil strikes, riots, coups)
7. Talent and/or labour shortages

In addition:

"Misinformation and disinformation" was recategorized from a societal to a technological risk, while "Disruptions to critical infrastructure" was recategorized from a technological to an economic risk.

"Adverse outcomes of AI technologies" was split out from "Adverse outcomes from frontier technologies (quantum, biotech, geoengineering)", while "Natural disasters and extreme weather events" was delineated into two separate categories ("Extreme weather events" and "Non-weather-related natural disasters").

Global risk categories relating to a failure in governance were removed. This includes "Ineffectiveness of multilateral institutions and international cooperation", as well as "Failure of climate-change adaptation" and "Failure to mitigate climate change". These updates were made to ensure the global risks list focused on the core risk itself, rather than a related exposure or vulnerability to that risk through in/action.

The names and definitions of the remaining risks have been revised and, where applicable, merged, modified and/or expanded to reflect new ways in which the risks may materialize and the potential adverse outcomes they may cause. However, to ensure comparability over time, the fundamental concept of each risk has remained broadly consistent with that of previous versions of the survey, although names and definitions were modified.

Methodology

The GRPS 2023–2024 was further refined this year to gather more granular perceptions of risk and to incorporate new approaches to risk management and analysis. To that end, the GRPS 2023–2024 was comprised of seven sections:

- **Current risk landscape** asked respondents to select up to five risks among 20 pre-selected risks that they believe are the most likely to present a material crisis on a global scale in 2024. The final rank is based on the share of respondents who selected the particular risk. The 20 options included: Accidental or intentional nuclear event; Accidental or intentional release of biological agents; AI-generated misinformation and disinformation; Attacks on critical infrastructure; Censorship and erosion of free speech; Cost of living crisis; Cyberattacks; Disrupted supply chains for critical goods or resources; Disrupted supply chains for energy; Disrupted supply chains for food; Economic downturn; Escalation or outbreak of interstate armed conflict(s); Extreme weather events; Housing-bubble burst; Institutional collapse within the financial sector; Public-debt distress; Skills or labour shortages; Societal and/or political polarization; Tech bubble burst; and Violent civil strikes and riots. Respondents were also able to write in additional risks to Other, a free-text field. Results are illustrated in Figure 1.2.

– **Short- and long-term risks landscape** asked respondents to estimate the likely impact (severity) of each of the 34 global risks, on a 1-7 scale [1 – Low severity, 7 – High severity], over both two-year and 10-year periods. "Severity" is meant to take into consideration the impact on populations, the economy or environmental resources on a global scale. Respondents were also allowed to nominate any other risk considered missing from the 34 global risks. A simple average based on the scores selected was calculated and the results are illustrated in Figures 1.3 and 2.2. In addition, if a respondent selected the highest severity score (7) for any of the 34 risks, they were asked a follow-up question to identify areas of particular concern with respect to the identified risk.

– **Consequences** seeks to understand the potential consequences of risks, to create a network map of the global risk landscape. Respondents were provided 10 randomly selected global risks (from the full list of 34 global risks) and were then asked to select up to five global risks (from the full list) likely to be triggered by each of the 10 randomly selected risks. Results are illustrated in Figure 1.7. In visual results, "Nodes: Risk influence" is based on a simple tally of all bidirectional relationships identified by respondents. "Edges: Relative influence" is based on a simple tally of the number of times the risk was identified as a consequence. However, visual results do not show all connections: weaker relationships identified by less than 25% of respondents were not included as edges.

– **Risk governance** asked respondents to identify approach(es) that they expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years, with respect to the most severe risks (severity score of 6 or 7 over the 10-year timeframe). Respondents could choose up to three answers from the following nine approaches: Financial instruments (e.g. insurance, catastrophe bonds, public risk pools); National and local regulations (e.g. environmental, operational, financial regulations and incentives); Minilateral treaties and agreements (e.g. Basel, Wassenaar, regional free trade agreements); Global treaties and agreements (e.g. UNFCC, Paris, Montreal, NPT, WTO); Development assistance (e.g. international aid for disaster risk response and reduction); Corporate strategies (e.g. ESG reporting, resilient supply chains, social initiatives, PPPs); Research and development (e.g. new technologies, early-warning systems, global risk research); Public awareness and education (e.g. campaigns, school curricula, media products); Multistakeholder engagement (e.g. platforms for exchanging knowledge, best practices, alignment). A simple tally of the number of times an approach was identified was calculated for each risk. Results are illustrated in Figure 3.5. To ensure legibility, the names of some of the global risks have been abbreviated in the figures. The portion of the full name used in the abbreviation is in bold.

– **Risk outlook** asked respondents to characterize the evolution of the global risks landscape based on a number of factors. It first asked respondents to indicate which statement best characterizes current and future global efforts to manage the Earth's resources. Respondents were provided with the same 7-point Likert scale for both the current and future timescales, ranging from "We need to respect Earth's limits and restrict the consumption of natural resources to make our lifestyles sustainable" (1) to "We need to change Earth's limits using science and technology to increase the supply of goods to create abundance" (7). A simple tally for each of the seven options was calculated.

– Respondents were then asked to select a statement that they believe best characterizes **the global political environment for cooperation on global risks in 10 years**. Respondents were provided with four options: (1) Continuation or reinvigoration of the US-led, rules-based international order; (2) Multipolar or fragmented order in which middle and great powers contest, set and enforce regional rules and norms; (3) Bipolar or bifurcated order shaped by strategic competition between two superpowers; (4) Realignment towards a new international order led by an alternative superpower. A simple tally for each of the four options was calculated. Results are illustrated in Figure 2.31.

– Finally, respondents were asked to select a statement which best characterizes their **outlook for the world over the next two and 10 years**. Respondents were provided with the same five options for both time periods: (1) Calm: negligible risk of global catastrophes; (2) Stable: isolated disruptions, low risk of global catastrophes; (3) Unsettled: some instability, moderate risk of global catastrophes; (4) Turbulent: upheavals and elevated risk of global catastrophes; (5) Stormy: global catastrophic risks looming. A simple tally for each of the five options was calculated. Results are illustrated in Figure 1.1.

