Item 10
For Noting

Glasgow Kelvin College

Audit & Risk Committee – Meeting 14 February 2023

Risk Management Update and College Risk Register

Report by Vice Principal Operations and Director of Estates and Corporate Services

1. Introduction

It is normal practice that the College's Strategic Risk Register is considered at every meeting of the Audit & Risk Committee and Risk Management Committee and considered twice per year by the Board of Management, once per year by each of the other formal Sub Committees of the Board and reviewed by the College's Senior Management Team at least once a Quarter.

A copy of the College Risk Register as at February 2023 is provided for information at **Appendix 1.**

This was reviewed by the Risk Management Committee during their meeting held on 24 January 2023 and SMT on 7 February 2023.

2. Risk Management Activities

- As aforementioned, the College Risk Register has been discussed and fully reviewed at a recent meeting of the Risk Management Committee.
- The SMT have reviewed the College Risk Register on 7 February 2023.
- The first self-evaluation exercise has taken place for the Risk Management Committee. The very positive results of this appear at **Appendix 2**.
- The Director of Estates and Corporate Services has attended an Escape of Water event hosted by UMAL; and
- The College Health & Safety risk management system (RMS), part of the existing WorkRite package, is currently being implemented with a target of Summer 2023. The successful completion of this project will significantly improve staff access in order to electronically complete, store and retrieve all college risk assessments moving forward.

It should be noted that, in relation to the College Operating Plan, a separate Risk Register is held.

It should further be noted that, in relation to the Campus Reinvestment Project and West End Campus Relocation of Curriculum, separate Risk Registers are also held.

3. Risk Register Review

The Risk Title, Residual Risk Score and colour of the thirteen risks which could impact on the College's ability to deliver its strategic ambitions are summarised in the table below including Inherent Risks Scores/Categories and Residual Risks Scores/Categories.

Review Date	January 2023

Risk No	Date Identified	Risk Title	IR	IR2	RR	RR2	Risk Appetite Category	Movement in Period
1	04/11/2021	SFC Review	20	Very High	12	High	1. Policy	↔
2	04/11/2021	GKC Identity	16	Very High	9	High	2. Reputation	↔
3	04/11/2021	People	20	Very High	9	High	5. Workforce	↔
4	04/11/2021	Litigation / Compliance	16	Very High	6	Medium	7. Legal & Compliance (including Health & Safety risks)	↔
5	04/11/2021	Curriculum Relevance	16	Very High	9	High	6. Student Experience	↔
6	04/11/2021	Sustainable Funding	25	Very High	20	Very High	3. Financial	↔
7	04/11/2021	Student Experience	16	Very High	9	High	6. Student Experience	↔
8	04/11/2021	Environment	16	Very High	9	High	8. Environmental Sustainability	↔
9	04/11/2021	Digital Transformation	16	Very High	6	Medium	4. Digital	↔
10	04/11/2021	Student Recruitment & Retention	20	Very High	12	High	6. Student Experience	↔
11	04/11/2021	Cyber Risk	25	Very High	12	High	2. Reputation	↔
12	13/12/2021	COVID-19 - Ongoing Implications	16	Very High	9	High	1. Policy	↔
13	19/04/2022	Strike Action	25	Very High	16	Very High	6. StudentExperience	↔

While there has been revision of the narrative content in a number of areas to reflect changes and activities which have taken place or are planned, Members will note that the risks have not changed since November 2022, with the inherent and residual scores unchanged.

Cognisance is being taken of risks to the College on an ongoing basis. These have not substantially changed in the last 3 months but include:

- Cost of living/debt crisis.
- Rapid and/or sustained inflation.
- The Public Sector Funding situation remains the main risk faced by the College; this is the same across the whole further education sector.
- The Senior Leadership Team (SLT) of the College has developed an Operating Plan to manage the College financial situation. This Operating Plan is being discussed with staff, unions, the Board of Management and other stakeholders. Milestones in respect of this plan will be agreed and achieved on a continual basis (as the landscape may change over the months/years ahead.)
- If the assumptions within the Operating Plan (v1.0) are realised, the predictions are currently that 89FTE will depart from the College over the next 3 Academic Years and the College itself will be 21% smaller. A separate Risk Register has been compiled to support this Plan, but clearly this could impact on the scale and quality of College activities as well as staff morale. However, the Plan emphasises that the College's underlying ethos, values and vision will remain.
- In consideration of the future, the closure/lease/sale of our West End Campus will have potential consequences – both negative and positive. A Feasibility Study has been considered and approved by the Board of Management. At the time of writing this report this is being taken forward via a series of meetings with relevant stakeholders – on-line and in person.
- Discussions are ongoing about the relocation of the curriculum currently located within the West End Campus. Contractors will require to be appointed to deal with any structural work; it is noted that materials costs are escalating daily and securing contractors is not straightforward nor easy i.e. in November 2022 4 tenders were prepared for College capital works and no responses were received to these. The College will consider using own staff to undertake some work to expedite progress over the short time scale.
- At present, Clyde College is using some of our West End Campus teaching rooms until their Anniesland Campus is habitable again. This could cause some minor implications in terms of leasing/selling this campus building.
- Covid-19/long Covid-19 and related negative effects on staffing/resources and availability of contractors continue to present very challenging issues.
- Many students are leaving education to take up employment positions due to the financial arena we are in at present.

- The negative effects of being locked down for such a lengthy period of time are emerging in students displaying slightly more challenging behaviour i.e. academic discipline.
- The impacts of an emerging/changed world of learning and teaching and the job market.
- Mental health and wellbeing of students and staff is a concern, particularly at a time when money is extremely tight and costs are exceptionally high.
- Teachers have begun national strike action over pay which is causing massive disruption to all services. All of the union's primary teachers walked out on 10 January, and secondary staff on 11 January. 16 days of strike action is planned followed by a further 22 day of extra strike days.
- Many more sectors going on strike due to requiring more pay, e.g. nurses/NHS staff, Royal Mail, National Rail Services.
- Royal Mail cyber attack has severely disrupted mail services.
- Cyber threat/attacks particularly in the public sector continue to be of real concern.
- Other COVID-19 strains appear to be emerging (which evade the vaccines), the College is keeping a watch on any emerging data and advice from the Scottish Government.
- Bird flu in mammals has appeared in the UK.
- Voluntary Severance – Expressions of Interest paperwork was sent out to College staff and this closed on 31 January 2023. A high number of people indicated that they may be interested in the Voluntary Severance Scheme. It is noted that departing staff may cause further unrest with staff during uneasy financial times.
- Pressure on staff in a number of areas due to vacancies and absence cover for colleagues who are absent with Covid-19, winter flu and family illness/deaths.

Social/Economic Environment

- As reported previously, poor communities continue to be significantly more disadvantaged with ongoing rising energy costs (despite government assistance), soaring cost of food, cost of fuel, clothing, goods etc all rising with the related very negative impact on millions of individuals.
- Many people hospitalised with hypothermia - very negative impact on the NHS already strained services. Between 1-18 December 2022 – Ambulances attended 800 people suffering with hypothermia.
- Many poor communities are making choices between heating their homes or eating. Cold and hunger will be felt by many and health may ultimately decline – both physical and mental.
- Dampness issues may cause breathing difficulties and other illness. Declining health impacts on attendance at College, PI's and ultimately the National Health Service who are already struggling to cope with demand and low nursing/social care staffing levels due to Brexit/Covid-19 (as well as nursing strike action.)
- Student dropout rates within the College showing as high with poor health being given as a main reason and others taking up employment due to soaring prices.
- Significant wating lists for medical attention from the National Health Service. This number will increase due to strike action and winter flu impact on hospitals. Health may continue to decline for many individuals during this very elongated waiting period until medical interventions/operations are carried out further exacerbated by cold, hunger, anxiety and poor mental health.
- Teaching strike is likely to mean ever more hospital staff shortages as parents take time off work to look after children not at school resulting in increased waiting times for operations and other medical attention.
- Alcohol and drug use may increase.
- Mental health referrals/issues with increased anxiety. The funding for the College's mental health councillors has only been confirmed to the end of this current Academic Year. This will be the end of a 4-year commitment from the Scottish Government for college and university counsellors. If funding ceases completely this will impact on service provision.

In Addition

The Scottish Government is being called upon to provide more support to colleges after a survey, said to be the largest of its kind, found “alarming” levels of depression and food poverty among students.

The Mental Health Foundation (MHF) Scotland interviewed 2,086 college students to understand their mental health and wellbeing. The results, published in a report called Thriving Learners, showed more than half of students surveyed – 54% – reported having moderate, moderately severe, or severe symptoms of depression. Meanwhile, 37% experienced food insecurity in the previous 12 months.

Among the students who have experienced food insecurity, 25% had severe symptoms of depression. The research also found one in six of the participants lived in a household that ran out of food in the previous 12 months.

Despite the prevalence of mental health problems among the college student population, more than half – 55% – said they have concealed a mental health problem due to fear of stigmatisation.

The data was collected between February and May 2022, before the harshest impacts of the cost of living crisis were taking hold. The links between financial strain, food insecurity and poor mental health are undeniable.

The full report can be accessed at this link: Thriving Learners Report

4. Cladding – Springburn Campus

A structural survey has been carried out to the cladding panels to ascertain what is causing the rust spots and why some panels are showing hair-line cracks.

Initial liaison has taken place with the College insurance company.

A further in-depth/invasive survey is currently underway to determine what the possible solutions could be.

Members will be kept apprised of this situation.

5. Campus Re-investment Project

The third strand of the Campus Reinvestment Project relates to College Environment - the look and feel of the Campuses. This will involve the introduction of updated, consistent contemporary signage and branding across the College Campuses, and will complement the physical student and curriculum works already completed.

This is progressing well and the intention is to implement these changes by the end of the academic year.

6. Land at Springburn

Hydepark Residents Association have requested a further meeting in relation to the small parcel of amenity land which is within the College boundary fence but which belongs to Hydepark Residents Association.

This meeting has been scheduled for the evening of Thursday, 16 February 2023.

Members will be kept apprised of this situation.

7. Fire Risk Assessment

The update on the previous Fire Risk Assessment report can be viewed in **Appendix 3.**

At the time of writing this report, an annual fire risk assessment is in the process of being carried out at all campuses i.e. 6 February 2023 – Springburn, West End and East End and 7 February 2023 - Easterhouse.

Members will be kept apprised of any actions and relevant updates.

8. Risk Management Committee

At the recent Risk Management Committee meeting on 24 January 2023, due cognisance was taken of key risk reports; hyperlinks provided below:

World Economic Forum: The Global Risks Report 2023 - 18th Edition
Global Risks Report 2023 - Summary
Counter Terrorism Policing: Statistics Show Continued Rise in Youth Arrests for Terrorism Offences
Home Office: Martyn's Law Factsheet
The Herald: Scots treated for hypothermia in hospital during cold snap
BBC News: Scotland's A&E departments not safe for patients, says doctors' union
BBC News: Ambulances called to 800 people suffering from hypothermia
BBC News: Royal Mail hit by Russia – linked ransomware attack

A number of newsletters were also reviewed and discussed. Pertinent articles from these will be extracted and incorporated into communication for staff/students via the College newsletters.

The approved minute of the Risk Management Committee held on 8 November 2022 is provided for interest and perusal.

Minute of Risk Management Committee meeting of 8 November 2022.

Risk Management Committee members also reviewed the various Team Risk Registers and the analysis which had been undertaken – this is shown via the link at **Appendix 4.** This highlights the progress made by the College in embedding Risk Management over the last year.

9. Resource Implications

There are some additional resource implications, i.e. overtime arising as a consequence of staffing shortages due to the Covid19 pandemic, general illness and bereavement absences. As reported previously, many staff members currently await operations and this can negatively impact upon their health, overall wellbeing and mental state.

10. Impact on Students

There may be a negative impact on students as the College moves forward into an arena of vastly reduced funding, increased cost pressures and a higher than normal student dropout rate.

This is coupled with tensions in relation to the College running a Voluntary Severance scheme. It is possible that general illness/associated cover, low staff morale (with the funding/health arena we are in) could cause disruption to learners.

11. Risk & Assurance

There are no risks or perceived implications arising from this report that are not already recorded in the Risk Register, this paper, the College Operating Plan Risk Register or the West End Campus Risk Register.

12. Equality

There are no adverse impacts on individuals with protected characteristics arising from the contents of this report.

13. Data Protection

There are no new data protection risks arising from the contents of this report. Data Protection continues to be a key consideration in College activities.

14. Recommendations

Members of the Risk Management Committee are recommended to note the comments of this report.

15. Further Information

Members can obtain further information on the contents of this report from Jeanette Evans, Vice Principal Operations at jevans@glasgowkelvin.ac.uk or Lisa Clark, Director of Estates and Corporate Services at lisaclark@glasgowkelvin.ac.uk

JE/LC
Glasgow Kelvin College
February 2023

Glasgow Kelvin College – Risk Management Committee
Self-Evaluation Questionnaire – November 2022

The Self-Evaluation Questionnaire was sent out to Committee members as a Microsoft Form.

Committee members were be asked to rate the following statements regarding the effectiveness of the Committee on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree).

Committee members were also invited to expand on any issues raised, or any points missed by the questionnaire.

13 out of 18 members of the Risk Management Committee responded.

No.	Statement	1 Strongly Disagree	2 Disagree	3 Neither Agree nor Disagree	4 Agree	5 Strongly Agree
1	The Committee has a systemic method for identifying and managing its principal risks.				46%	54%
2	The Committee receives regular and full assurance that risks are being effectively managed within all operational teams, and projects.				54%	46%
3	Senior Managers and Board members are provided with sufficient information about risks to allow them to make effective decisions.				62%	38%
4	Risks are identified, managed and reported to the Committee – if appropriate – as part of the strategic and business planning processes.				64%	46%
5	Risks are identified, managed and reported to the Committee – if			7%	62%	31%

No.	Statement	1 Strongly Disagree	2 Disagree	3 Neither Agree nor Disagree	4 Agree	5 Strongly Agree
	appropriate – as part of the workforce planning process.					
6	Risks are identified, managed and reported to the Committee – if appropriate – as part of all major (capital, change & procurement) projects.			8%	69%	23%
7	The organisation has a clearly defined risk appetite that has been communicated to all staff, and risks are managed in line with the appetite.			8%	77%	15%
8	The Committee identifies and manages medium- and long-term risks to the organisation, as well as those which may materialise in the short term.				46%	54%
9	The Committee has been told of any significant breaches of the organisation's legal & regulatory framework.			23%	62%	15%
10	When significant risks materialise, theCommittee is notified, lessons are learned, and appropriate action is taken tomanage the risk in future.				62%	38%
11	The Committee actively challenges & questions the risk information it receives.			8%	54%	38%
12	The SMT take Risk Management seriously.				54%	46%

No.	Statement	1 Strongly Disagree	2 Disagree	3 Neither Agree nor Disagree	4 Agree	5 Strongly Agree
13	Committee members have received sufficient training and guidance toperform their role effectively.			**23%**	**62%**	**15%**
14	SMT members have received sufficienttraining and guidance to perform their role – in relation to risk management – effectively.			**38%**	**46%**	**16%**
15	Board members have received sufficient training and guidance to perform their role – in relation to risk management – effectively.			**70%**	**15%**	**15%**
16	The chair of the Committee leads meetings well and allows full and open discussionof the information put before them.				**46%**	**54%**
17	The Committee has the right blend of skills, experience, and knowledge from across the organisation to perform its role effectively.				**69%**	**31%**
18	The Committee takes advice from subject matter experts when appropriate. These may be internal or external to the organisation.			**8%**	**69%**	**23%**
19	The Committee and its members create a rotation and succession plan to ensure it does not remain stagnant.			**62%**	**38%**	

No.	Statement	1 Strongly Disagree	2 Disagree	3 Neither Agree nor Disagree	4 Agree	5 Strongly Agree
20	The Committee's terms of reference are clear and do not restrict it in performing its role effectively.				**69%**	**31%**
21	The Committee has satisfied itself (or is aware other committees or teams) are managing key 'business as usual' risks, including: • Health & Safety • Management of hazardous substances, e.g., asbestos • Financial exposures: liabilities, debt,& cash flow • Fraud • Business continuity • Regulatory and legal compliance • Compliance with relevant professional standards	**8%**			**62%**	**30%**
22	The Committee liaises with other individuals or committees to avoid gaps or duplication of effort in overseeing risk management.				**92%**	**8%**
23	The Committee has a clear action plan with appropriate ownership and timescales to perform its role effectively.			**15%**	**54%**	**31%**
24	Continuous improvement is important to the Committee.				**69%**	**31%**
25	Members of the Committee come to meetings well prepared.			**8%**	**69%**	**23%**

RMC members are invited to expand on any issues raised, or any points missed by the questionnaire:

No.	Statement	Additional Comment
9	The Committee has been told of any significant breaches of the organisation's legal & regulatory framework.	I am unaware of any breaches - but don't know if that's because there have been none or they have not been made apparent.
14	SMT members have received sufficient training and guidance to perform their role – in relation to risk management – effectively.	Unable to comment.
15	Board members have received sufficient training and guidance to perform their role – in relation to risk management – effectively.	I am aware of my own training etc. - but not other members
15	Board members have received sufficient training and guidance to perform their role – in relation to risk management – effectively.	Unable to comment
19	The Committee and its members create a rotation and succession plan to ensure it does not remain stagnant.	I am unaware of a rotation/succession plan
		I have no issues with the committee's responsibilities and actions related to these responsibilities.