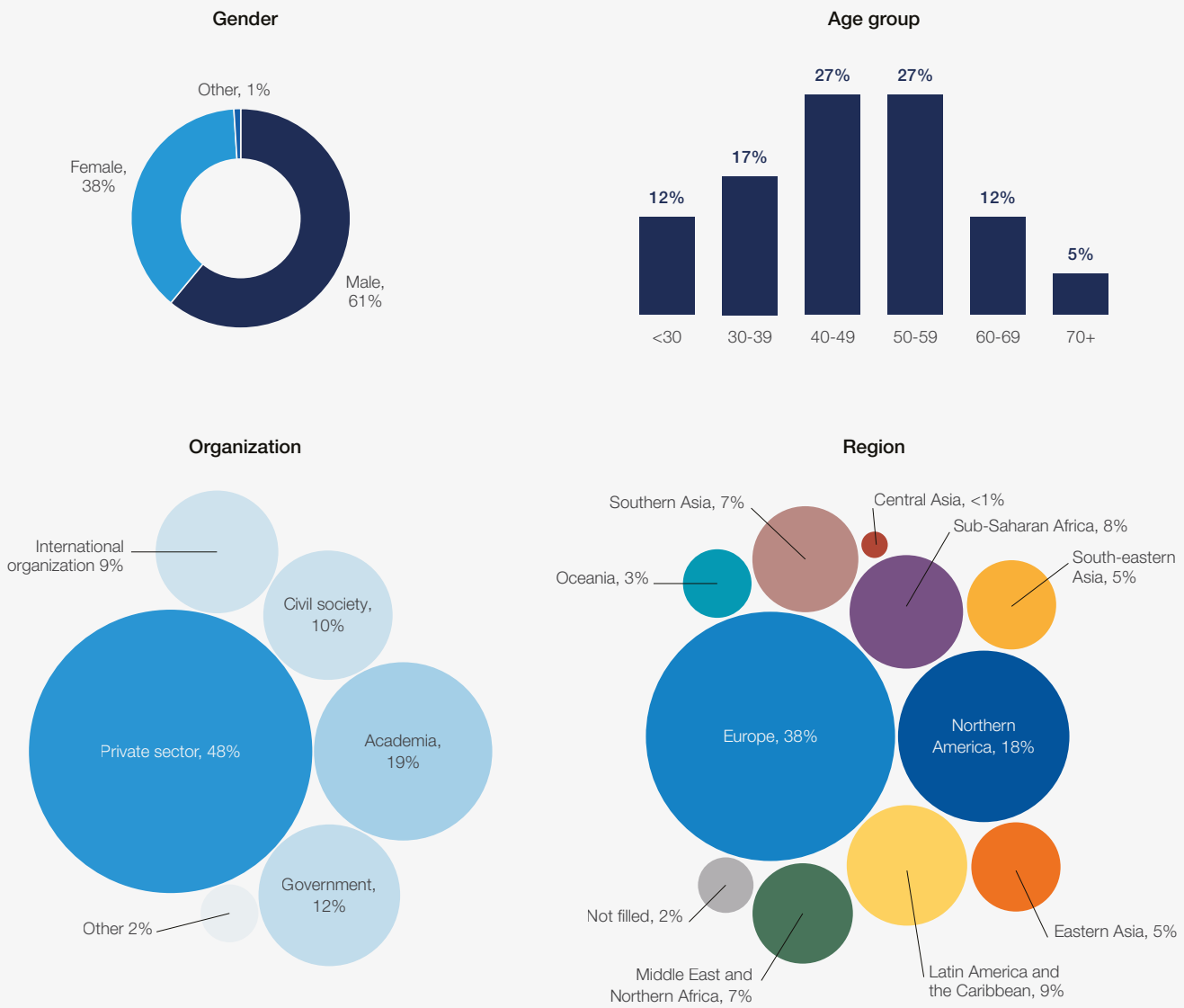
Completion thresholds

A total of 1,852 responses to the GRPS were received. From these, 1,490 were kept, based on the threshold at least one non-demographic answer, a minimum answer time of 2 minutes, and the filtering of multiple submissions based on browser cookies as well as partial responses (>40%) that have overlapping IP-numbers and demographic answers with a fully recorded response (100%).

- **Current risk landscape**: 1,490 respondents selected at least one risk.
- **Short- and long-term risks landscape**: 1,312 respondents evaluated the severity of at least one risk in one time frame.
  - Short-term severity: 1,312 respondents evaluated the severity of at least one risk.
  - Long-term severity: 1,311 respondents evaluated the severity of at least one risk.
- **Consequences**: 1,049 respondents paired at least one risk with one consequence.
- **Risk governance**: 952 respondents selected at least one approach for at least one risk.
- **Risk outlook**: 1,001 respondents answered at least one question.
  - Global efforts: 984 respondents answered over at least one time frame.
  - Global political environment for cooperation: 981 respondents answered.
  - Outlook for the world: 992 respondents answered over at least one timeframe.
- **Sample distribution**: 1,490 respondents who answered at least one non-demographic question were used to calculate the sample distribution by place of residence (region), gender, age, area of expertise and organization type.

Figure B.1 presents some key descriptive statistics and information about the profiles of the respondents.

TABLE B.1 **Survey sample composition**



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Appendix C

Executive Opinion Survey: National Risk Perceptions

Table C.1 presents the list of 36 risks that were incorporated into the World Economic Forum's 2023 Executive Opinion Survey (EOS), which was administered between April and August 2023. The risks are comparable to those in the GRPS (Global Risks Perception Survey) but are applied at a more granular level to reflect the possible short-term and country-level manifestations of global risks.

To ensure legibility, the names of some of the global risks have been abbreviated in the figures. The portion of the full name used in the abbreviation is in bold.