Glasgow Kelvin College - Fire Risk Assessment February 2022 – Action Plan by Campus as at January 2023

Campus:	East End							
Category 5: Means of Escape								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Do the fire resisting door sets meet the appropriate standard?	On 1st floor level there is an office suite with entry from both atrium and escape corridor therefore crossing over two compartments.	The door in the corridor does not have a self-closing device fitted. As this door is not required it is recommended that it be kept locked shut to maintain means of escape.	Medium		18/03/2022	G Lawson Door locked and signage added to both	G Lawson Door locked and signage added to both	G Lawson Door locked and signage added to both
Do the fire resisting door sets meet the appropriate standard?	The fire doors have a large gap between the doors and the frame which may prevent the intumescent seals being effective.	The doors should be adjusted to ensure that there is no more than a 3mm gap between the hinge edge, leading edge, and the top of the door frame.	Medium		18/03/2022	Ongoing		Complete June 22
Category 10: Management								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Have employees received appropriate fire safety awareness training?	Fire marshals/wardens training overdue.	Employees expected to fulfil a role of a fire marshal/warden will require comprehensive training from a competent person/organisation to cover all of their additional responsibilities. It should be remembered that for each fire marshal/warden required a deputy should be trained to cover any absences. In addition, a fire marshal/warden should take no longer than one minute to search a designated area.	Medium		18/03/2022	G Lawson	New East End Fire Wardens trained	22/10/2022
Category 11: Signs and Signals								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Are there adequate and suitable fire safety signs and notices displayed in the appropriate places throughout the premises?	Fire action notices have not Been provided.	Fire action notices must be installed in all the common areas within the building and adjacent to the fire alarm call points. They are to contain the relevant information to aid a safe escape from the building.	Low		17/05/2022	17/05/2022 G Lawson All signs replaced or updated 07 March	17/05/2022 G Lawson All signs replaced or updated 07 March	17/05/2022 G Lawson All signs replaced or updated 07 March
Are there adequate and suitable fire safety signs and notices displayed in the appropriate places throughout the premises?	A number of fire action notices were found to be defaced or incomplete.	The notices should be completed in full with the location of the assembly point and the number to call in an emergency.	Low		17/05/2022	17/05/2022 G Lawson All signs replaced or updated 07 March	17/05/2022 G Lawson All signs replaced or updated 07 March	17/05/2022 G Lawson All signs replaced or updated 07 March

Campus:	Easterhouse							
Category 2: Sources of Ignition								
Question	**Non Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Are all electrical installations and appliances correctly installed and maintained?	There is unsafe use of extension leads. Daisy chaining	These appliances are to be used in accordance with manufacturers' instructions or alternatively, additional power sockets provided in this area.	Medium		18/03/2022	ICT Extensions piggybacked to each other	ICT Extensions piggybacked to each other	22/03/22
Are all electrical installations and appliances correctly installed and maintained?	There was no evidence of periodic inspections of the lift installations.	If evidence of an inspection is unavailable, a competent person is to inspect the lift installations and records maintained.	Low		17/05/2022	Kone	The lifts are maintained monthly by Kone and annually by Ashdale for our insurance company. Paperwork uploaded to the electronic logbook	22/03/22
Category 3: Sources of Fuel								
Question	**Non Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Are house keeping arrangements satisfactory?	An area of concern was the overall condition of the staff work room on the 3rd Floor which was untidy with significant amounts of combustible materials poorly situated.	The poor housekeeping here could result in greatly assisting fire spread should one occur therefore a general clean up is required.	Low		17/05/2022	Management / Lecturing staff	Management to instruct faculty staff to clear their individual areas.	Area cleared
Category 5: Means of Escape								
Question	**Non Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Do the fire resisting door sets meet the appropriate standard?	Ineffective self closing devices.	Repair or replace the self-closing device/s to ensure fire door/s close fully into their frame/s against the door stops.	Medium	Ground Floor Corridor	18/03/2022		Parts are on order. Estimated repair to be carried out on the 4th April 2022.	Complete May 2022
Do the fire resisting door sets meet the appropriate standard?	The intumescent cold smoke seals installed to prevent the spread of smoke and fire between compartments are missing.	The missing intumescent cold smoke seals must be replaced to ensure that the spread of smoke and fire is restricted.	Medium		18/03/2022	Estates	The seal is not missing and will still work if there is a fire. The small soft insert has been ordered. 22.03.2022	Complete May 2022
Category 7: Fire Detection and Warning								
Question	**Non Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Is the fire alarm system routinely tested, inspected and maintained in accordance with current guidance?	No up to date record of inspection and maintenance in accordance with BS 58391.	The fire alarm system must be inspected and maintained by a competent certificated organisation in accordance with BS 58391.	Medium		18/03/2022	Estates / Securigroup	Estates test the system weekly and Securigroup maintain the system. Copy of contract uploaded to electronic logbook	23/03/2022

Category 8: Emergency Lighting								
Question	**Non Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Is the emergency lighting system routinely tested, inspected and maintained in accordance with current guidance?	Not inspected and maintained in accordance with BS 52668.	The emergency lighting system must be inspected and maintained by a competent certified organisation in accordance with BS 52668.	Medium		18/03/2022	Thomas Smith Electrical	The whole system is checked on a four year rotation, meeting with the regulations. Checks are completed monthly, annually & 5 yearly.	22/03/2022
Is the emergency lighting system routinely tested, inspected and maintained in accordance with current guidance?	No monthly emergency lighting tests are recorded.	The emergency lighting system should be tested monthly and records maintained, in accordance with BS 52668.	Medium		18/03/2022	Thomas Smith Electrical	Al lighting tests are recorded. Last paperwork uploaded to the electronic logbook.	22/03/2022

Category 10: Management								
Question	**Non Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Have employees received appropriate fire safety awareness training?	Fire marshals/wardens training overdue.	Employees expected to fulfil a role of a fire marshal/warden will require comprehensive training from a competent person/organisation to cover all of their additional responsibilities. It should be remembered that for each fire marshal/warden required a deputy should be trained to cover any absences. In addition, a fire marshal/warden should take no longer than one minute to search a designated area.	Medium		18/03/2022	H&S Manager	Training happening week 21 – 25 October 2022	October 2022
Are house keeping arrangements satisfactory?	Inappropriate use of rooms/space.	The room/space should be utilised for the purpose for which it was designed.	Medium		18/03/2022	Faculty housekeeping		Area clear
Are house keeping arrangements satisfactory?	The furniture and furnishings present is not compliant with current standards and/or damaged thereby exposing its foam interior.	The noncompliant/damaged furniture/furnishings should be removed or repaired to ensure compliance with the Furniture and Furnishings (Fire) (Safety) Regulations 1988 as amended.	Low		17/05/2022	Students Association / Estates	The room has been taken out of use and the furniture has now been removed for disposal	22/03/2022