TABLE C.1 **National risk list**

Asset bubble burst	**Water-supply shortage**
Corporate debt	Accidental or intentional **use of biological, chemical or nuclear weapons**
Critical minerals shortage	**Attacks on critical infrastructure**
Economic downturn (e.g. recession, stagnation)	**Geoeconomic confrontation** (sanctions, tariffs, investment screening)
Energy-supply shortage	**Interstate armed conflict**
Household debt	**State fragility** and failure of public services
Illicit economic activity	**Terrorism**
Inequality (wealth, income)	**Censorship** and limitations to civil liberties
Inflation	**Chronic diseases and health conditions** (heart, cancer, diabetes)
Labour and/or talent **shortage**	**Erosion of social cohesion** and wellbeing
Public debt	**Infectious diseases** (COVID-19, influenza, tuberculosis, malaria, etc.)
Biodiversity loss (marine, freshwater, terrestrial)	**Involuntary migration**
Extreme weather events (floods, storms, etc.)	**Unemployment**
Failure of climate-change adaptation	**Adverse outcomes of artificial intelligence** technologies
Failure of climate-change mitigation	**Adverse outcomes of bioengineering** technologies
Food-supply shortage	**Cybercrime and cyber insecurity**
Non-weather related natural disasters (earthquakes, volcanoes, etc.)	**Digital inequality**
Pollution (air, water, soil)	**Misinformation and disinformation**

Risk categories: Economic, Environmental, Geopolitical, Societal, Technological

Source
World Economic Forum Executive Opinion Survey 2023.

Over 11,000 respondents were presented with the following question: "Which five risks are the most likely to pose the biggest threat to your country in the next two years?" and were asked to select these from the list of 36 risks listed in Table C.1.

"Risk 1" indicates the most frequently selected risk in each economy. Tied risks are presented in alphabetical order, with the tie indicated by numbering. For example, in Türkiye, two risks ("Inequality (wealth, income)" and "Erosion of social cohesion and wellbeing") are tied for third place and there is, therefore, no risk listed in fourth place.

For the purposes of more intuitive visual representation of results in the report, risks which were selected by zero respondents within a country tie last at #36. Further, to analyse the results of country or economy groups (such as the G20 or EU), country-level results are aggregated by taking a simple average of the ranking of the risk (from 1-36) by the countries or economies included in the group.

TABLE C.2 **Top five risks identified by the Executive Opinion Survey (EOS)**

Algeria

1st	Inflation
2nd	Infectious diseases
3rd	Involuntary migration
4th	Unemployment
5th	Energy supply shortage

Angola

1st	Economic downturn
2nd	Inflation
3rd	Unemployment
4th	Inequality (wealth, income)
5th	Labour shortage

Argentina

1st	Inflation
2nd	Economic downturn
3rd	Public debt
4th	Erosion of social cohesion
5th	Inequality (wealth, income)

Armenia

1st	Interstate armed conflict
2nd	Labour shortage
3rd	Geoeconomic confrontation
4th	Involuntary migration
5th	Economic downturn

Australia

1st	Economic downturn
2nd	Inflation
3rd	Household debt
4th	Energy supply shortage
5th	Extreme weather events

Austria

1st	Labour shortage
2nd	Economic downturn
3rd	Inflation
4th	Cybercrime and cyber insecurity
5th	Erosion of social cohesion

Bahamas

1st	Economic downturn
2nd	Extreme weather events
3rd	Energy supply shortage
4th	Unemployment
5th	Failure of climate-change adaption

Bahrain

1st	Inflation
2nd	Economic downturn
3rd	Public debt
4th	Labour shortage
5th	Unemployment

Bangladesh

1st	Energy supply shortage
2nd	Inflation
3rd	Economic downturn
4th	Inequality (wealth, income)
5th	Public debt
5th	Unemployment

Risk categories: Economic, Environmental, Geopolitical, Societal, Technological

TABLE C.2 | **Top five risks identified by the Executive Opinion Survey (EOS)**

Belgium

1st	Economic downturn
2nd	Energy supply shortage
3rd	Inflation
4th	Use of biological, chemical or nuclear weapons
5th	Infectious diseases

Brazil

1st	Economic downturn
2nd	Inflation
3rd	Public debt
4th	Censorship
5th	Inequality (wealth, income)

Chile

1st	Economic downturn
2nd	Erosion of social cohesion
3rd	State fragility
4th	Involuntary migration
5th	Inflation

Benin

1st	Use of biological, chemical or nuclear weapons
2nd	Erosion of social cohesion
3rd	Economic downturn
4th	Energy supply shortage
5th	Adverse outcomes of artificial intelligence

Bulgaria

1st	Economic downturn
2nd	Inflation
3rd	Energy supply shortage
4th	Labour shortage
5th	Public debt

Colombia

1st	Economic downturn
2nd	Inflation
3rd	Unemployment
4th	Public debt
5th	Interstate armed conflict

Bolivia (Plurinational State of)

1st	Economic downturn
2nd	Public debt
3rd	Censorship
4th	Inflation
5th	Erosion of social cohesion

Cameroon

1st	Unemployment
2nd	Illicit economic activity
3rd	Cybercrime and cyber insecurity
4th	Chronic diseases and health conditions
5th	Inequality (wealth, income)

Costa Rica

1st	Economic downturn
2nd	Public debt
3rd	Erosion of social cohesion
4th	Unemployment
5th	Extreme weather events

Bosnia and Herzegovina

1st	Economic downturn
2nd	Labour shortage
3rd	Inflation
4th	State fragility
5th	Erosion of social cohesion

Canada

1st	Economic downturn
2nd	Labour shortage
3rd	Extreme weather events
4th	Inflation
5th	Infectious diseases

Côte D'Ivoire

1st	Unemployment
2nd	Inflation
3rd	Economic downturn
4th	Erosion of social cohesion
5th	Cybercrime and cyber insecurity

Botswana

1st	Unemployment
2nd	Inflation
3rd	Inequality (wealth, income)
4th	Household debt
5th	Digital inequality

Chad

1st	Energy supply shortage
2nd	Economic downturn
3rd	Erosion of social cohesion
4th	Infectious diseases
5th	Failure of climate-change adaption

Croatia

1st	Labour shortage
2nd	Economic downturn
3rd	Inflation
4th	Asset bubble burst
5th	Extreme weather events

Risk categories: Economic | Environmental | Geopolitical | Societal | Technological

TABLE C.2 | **Top five risks identified by the Executive Opinion Survey (EOS)**

Cyprus

1st	Economic downturn
2nd	Labour shortage
3rd	Inflation
4th	Cybercrime and cyber insecurity
5th	Household debt

Ecuador

1st	Economic downturn
2nd	Terrorism
3rd	State fragility
4th	Illicit economic activity
5th	Extreme weather events