Campus:	Springburn							
Category 2: Sources of Ignition								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Are all electrical installations and appliances correctly installed and maintained?	There is unsafe use of extension leads.	These appliances are to be used in accordance with manufacturers' instructions or alternatively, additional power sockets provided in this area. Daisy chain	Low	432	17/05/2022	Finance Staff	In progress (Desk area has insufficient floor plug blocks to accommodate 4 working desks - MT met with I Gordon who will ask the electrician to look at this area)	Electrician to advise
Category 3: Sources of Fuel								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Are house keeping arrangements satisfactory?	The standard of housekeeping regarding combustible materials in the staff work area is inadequate.	Ensure adequate storage areas are provided and that housekeeping within these areas is of an acceptable standard.	Medium	Staffrooms	18/03/2022	Teaching staff	Estates and Admin staff undertook a paper clearing exercise during the summer break, to identify and destroy out of date paperwork and clear floors and cupboard tops.	30/07/2022
Category 5: Means of Escape								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Do the fire resisting door sets meet the appropriate standard?	Fire doors are fouling against the frame/dragging on the floor surface and are not closing completely against the door stops.	All fire doors and associated self closing devices should be maintained to ensure they close fully into their frames.	Medium		18/03/2022	Joiner Technician	Ongoing	Ongoing maintainance plan in place and work still being carried out.
Do the fire resisting door sets meet the appropriate standard?	Ineffective self closing devices.	Repair or replace the self closing device/s to ensure fire door/s close fully into their frame/s against the door stops.	Medium		18/03/2022	Joiner Technician	Ongoing	Ongoing maintainance plan in place and work still being carried out.
Do the fire resisting door sets meet the appropriate standard?	The fire doors have a large gap between the doors and the frame which may prevent the intumescent seals being effective.	The doors should be adjusted to ensure that there is no more than a 3mm gap between the hinge edge, leading edge and the top of the door frame.	Low	Ground Floor Music Corridor	17/05/2022	Joiner Technician	Ongoing	Ongoing maintainance plan in place and work still being carried out.
Do the fire resisting door sets meet the appropriate standard?	It was noted during the visit that there were several issues regarding the proper function of fire doors and these are highlighted in the action plan.	It is vital that fire doors operate correctly, especially those surrounding the atrium therefore a regular inspection regime should be set up and any defects corrected.	Medium		18/03/2022	Joiner Technician	Ongoing	Ongoing maintainance plan in place and work still being carried out.

Are house keeping arrangements satisfactory?	Combustible materials are located/stored in the escape routes.	Items that are a source of fuel or are combustible and likely to increase the fire loading or spread of fire, should not be located on any corridor, stairway or circulation space that will be used as an escape route. Therefore, the combustible materials stored in the escape routes must be removed.	Medium		18/03/2022	Estates	Tiles removed	02/03/2022
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Are house keeping arrangements satisfactory?	The escape route is obstructed.	The items obstructing the escape route must be removed immediately.	Medium	Student Hub ground floor	18/03/2022	Estates	Area out of bounds to all staff and students	16/02/2022
Category 7: Fire Detection and Warning								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Is there an adequate method for raising the alarm and detecting a fire present in the premises?	Manual call point damaged in games room	Contractor to be contacted to repair manual call point. The MCP should be protected against impact damage in this area.	Low	Games Hall ground Floor	17/05/2022	CHUBB Fire	Call point has been replaced	03/03/2022
Category 8: Emergency Lighting								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Is the emergency lighting system routinely tested, inspected and maintained in accordance with current guidance?	No record of annual inspection and maintenance in accordance with BS 52668.	The emergency lighting system must be inspected and maintained by a competent certified organisation in accordance with BS 52668.	Medium		18/03/2022	Tommy Smith	The whole system is checked on a four year rotation, meeting with the regulations. Checks are completed monthly, annually & 5 yearly.	Ongoing
Category 10: Management								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Have employees received appropriate fire safety awareness training?	Fire marshals/wardens training overdue.	Employees expected to fulfil a role of a fire marshal/warden will require comprehensive training from a competent person/organisation to cover all of their additional responsibilities. It should be remembered that for each fire marshal/warden required a deputy should be trained to cover any absences. In addition, a fire marshal/warden should take no longer than one minute to search a designated area.	Medium		18/03/2022	Geoff Lawson	Training will be scheduled prior to the Summer break.	Ongoing
Are house keeping arrangements satisfactory?	The furniture and furnishings present is not compliant with current standards and/or damaged thereby exposing its foam interior.	The noncompliant/damaged furniture/furnishings should be removed or repaired to ensure compliance with the Furniture and Furnishings (Fire) (Safety) Regulations 1988 as amended.	Low	1st floor bridge between main building and workshops	17/05/2022	estates	Sofa removed and disposed	11/03/2022

Campus:	West							
Category 2: Sources of Ignition								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Are all heating appliances correctly installed, adequately protected and maintained?	There is no record of appropriate servicing and maintenance of the gas appliances.	Gasfired boilers and other appliances, should be subject to periodic inspection and maintenance by a competent Gasafe engineer in accordance with the Gas Safety (Installation and Use) Regulations 1998 (GS(IU)R 98). Records are to be maintained.	Medium		18/03/2022	G Lawson	Records of boiler maintenance are kept in the Estates office for viewing. Richard Irvin FM Limited are the company who carry out all boiler maintenance	23/02/2022
Are all electrical installations and appliances correctly installed and maintained?	There is unsafe use of extension leads.	These appliances are to be used in accordance with manufacturers' instructions or alternatively, additional power sockets provided in this area.	Medium		18/03/2022	E McWilliam	Extension cable has been removed	23/02/2022
Category 7: Fire Detection and Warning								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Is the fire alarm system routinely tested, inspected and maintained in accordance with current guidance?	No record of inspection and maintenance in accordance with BS 58391.	The fire alarm system must be inspected and maintained by a competent certificated organisation in accordance with BS 58391.	Medium		18/03/2022	G Lawson	Chubb Fire services inspect our system on a 25% scale per visit x4 per year. all records are kept for viewing in our Campus Office.	17/02/2022
Category 8: Emergency Lighting								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Is there an adequate method for illuminating the escape route and safety equipment in the premises?	The existing escape lighting system is damaged/defective. No visible charging light.	A competent person is to survey the existing system and repair/replace luminaries as required.	Medium		18/03/2022	Estates	Awaiting Electrician Survey	Complete July 2022
Is the emergency lighting system routinely tested, inspected and maintained in accordance with current guidance?	No monthly emergency lighting tests are recorded.	The emergency lighting system should be tested monthly and records maintained, in accordance with BS 52668.	Medium		18/03/2022	Estates	Monthly tests are carried out, Records kept in campus office for viewing.	09/03/2022
Category 10: Management								
Question	**Non-Conformity**	**Recommendations**	**Risk Level**	**Location**	**Required Completion Date**	**Person/s Responsible**	**Progress/Comments**	**Date Completed**
Are management and employees fully aware of the fire safety features provided and their purpose?	The record of the maintenance of fire safety measures was not kept up to date.	A fire precautions logbook is provided and should be maintained to include details of fire instructions, fire training, fire drills; and testing, inspection and maintenance of alarm and detection systems, portable firefighting equipment, fixed firefighting installations and emergency lighting systems.	Medium		18/03/2022	G Lawson	Logbook has been updated for viewing	18/03/2022

Question	Non-Conformity	Recommendations	Risk Level	Location	Required Completion Date	Person/s Responsible	Progress/Comments	Date Completed
Have employees received appropriate fire safety awareness training?	Fire marshals/wardens training overdue.	Employees expected to fulfil a role of a fire marshal/warden will require comprehensive training from a competent person/organisation to cover all of their additional responsibilities. It should be remembered that for each fire marshal/warden required a deputy should be trained to cover any absences. In addition, a fire marshal/warden should take no longer than one minute to search a designated area.	Medium		18/03/2022	G Lawson	Training scheduled week beginning 05 December 2022	December 2022

WORLD ECONOMIC FORUM

The Global Risks Report 2023

18th 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 that a divergent economic recovery from the COVID-19 pandemic risked deepening divisions at a time when collaboration was urgently required to address looming global challenges. Yet despite hard-learned lessons around the interdependence of global risks, few would have anticipated the extent of instability that would soon unfold, this time driven by a new war in Europe.

The health and economic aftereffects of the pandemic have quickly spiraled into compounding crises. Carbon emissions have climbed, as the post-pandemic global economy fired back up. Food and energy have become weaponized by the war in Ukraine, sending inflation soaring to levels not seen in decades, globalizing a cost-of-living crisis and fueling social unrest. The resulting shift in monetary policy marks the end of an economic era defined by easy access to cheap debt and will have vast ramifications for governments, companies and individuals, widening inequality within and between countries.