France

1st	Economic downturn
2nd	Erosion of social cohesion
3rd	Public debt
4th	Labour shortage
5th	Energy supply shortage

Czechia

1st	Economic downturn
2nd	Labour shortage
3rd	Public debt
4th	Inflation
5th	Misinformation and disinformation

Egypt

1st	Economic downturn
2nd	Inflation
3rd	Unemployment
4th	Public debt
5th	Interstate armed conflict

Georgia

1st	Interstate armed conflict
2nd	Use of biological, chemical or nuclear weapons
3rd	Involuntary migration
4th	Cybercrime and cyber insecurity
5th	Energy supply shortage

Democratic Republic of the Congo

1st	Interstate armed conflict
2nd	Unemployment
3rd	Inflation
4th	State fragility
5th	Inequality (wealth, income)

El Salvador

1st	Economic downturn
2nd	Public debt
3rd	Censorship
4th	Misinformation and disinformation
5th	Inflation

Germany

1st	Economic downturn
2nd	Labour shortage
3rd	Energy supply shortage
4th	Inflation
5th	Erosion of social cohesion

Denmark

1st	Economic downturn
2nd	Labour shortage
3rd	Cybercrime and cyber insecurity
4th	Inflation
5th	Attacks on critical infrastructure

Estonia

1st	Economic downturn
2nd	Interstate armed conflict
3rd	Inflation
4th	Labour shortage
5th	Energy supply shortage

Ghana

1st	Unemployment
2nd	Public debt
3rd	Inflation
4th	Cybercrime and cyber insecurity
5th	Economic downturn

Dominican Republic

1st	Extreme weather events
2nd	Public debt
3rd	Economic downturn
4th	Inflation
5th	Involuntary migration

Finland

1st	Economic downturn
2nd	Labour shortage
3rd	Public debt
4th	Inflation
5th	Erosion of social cohesion

Greece

1st	Economic downturn
2nd	Labour shortage
3rd	Inflation
4th	Public debt
5th	Interstate armed conflict

Risk categories: Economic | Environmental | Geopolitical | Societal | Technological

TABLE C.2 | **Top five risks identified by the Executive Opinion Survey (EOS)**

Guatemala

1st	State fragility
2nd	Labour shortage
3rd	Erosion of social cohesion
4th	Extreme weather events
5th	Illicit economic activity

Honduras

1st	Energy supply shortage
2nd	Economic downturn
3rd	Extreme weather events
4th	State fragility
5th	Unemployment

Hong Kong SAR, China

1st	Labour shortage
2nd	Economic downturn
3rd	Geoeconomic confrontation
4th	Infectious diseases
5th	Asset bubble burst

Hungary

1st	Economic downturn
2nd	Energy supply shortage
3rd	Inflation
4th	Labour shortage
5th	Interstate armed conflict

Iceland

1st	Economic downturn
2nd	Inflation
3rd	Labour shortage
4th	Non-weather-related natural disasters
5th	Extreme weather events

India

1st	Misinformation and disinformation
2nd	Infectious diseases
3rd	Illicit economic activity
4th	Inequality (wealth, income)
5th	Labour shortage

Indonesia

1st	Economic downturn
2nd	Extreme weather events
3rd	Infectious diseases
4th	Energy supply shortage
5th	Unemployment

Iran (Islamic Republic of)

1st	Inflation
2nd	Water-supply shortage
3rd	Erosion of social cohesion
4th	Inequality (wealth, income)
5th	Economic downturn

Iraq

1st	Economic downturn
2nd	Water-supply shortage
3rd	Energy supply shortage
3rd	State fragility
5th	Interstate armed conflict

Ireland

1st	Labour shortage
2nd	Economic downturn
3rd	Energy supply shortage
4th	Inflation
5th	Cybercrime and cyber insecurity
5th	Misinformation and disinformation

Italy

1st	Economic downturn
2nd	Energy supply shortage
3rd	Extreme weather events
4th	Interstate armed conflict
5th	Failure of climate-change adaption

Jamaica

1st	Economic downturn
2nd	Labour shortage
3rd	Extreme weather events
4th	Inflation
5th	Erosion of social cohesion

Japan

1st	Interstate armed conflict
2nd	Labour shortage
3rd	Economic downturn
4th	Non-weather-related natural disasters
5th	Extreme weather events

Risk categories: Economic | Environmental | Geopolitical | Societal | Technological

TABLE C.2 | **Top five risks identified by the Executive Opinion Survey (EOS)**

Jordan

1st	Unemployment
2nd	Public debt
3rd	Inflation
4th	Economic downturn
5th	Infectious diseases

Kazakhstan

1st	Inflation
2nd	Economic downturn
3rd	Erosion of social cohesion
4th	Water-supply shortage
5th	Interstate armed conflict

Kenya

1st	Economic downturn
2nd	Public debt
3rd	Unemployment
4th	Inflation
5th	Food-supply shortage

Kuwait

1st	Economic downturn
2nd	Labour shortage
3rd	State fragility
4th	Inflation
5th	Erosion of social cohesion

Kyrgyzstan

1st	Interstate armed conflict
2nd	Economic downturn
3rd	Involuntary migration
4th	Public debt
5th	Inflation

Lao PDR

1st	Infectious diseases
2nd	Inflation
3rd	Economic downturn
4th	Energy supply shortage
5th	Labour shortage

Latvia

1st	Use of biological, chemical or nuclear weapons
2nd	Failure of climate-change mitigation
3rd	Pollution (air, water, soil)
4th	Terrorism
5th	State fragility

Lesotho

1st	Economic downturn
2nd	Infectious diseases
3rd	Failure of climate-change adaption
4th	Extreme weather events
5th	Failure of climate-change mitigation

Lithuania

1st	Economic downturn
2nd	Interstate armed conflict
3rd	Inflation
4th	Labour shortage
5th	Use of biological, chemical or nuclear weapons

Luxembourg

1st	Economic downturn
2nd	Labour shortage
3rd	Inflation
4th	Energy supply shortage
5th	Asset bubble burst

Malawi

1st	Economic downturn
2nd	Public debt
3rd	Inflation
4th	Unemployment
5th	Extreme weather events

Malaysia

1st	Economic downturn
2nd	Labour shortage
3rd	Food-supply shortage
4th	Inflation
5th	Erosion of social cohesion
5th	Infectious diseases

Mali

1st	Terrorism
2nd	Unemployment
3rd	Cybercrime and cyber insecurity
4th	Interstate armed conflict
5th	Energy supply shortage

Malta

1st	Economic downturn
2nd	Inflation
3rd	Labour shortage
4th	Asset bubble burst
5th	Public debt

Risk categories: Economic | Environmental | Geopolitical | Societal | Technological

TABLE C.2 | **Top five risks identified by the Executive Opinion Survey (EOS)**

Mauritius

1st	Labour shortage
2nd	Economic downturn
3rd	Public debt
4th	Inflation
5th	Extreme weather events

Mexico

1st	Economic downturn
2nd	State fragility
3rd	Energy supply shortage
4th	Inequality (wealth, income)
5th	Illicit economic activity
5th	Erosion of social cohesion

Mongolia

1st	Economic downturn
2nd	Labour shortage
3rd	Inflation
4th	Pollution (air, water, soil)
5th	Energy supply shortage

Morocco

1st	Economic downturn
2nd	Inflation
3rd	Water-supply shortage
4th	Inequality (wealth, income)
5th	Unemployment

Nepal

1st	Economic downturn
2nd	Unemployment
3rd	Inequality (wealth, income)
4th	Inflation
5th	Labour shortage

Netherlands

1st	Labour shortage
2nd	Economic downturn
3rd	Energy supply shortage
4th	Erosion of social cohesion
5th	Cybercrime and cyber insecurity

New Zealand

1st	Economic downturn
2nd	Extreme weather events
3rd	Inflation
4th	Energy supply shortage
5th	Labour shortage

Nigeria

1st	Economic downturn
2nd	Energy supply shortage
3rd	Unemployment
4th	Public debt
5th	Inflation

North Macedonia

1st	Economic downturn
2nd	Inflation
3rd	Pollution (air, water, soil)
4th	Public debt
5th	Unemployment

Oman

1st	Economic downturn
2nd	Unemployment
3rd	Inflation
4th	Public debt
5th	Infectious diseases

Pakistan

1st	Economic downturn
2nd	Energy supply shortage
3rd	Extreme weather events
4th	Inflation
5th	Misinformation and disinformation

Panama

1st	Public debt
2nd	Labour shortage
3rd	Erosion of social cohesion
4th	Economic downturn
5th	Inequality (wealth, income)

Paraguay

1st	State fragility
2nd	Illicit economic activity
3rd	Public debt
4th	Economic downturn
5th	Inequality (wealth, income)

Peru

1st	Economic downturn
2nd	Extreme weather events
3rd	State fragility
4th	Erosion of social cohesion
5th	Illicit economic activity

Risk categories: Economic | Environmental | Geopolitical | Societal | Technological

TABLE C.2 | **Top five risks identified by the Executive Opinion Survey (EOS)**

Philippines

1st	Extreme weather events
2nd	Economic downturn
3rd	Energy supply shortage
4th	Inflation
5th	Infectious diseases

Poland

1st	Inflation
2nd	Economic downturn
3rd	Interstate armed conflict
4th	Use of biological, chemical or nuclear weapons
5th	Public debt

Portugal

1st	Economic downturn
2nd	Labour shortage
3rd	Inflation
4th	Erosion of social cohesion
5th	Public debt

Qatar

1st	Inflation
2nd	Digital inequality
3rd	Terrorism
4th	Economic downturn
5th	Labour shortage

Romania

1st	Economic downturn
2nd	Inflation
3rd	Labour shortage
4th	Interstate armed conflict
5th	Misinformation and disinformation

Rwanda

1st	Inflation
2nd	Extreme weather events
3rd	Unemployment
4th	Food-supply shortage
5th	Economic downturn

Saudi Arabia

1st	Infectious diseases
2nd	Inflation
3rd	Adverse outcomes of artificial intelligence
4th	Economic downturn
5th	Misinformation and disinformation

Senegal

1st	Economic downturn
2nd	Unemployment
3rd	Inflation
4th	State fragility
5th	Censorship

Serbia

1st	Labour shortage
2nd	Inflation
3rd	Economic downturn
4th	Interstate armed conflict
5th	Censorship

Sierra Leone

1st	Economic downturn
2nd	Energy supply shortage
3rd	Inflation
4th	Erosion of social cohesion
5th	Extreme weather events

Singapore

1st	Economic downturn
2nd	Labour shortage
3rd	Inflation
4th	Geoeconomic confrontation
5th	Cybercrime and cyber insecurity

Slovenia

1st	Economic downturn
2nd	Labour shortage
3rd	Energy supply shortage
4th	Inflation
5th	Public debt

South Africa

1st	Energy supply shortage
2nd	Economic downturn
3rd	Unemployment
4th	State fragility
5th	Water-supply shortage

South Korea

1st	Economic downturn
2nd	Household debt
3rd	Asset bubble burst
4th	Labour shortage
5th	Inequality (wealth, income)
5th	Inflation
5th	Use of biological, chemical or nuclear weapons

Risk categories: Economic | Environmental | Geopolitical | Societal | Technological

TABLE C.2 | **Top five risks identified by the Executive Opinion Survey (EOS)**

Spain

1st	Economic downturn
2nd	Public debt
3rd	Erosion of social cohesion
4th	Labour shortage
5th	Inflation

Sri Lanka

1st	Economic downturn
2nd	Labour shortage
3rd	Energy supply shortage
4th	Inflation
5th	Public debt

Sweden

1st	Economic downturn
2nd	Energy supply shortage
3rd	Inflation
4th	Involuntary migration
5th	Failure of climate-change adaption

Switzerland

1st	Labour shortage
2nd	Energy supply shortage
3rd	Economic downturn
4th	Cybercrime and cyber insecurity
5th	Erosion of social cohesion
5th	Involuntary migration

Taiwan, China

1st	Economic downturn
2nd	Energy supply shortage
3rd	Geoeconomic confrontation
4th	Labour shortage
5th	Inflation

Thailand

1st	Economic downturn
2nd	Pollution (air, water, soil)
3rd	Labour shortage
4th	Household debt
5th	Inequality (wealth, income)