As the conflict between Russia and Ukraine approaches one year, economies and societies will not easily rebound from continued shocks. In this year's Global Risks Perception Survey, more than four in five respondents anticipated consistent volatility over the next two years. The persistence of these crises is already reshaping the world that we live in, ushering in economic and technological fragmentation. A continued push for national resilience in strategic sectors will come at a cost – one that only a few economies can bear. Geopolitical dynamics are also creating significant headwinds for global cooperation, which often acts as a guardrail to these global risks.

The 18th edition of the *Global Risks Report* considers this backdrop of simmering geopolitical tensions and confluence of socioeconomic risks. It identifies the most severe perceived risks to economies and societies over the next two years. The world's collective focus is being channeled into the "survival" of today's crises: cost of living, social and political polarization, food and energy supplies, tepid growth, and geopolitical confrontation, among others.

Yet much-needed attention and resources are being diverted from newly emerging or rapidly accelerating risks to natural ecosystems, human health, security, digital rights and economic stability that could become crises and catastrophes in the next decade. A low-growth, low-investment and low-cooperation era further undermines resilience and the ability to manage future shocks. In recognition of growing complexity and uncertainty, the report also explores connections between these risks. The analysis focuses on a potential "polycrisis", relating to shortages in natural resources such as food, water, and metals and minerals, illustrating the associated socioeconomic and environmental fall-out through a set of potential futures.

The report is underpinned by our annual Global Risks Perception Survey, which brings together leading insights from over 1,200 experts across the World Economic Forum's diverse network. It draws on the collective intelligence of the world's foremost risk experts, including the Global Risks Advisory Board and the Chief Risk Officers Community, as well as thematic experts from academia, business, government, the international community and civil society. The report has also benefited greatly from the expertise of the World Economic Forum's platforms, which work daily to drive tangible, system-positive change for the long term. We are deeply grateful to our long-standing partners in the report's development: Marsh McLennan and Zurich Insurance Group.

The 2023 edition of the *Global Risks Report* highlights the multiple areas where the world is at a critical inflection point. It is a call to action, to collectively prepare for the next crisis the world may face and, in doing so, shape a pathway to a more stable, resilient world.

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 over 1,200 experts across academia, business, government, the international community and civil society. Responses for the GRPS 2022-2023 were collected from 7 September to 5 October 2022.

"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. The GRPS 2022-2023 included the following components:

- **Outlook** invited respondents to predict global volatility to provide context to the evolution of the global risks landscape.
- **Severity** assessed the perceived likely impact of global risks over a one-, two- and 10-year horizon, to illustrate the potential development of individual global risks over time.
- **Consequences** asked respondents to consider potential impacts of a risk arising, to highlight relationships between global risks and the potential for compounding crises.
- **Risk preparedness and governance** invited respondents to assess the current effectiveness of the management of global risks and reflect on which stakeholders are best placed to effectively manage them, to elicit opportunities for global action and collaboration.
- **Qualitative questions on risks** sourced expert knowledge to identify new and emerging risks.

Refer to **Appendix A: Technical Notes: Global Risks Perception Survey 2022-2023** for more detail, including relevant definitions for each of the 32 global risks.

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 12,000 business leaders in 121 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 B: Executive Opinion Survey: National Risk Perceptions** for more detail.

Finally, the report integrates the views of leading experts to generate foresight and to support analysis of the survey data. The *Global Risks Report* harnesses contributions from over 40 colleagues across the World Economic Forum's platforms. Qualitative insights were also collected from over 50 experts from across academia, business, government, the international community and civil society through community meetings, private interviews and thematic workshops conducted from July to November 2022. These include the Global Risks Advisory Board and the Chief Risks Officers Community. Refer to **Contributors** for more detail.

Executive Summary

The first years of this decade have heralded a particularly disruptive period in human history. The return to a "new normal" following the COVID-19 pandemic was quickly disrupted by the outbreak of war in Ukraine, ushering in a fresh series of crises in food and energy – triggering problems that decades of progress had sought to solve.

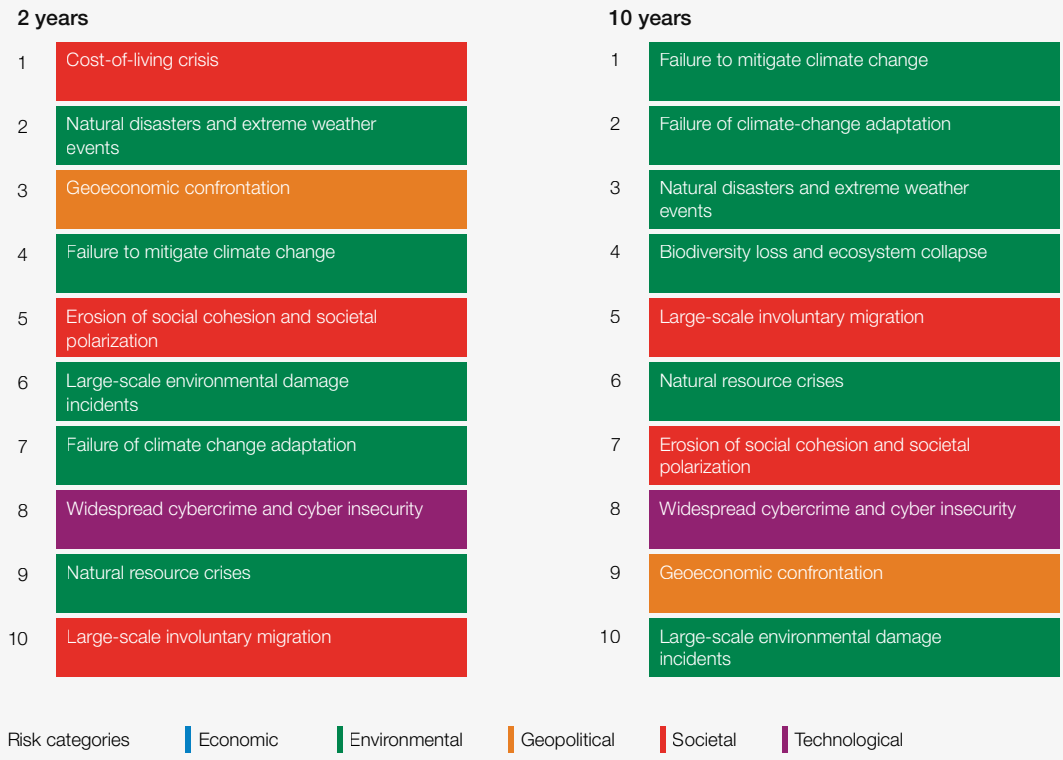
As 2023 begins, the world is facing a set of risks that feel both wholly new and eerily familiar. We have seen a return of "older" risks – inflation, cost-of-living crises, trade wars, capital outflows from emerging markets, widespread social unrest, geopolitical confrontation and the spectre of nuclear warfare – which few of this generation's business leaders and public policy-makers have experienced. These are being amplified by comparatively new developments in the global risks landscape, including unsustainable levels of debt, a new era of low growth, low global investment and de-globalization, a decline in human development after decades of progress, rapid and unconstrained development of dual-use (civilian and military) technologies, and the growing pressure of climate change impacts and ambitions in an ever-shrinking window for transition to a 1.5°C world. Together, these are converging to shape a unique, uncertain and turbulent decade to come.

The *Global Risks Report 2023* presents the results of the latest Global Risks Perception Survey (GRPS). We use three time frames for understanding global risks. Chapter 1 considers the mounting impact of current crises (i.e. global risks which are already unfolding) on the most severe global risks that many expect to play out over the short term (two years). Chapter 2 considers a selection of risks that are likely to be most severe in the long term (10 years), exploring newly emerging or rapidly accelerating economic, environmental, societal, geopolitical and technological risks that could become tomorrow's

FIGURE A

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"



Source

World Economic Forum Global Risks Perception Survey 2022-2023.

crises. Chapter 3 imagines mid-term futures, exploring how connections between the emerging risks outlined in previous sections may collectively evolve into a "polycrisis" centred around natural resource shortages by 2030. The report concludes by considering perceptions of the comparative state of preparedness for these risks and highlighting enablers to charting a course to a more resilient world. Below are key findings of the report.