Tunisia

1st	Economic downturn
2nd	Public debt
3rd	Water-supply shortage
4th	State fragility
5th	Inflation

Türkiye

1st	Economic downturn
2nd	Involuntary migration
3rd	Inequality (wealth, income)
3rd	Erosion of social cohesion
5th	Censorship

Ukraine

1st	Interstate armed conflict
2nd	Involuntary migration
3rd	Use of biological, chemical or nuclear weapons
4th	Public debt
5th	Inflation

United Arab Emirates

1st	Economic downturn
2nd	Inflation
3rd	Adverse outcomes of artificial intelligence
4th	Infectious diseases
5th	Cybercrime and cyber insecurity

United Kingdom

1st	Economic downturn
2nd	Inflation
3rd	Energy supply shortage
4th	Household debt
5th	Labour shortage

United Republic of Tanzania

1st	Unemployment
2nd	Chronic diseases and health conditions
3rd	Failure of climate-change adaption
4th	Inequality (wealth, income)
5th	Cybercrime and cyber insecurity

United States of America

1st	Economic downturn
2nd	Infectious diseases
3rd	Inflation
4th	Use of biological, chemical or nuclear weapons
5th	Energy supply shortage

Uruguay

1st	Labour shortage
2nd	Economic downturn
3rd	Extreme weather events
4th	Erosion of social cohesion
5th	Inequality (wealth, income)

Risk categories: Economic | Environmental | Geopolitical | Societal | Technological

TABLE C.2 | **Top five risks identified by the Executive Opinion Survey (EOS)**

Uzbekistan

1st	Energy supply shortage
2nd	Pollution (air, water, soil)
3rd	Inflation
4th	Water-supply shortage
5th	Economic downturn

Viet Nam

1st	Economic downturn
2nd	Infectious diseases
3rd	Inflation
4th	Pollution (air, water, soil)
5th	Labour shortage

Zimbabwe

1st	Economic downturn
2nd	Energy supply shortage
3rd	Inflation
4th	Unemployment
5th	Involuntary migration

Venezuela, Bolivarian Republic of

1st	Economic downturn
2nd	Energy supply shortage
3rd	Inflation
4th	State fragility
5th	Labour shortage

Yemen

1st	Interstate armed conflict
2nd	State fragility
3rd	Unemployment
4th	Energy supply shortage
5th	Economic downturn

Risk categories: Economic | Environmental | Geopolitical | Societal | Technological

Source
World Economic Forum Executive Opinion Survey 2023.

Appendix D

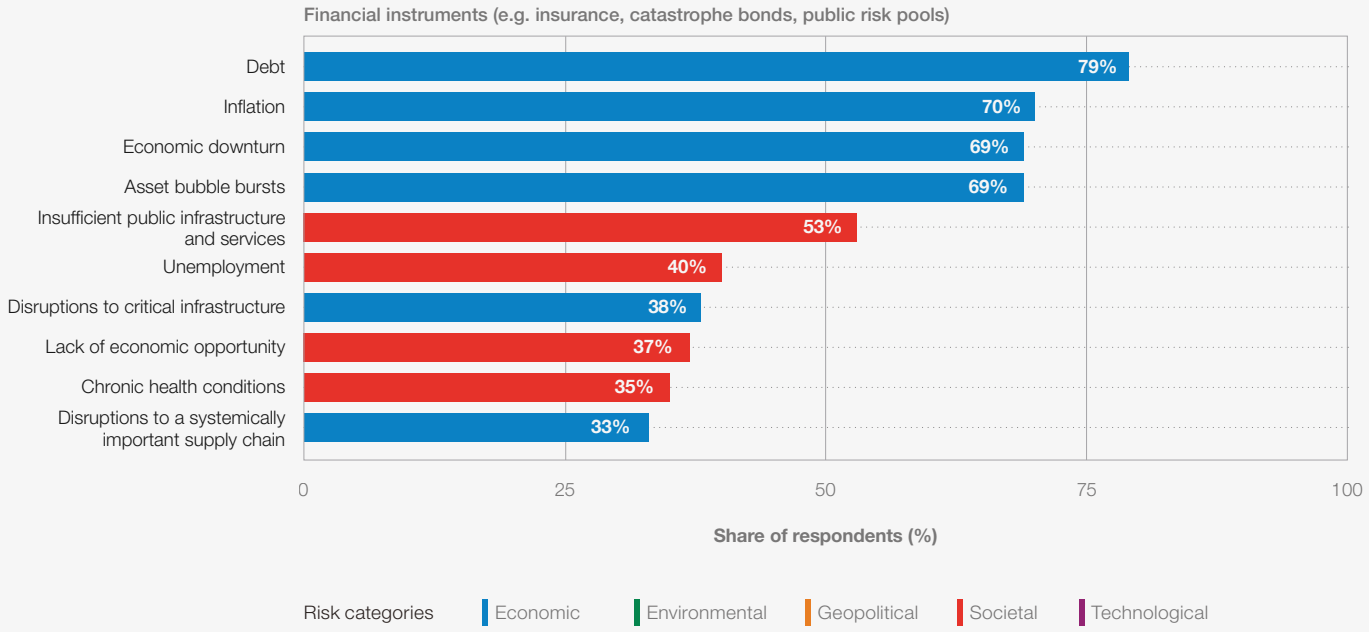
Risk governance

Respondents were asked to identify approach(es) that they expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years. The following figures present the top global risks addressed by selected risk reduction and preparedness approaches that were not otherwise featured in **Chapter 3: Responding to global risks**.

FIGURE D.1

Top global risks addressed by Financial instruments

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years?"