Cost of living dominates global risks in the next two years while climate action failure dominates the next decade

The next decade will be characterized by environmental and societal crises, driven by underlying geopolitical and economic trends. **"Cost-of-living crisis"** is ranked as the most severe global risk over the next two years, peaking in the short term. **"Biodiversity loss and ecosystem collapse"** is viewed as one of the fastest deteriorating global risks over the next decade, and all six environmental risks feature in the top 10 risks over the next 10 years. Nine risks are featured in the top 10 rankings over both the short and the long term, including **"Geoeconomic confrontation"** and **"Erosion of social cohesion and societal polarisation"**, alongside two new entrants to the top rankings: **"Widespread cybercrime and cyber insecurity"** and **"Large-scale involuntary migration"**.

As an economic era ends, the next will bring more risks of stagnation, divergence and distress

The economic aftereffects of COVID-19 and the war in Ukraine have ushered in skyrocketing inflation, a rapid normalization of monetary policies and started a low-growth, low-investment era.

Governments and central banks could face stubborn inflationary pressures over the next two years, not least given the potential for a prolonged war in Ukraine, continued bottlenecks from a lingering pandemic, and economic warfare spurring supply chain decoupling. Downside risks to the economic outlook also loom large. A miscalibration between monetary and fiscal policies will raise the likelihood of liquidity shocks, signaling a more prolonged economic downturn and debt distress on a global scale. Continued supply-driven inflation could lead to stagflation, the socioeconomic consequences of which could be severe, given an unprecedented interaction with historically high levels of public debt. Global economic fragmentation, geopolitical tensions and rockier restructuring could contribute to widespread debt distress in the next 10 years.

Even if some economies experience a softer-than-expected economic landing, the end of the low interest rate era will have significant ramifications for governments, businesses and individuals. The knock-on effects will be felt most acutely by the most vulnerable parts of society and already-fragile states, contributing to rising poverty, hunger, violent protests, political instability and even state collapse. Economic pressures will also erode gains made by middle-income households, spurring discontent, political polarization and calls for enhanced social protections in countries across the world. Governments will continue to face a dangerous balancing act between protecting a broad swathe of their citizens from an elongated cost-of-living crisis without embedding inflation – and meeting debt servicing costs as revenues come under pressure from an economic downturn, an increasingly urgent transition to new energy systems, and a less stable geopolitical environment. The resulting new economic era may be one of growing divergence between rich and poor countries and the first rollback in human development in decades.

Geopolitical fragmentation will drive geoeconomic warfare and heighten the risk of multi-domain conflicts

Economic warfare is becoming the norm, with increasing clashes between global powers and state intervention in markets over the next two years. Economic policies will be used defensively, to build self-sufficiency and sovereignty from rival powers, but also will increasingly be deployed offensively to constrain the rise of others. Intensive geoeconomic weaponization will highlight security vulnerabilities posed by trade, financial and technological interdependence between globally integrated economies, risking an escalating cycle of distrust and decoupling. As geopolitics trumps economics, a longer-term rise in inefficient production and rising prices becomes more likely. Geographic hotspots that are critical to the effective functioning of the global financial and economic system, in particular in the Asia-Pacific, also pose a growing concern.

Interstate confrontations are anticipated by GRPS respondents to remain largely economic in nature over the next 10 years. However, the recent uptick in military expenditure and proliferation of new technologies to a wider range of actors could drive a global arms race in emerging technologies. The longer-term global risks landscape could be defined by multi-domain conflicts and asymmetric warfare, with the targeted deployment of new-tech weaponry on a potentially more destructive scale than seen in recent decades. Transnational arms control mechanisms must quickly adapt to this new security context, to strengthen the shared moral, reputational and political costs that act as a deterrent to accidental and intentional escalation.

Technology will exacerbate inequalities while risks from cybersecurity will remain a constant concern

The technology sector will be among the central targets of stronger industrial policies and enhanced state intervention. Spurred by state aid and military expenditure, as well as private investment, research and development into emerging technologies will continue at pace over the next decade, yielding advancements in AI, quantum computing and biotechnology, among other technologies. For countries that can afford it, these technologies will provide partial solutions to a range of emerging crises, from addressing new health threats and a crunch in healthcare capacity to scaling food security and climate mitigation. For those that cannot, inequality and divergence will grow. In all economies, these technologies also bring risks, from widening misinformation and disinformation to unmanageably rapid churn in both blue- and white-collar jobs.

However, the rapid development and deployment of new technologies, which often comes with limited protocols governing their use, poses its own set of risks. The ever-increasing intertwining of technologies with the critical functioning of societies is exposing populations to direct domestic threats, including those that seek to shatter societal functioning. Alongside a rise in cybercrime, attempts to disrupt critical technology-enabled resources and services will become more common, with attacks anticipated against agriculture and water, financial systems, public security, transport, energy and domestic, space-based and undersea communication infrastructure. Technological risks are not solely limited to rogue actors. Sophisticated analysis of larger data sets will enable the misuse of personal information through legitimate legal mechanisms, weakening individual digital sovereignty and the right to privacy, even in well-regulated, democratic regimes.

Climate mitigation and climate adaptation efforts are set up for a risky trade-off, while nature collapses

Climate and environmental risks are the core focus of global risks perceptions over the next decade – and are the risks for which we are seen to be the least prepared. The lack of deep, concerted progress on climate targets has exposed the divergence between what is scientifically necessary to achieve net zero and what is politically feasible. Growing demands on public-and private-sector resources from other crises will reduce the speed and scale of mitigation efforts over the next two years, alongside insufficient progress towards the adaptation support required for those communities and countries increasingly affected by the impacts of climate change.

As current crises diverts resources from risks arising over the medium to longer term, the burdens on natural ecosystems will grow given their still undervalued role in the global economy and overall planetary health. Nature loss and climate change are intrinsically interlinked – a failure in one sphere will cascade into the other. Without significant policy change or investment, the interplay between climate change impacts, biodiversity loss, food security and natural resource consumption will accelerate ecosystem collapse, threaten food supplies and livelihoods in climate-vulnerable economies, amplify the impacts of natural disasters, and limit further progress on climate mitigation.

FIGURE B

Short- and long-term global outlook

"Which of the following best characterizes your outlook for the world over the short-term (2 years) and longer-term (10 years)?

Source

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

Food, fuel and cost crises exacerbate societal vulnerabilities while declining investments in human development erode future resilience

Compounding crises are widening their impact across societies, hitting the livelihoods of a far broader section of the population, and destabilizing more economies in the world, than traditionally vulnerable communities and fragile states. Building on the most severe risks expected to impact in 2023 – including **"Energy supply crisis"**, "**Rising inflation"** and **"Food supply crisis"** – a global **Cost-of-living crisis** is already being felt. Economic impacts have been cushioned by countries that can afford it, but many lower-income countries are facing multiple crises: debt, climate change and food security. Continued supply-side pressures risk turning the current cost-of-living crisis into a wider humanitarian crisis within the next two years in many import-dependent markets.

Associated social unrest and political instability will not be contained to emerging markets, as economic pressures continue to hollow out the middle-income bracket. Mounting citizen frustration at losses in human development and declining social mobility, together with a widening gap in values and equality, are posing an existential challenge to political systems around the world. The election of less centrist leaders as well as political polarization between economic superpowers over the next two years may also reduce space further for collective problem-solving, fracturing alliances and leading to a more volatile dynamic.

With a crunch in public-sector funding and competing security concerns, our capacity to absorb the next global shock is shrinking. Over the next 10 years, fewer countries will have the fiscal headroom to invest in future growth, green technologies, education, care and health systems. The slow decay of public infrastructure and services in both developing and advanced markets may be relatively subtle, but accumulating impacts will be highly corrosive to the strength of human capital and development – a critical mitigant to other global risks faced.

As volatility in multiple domains grows in parallel, the risk of polycrises accelerates

Concurrent shocks, deeply interconnected risks and eroding resilience are giving rise to the risk of polycrises – where disparate crises interact such that the overall impact far exceeds the sum of each part. Eroding geopolitical cooperation will have ripple effects across the global risks landscape over the medium term, including contributing to a potential polycrisis of interrelated environmental, geopolitical and socioeconomic risks relating to the supply of and demand for natural resources.

The report describes four potential futures centred around food, water and metals and mineral shortages, all of which could spark a humanitarian as well as an ecological crisis – from water wars and famines to continued overexploitation of ecological resources and a slowdown in climate mitigation and adaption. Given uncertain relationships between global risks, similar foresight exercises can help anticipate potential connections, directing preparedness measures towards minimizing the scale and scope of polycrises before they arise.

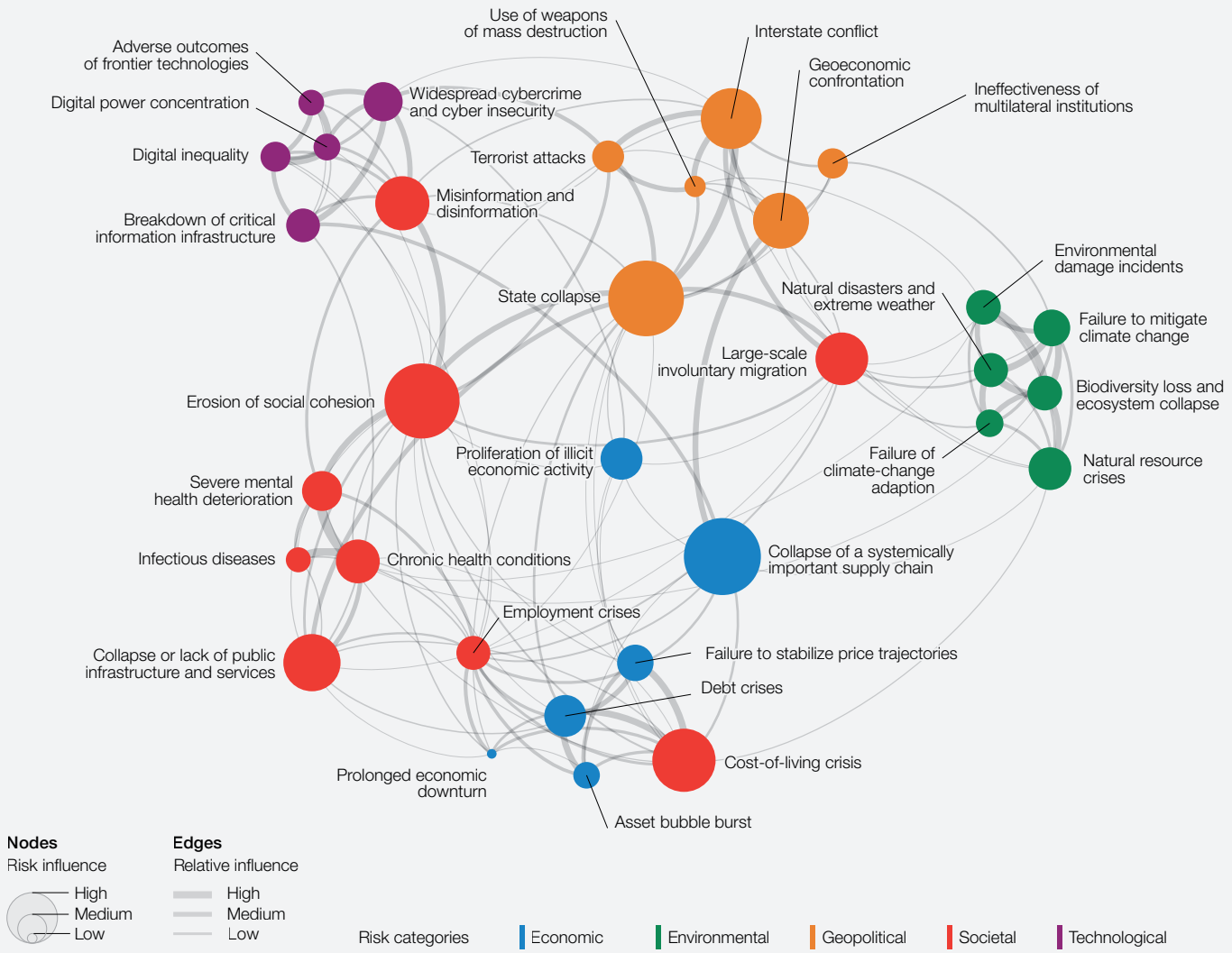
In the years to come, as continued, concurrent crises embed structural changes to the economic and geopolitical landscape, they accelerate the other risks that we face. More than four in five GRPS respondents anticipate consistent volatility over the next two years at a minimum, with multiple shocks accentuating divergent trajectories. However, respondents are generally more optimistic over the longer term. Just over one-half of respondents anticipate a negative outlook, and nearly one in five respondents predict limited volatility with relative – and potentially renewed – stability in the next 10 years.

Indeed, there is still a window to shape a more secure future through more effective preparedness. Addressing the erosion of trust in multilateral processes will enhance our collective ability to prevent and respond to emerging cross-border crises and strengthen the guardrails we have in place to address well-established risks. In addition, leveraging the interconnectivity between global risks can broaden the impact of risk mitigation activities – shoring up resilience in one area can have a multiplier effect on overall preparedness for other related risks. As a deteriorating economic outlook brings tougher trade-offs for governments facing competing social, environmental and security concerns, investment in resilience must focus on solutions that address multiple risks, such as funding of adaptation measures that come with climate mitigation co-benefits, or investment in areas that strengthen human capital and development.

Some of the risks described in this year's report are close to a tipping point. This is the moment to act collectively, decisively and with a long-term lens to shape a pathway to a more positive, inclusive and stable world.

FIGURE C

Global risks landscape: an interconnections map



Source

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

FIGURE D

Currently manifesting risks

"Please rank the top 5 currently manifesting risks in order of how severe you believe their impact will be on a global level in 2023"

1	2	3	4	5
Energy supply crisis	Cost-of-living crisis	Rising inflation	Food supply crisis	Cyberattacks on critical infrastructure

Source

World Economic Forum Global Risks Perception Survey 2022-2023.

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

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	Long term
1	Cost-of-living crisis	Failure to mitigate climate change
2	Natural disasters and extreme weather events	Failure of climate-change adaption
3	Geoeconomic confrontation	Natural disasters and extreme weather events
4	Failure to mitigate climate change	Biodiversity loss and ecosystem collapse
5	Erosion of social cohesion and societal polarization	Large-scale involuntary migration
6	Large-scale environmental damage incidents	Natural resource crises
7	Failure of climate-change adaption	Erosion of social cohesion and societal polarization
8	Widespread cybercrime and cyber insecurity	Widespread cybercrime and cyber insecurity
9	Natural resource crises	Geoeconomic confrontation
10	Large-scale involuntary migration	Large-scale environmental damage incidents
11	Debt crises	Misinformation and disinformation
12	Failure to stabilize price trajectories	Ineffectiveness of multilateral institutions and international cooperation
13	Prolonged economic downturn	Interstate conflict
14	Interstate conflict	Debt crises
15	Ineffectiveness of multilateral institutions and international cooperation	Cost-of-living crisis
16	Misinformation and disinformation	Breakdown of critical information infrastructure
17	Collapse of a systemically important industry or supply chain	Digital power concentration
18	Biodiversity loss and ecosystem collapse	Adverse outcomes of frontier technologies
19	Employment crises	Failure to stabilize price trajectories
20	Infectious diseases	Chronic diseases and health conditions
21	Use of weapons of mass destruction	Prolonged economic downturn
22	Asset bubble bursts	State collapse or severe instability
23	Severe mental health deterioration	Employment crises
24	Breakdown of critical information infrastructure	Collapse of a systemically important industry or supply chain
25	State collapse or severe instability	Severe mental health deterioration
26	Chronic diseases and health conditions	Collapse or lack of public infrastructure and services
27	Collapse or lack of public infrastructure and services	Infectious diseases
28	Proliferation of illicit economic activity	Use of weapons of mass destruction
29	Digital power concentration	Proliferation of illicit economic activity
30	Terrorist attacks	Digital inequality and lack of access to digital services
31	Digital inequality and lack of access to digital services	Asset bubble bursts
32	Adverse outcomes of frontier technologies	Terrorist attacks