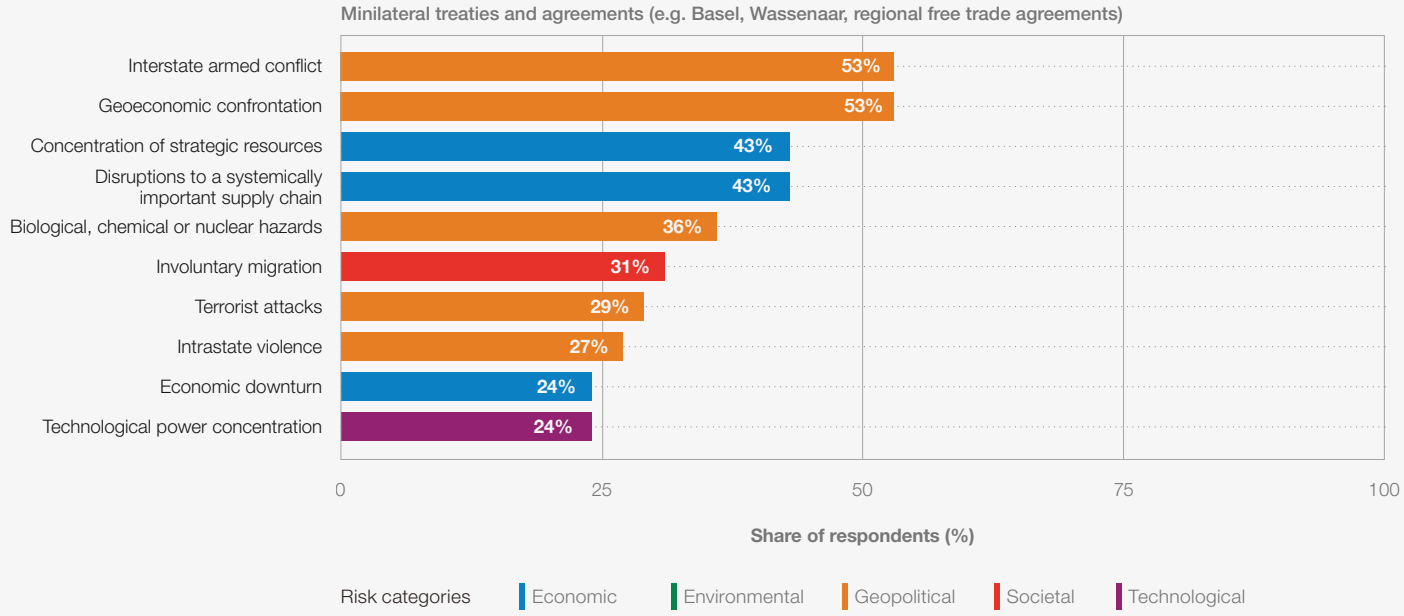
Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Respondents could select up to three responses from the following nine options: Financial instruments, National and local regulations, Minilateral treaties and agreements, Global treaties and agreements, Development assistance, corporate strategies, Research & development, Public awareness and education, Multi-stakeholder engagement.

FIGURE D.2

Top global risks addressed by Minilateral treaties and agreements

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years?"



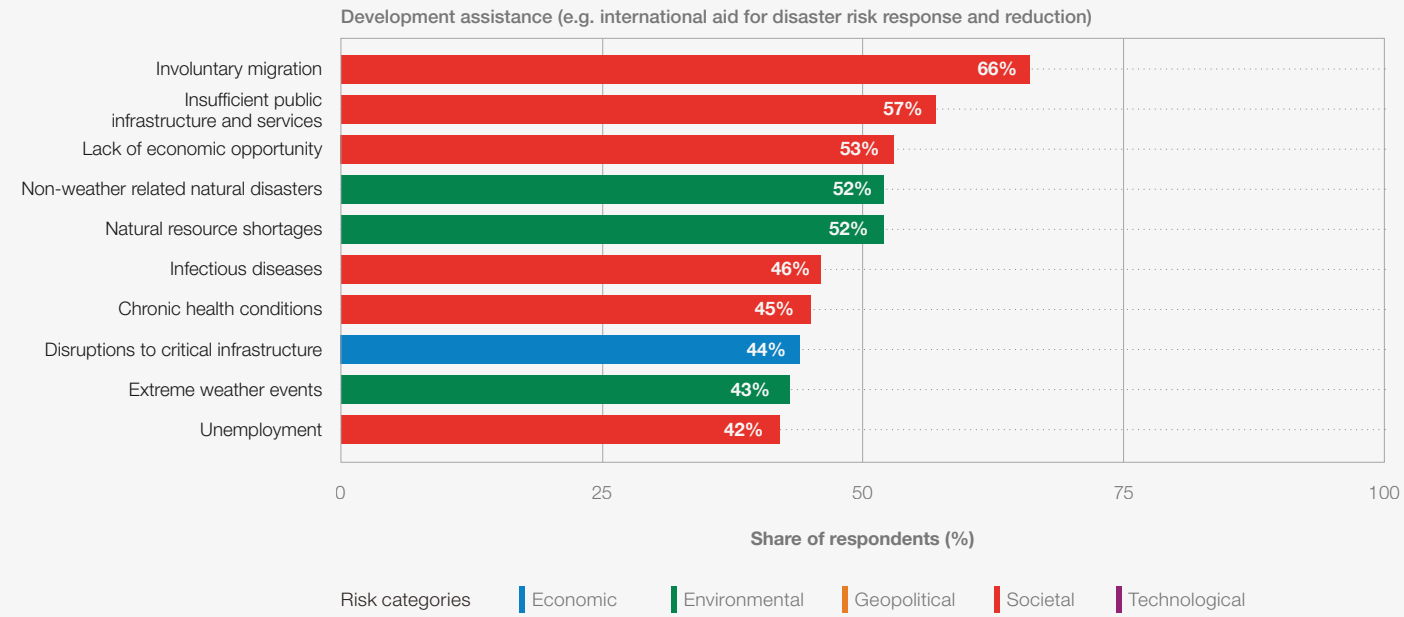
Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Respondents could select up to three responses from the following nine options: Financial instruments, National and local regulations, Minilateral treaties and agreements, Global treaties and agreements, Development assistance, corporate strategies, Research & development, Public awareness and education, Multi-stakeholder engagement.

FIGURE D.3

Top global risks addressed by Development assistance

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years?"



Source
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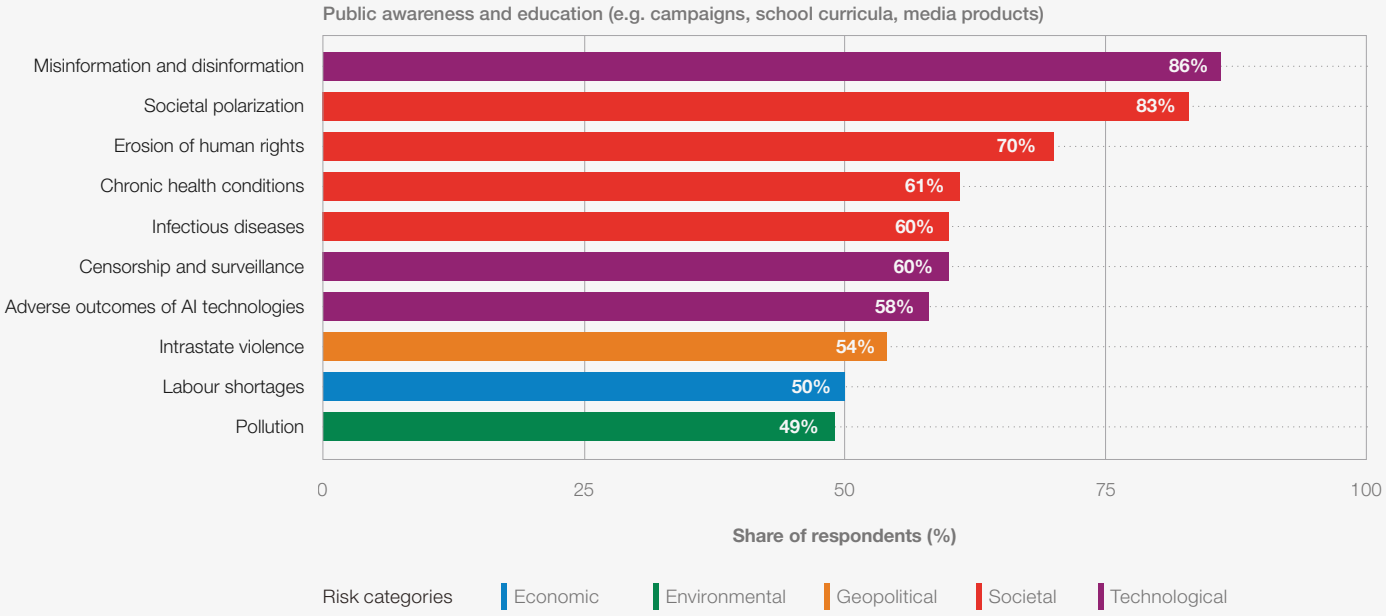
Note
Respondents could select up to three responses from the following nine options: Financial instruments, National and local regulations, Minilateral treaties and agreements, Global treaties and agreements, Development assistance, corporate strategies, Research & development, Public awareness and education, Multi-stakeholder engagement.

FIGURE D.4

Top global risks addressed by Public awareness and education

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years?"



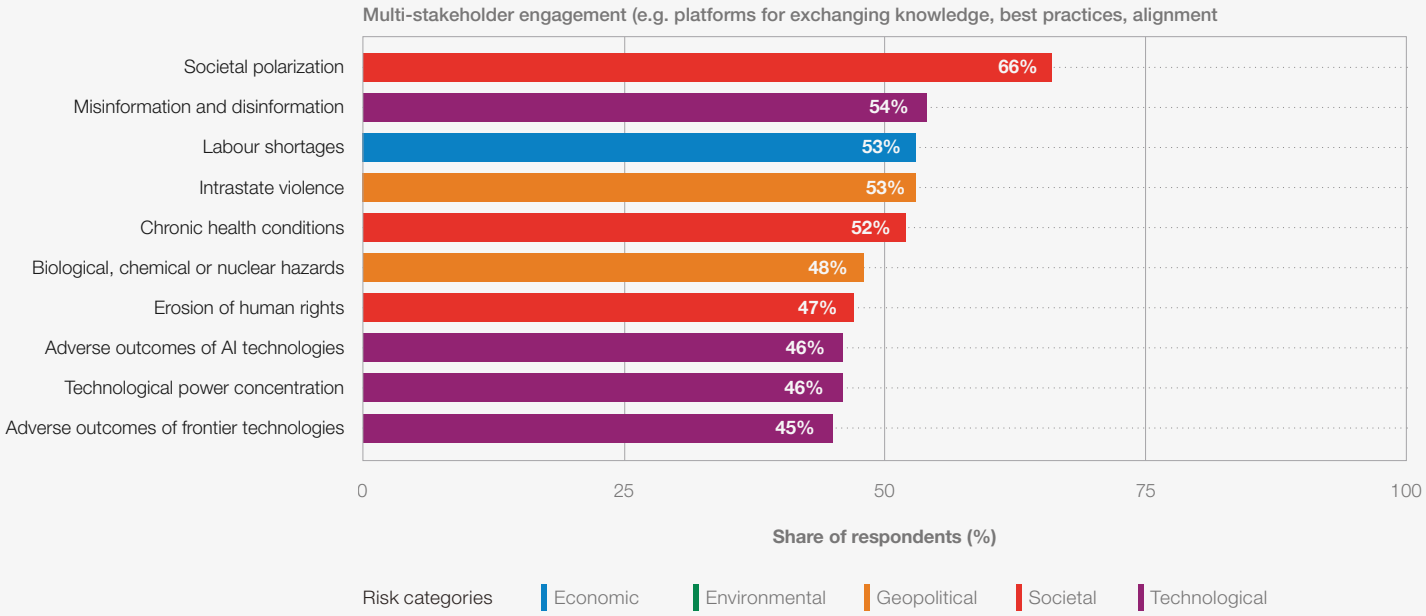
Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Respondents could select up to three responses from the following nine options: Financial instruments, National and local regulations, Minilateral treaties and agreements, Global treaties and agreements, Development assistance, corporate strategies, Research & development, Public awareness and education, Multi-stakeholder engagement.

FIGURE D.5

Top global risks addressed by Multi-stakeholder engagement

"Which approach(es) do you expect to have the most potential for driving action on risk reduction and preparedness over the next 10 years?"



Source
World Economic Forum Global Risks Perception Survey 2023-2024.

Note
Respondents could select up to three responses from the following nine options: Financial instruments, National and local regulations, Minilateral treaties and agreements, Global treaties and agreements, Development assistance, corporate strategies, Research & development, Public awareness and education, Multi-stakeholder engagement.

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