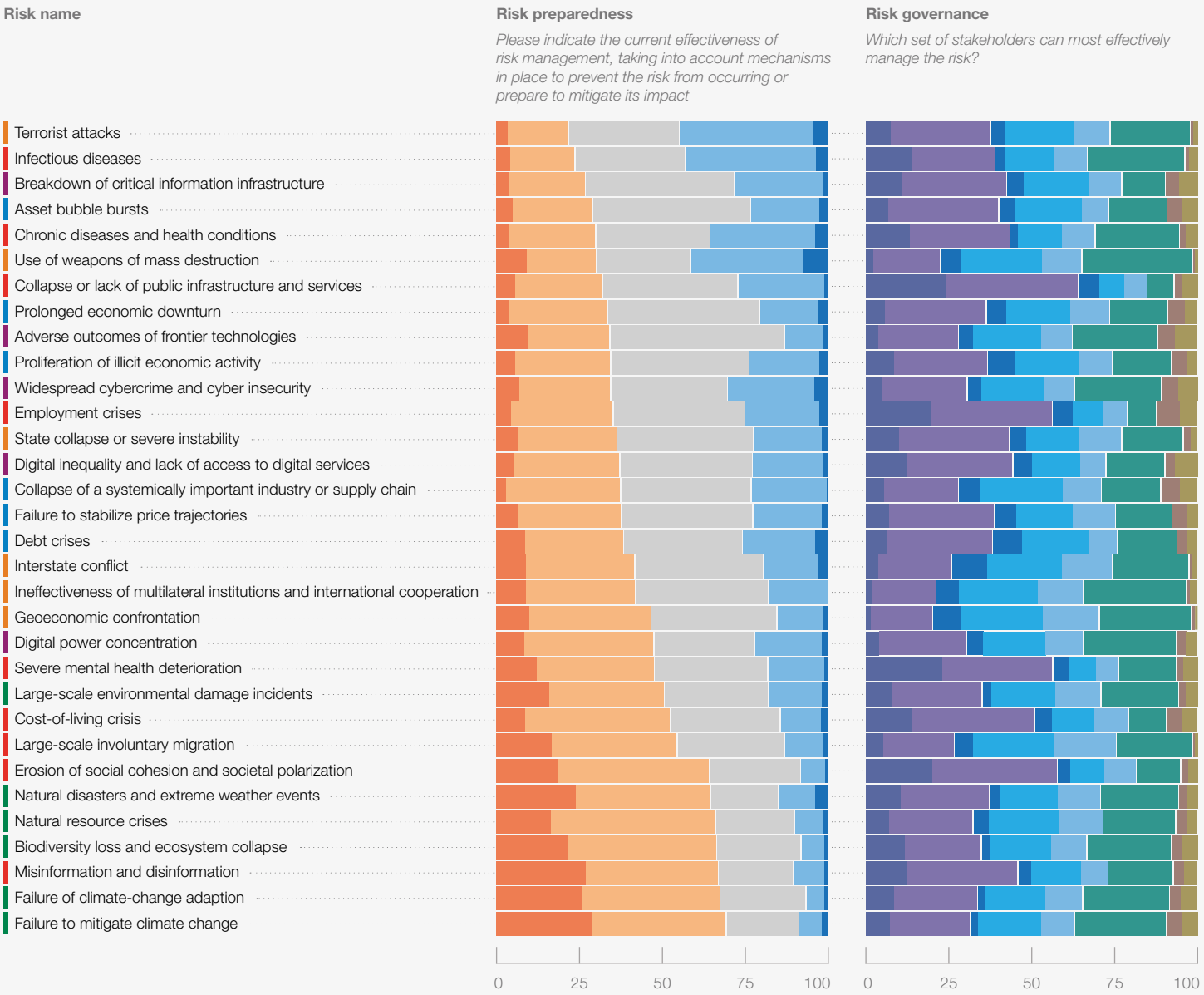
Source

World Economic Forum Global Risks Perception Survey 2022-2023.

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

FIGURE F

Perceptions around preparedness and governance



Risk category

- Economic
- Environmental
- Geopolitical
- Societal
- Technological

Perception

- Highly ineffective
- Ineffective
- Indeterminate effectiveness
- Highly effective
- Effective

Stakeholder

- Local government
- National government
- Bilateral
- Multi-country
- Regional
- International organization
- Businesses
- Public-Private cooperation

Source

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

1

Global Risks 2023: Today's Crisis

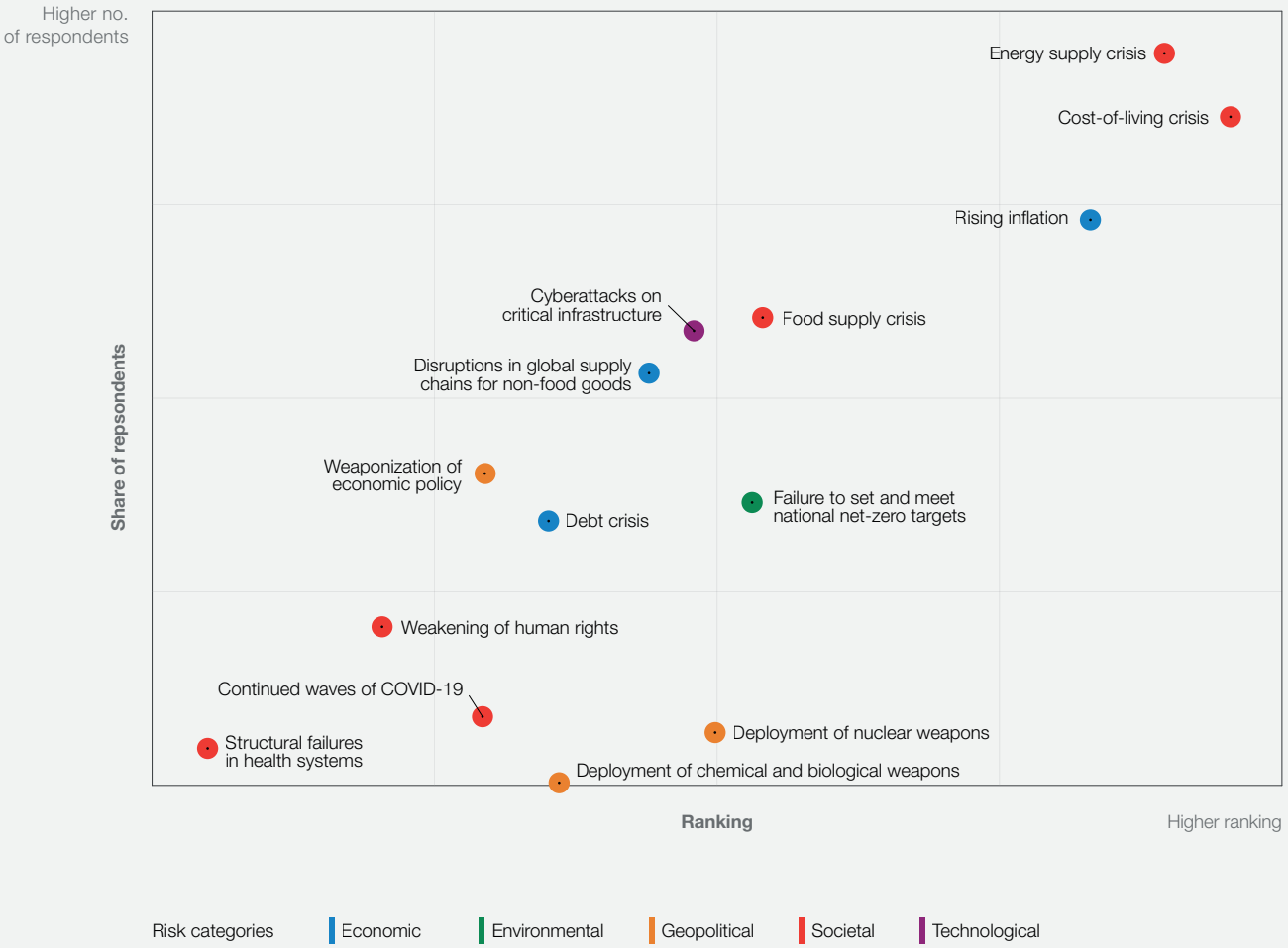
1.1 Current crises

With the global landscape dominated by manifesting risks, we introduce this year three time frames for understanding global risks: 1) current crises (i.e. global risks which are already unfolding), 2) risks that are likely to be most severe in two years, and 3) risks that are likely to be most severe in 10 years. This chapter address the outlook for the first two time frames. Most respondents to the

FIGURE 1.1

Currently manifesting risks

"Please rank the top 5 currently manifesting risks in order of how severe you believe their impact will be on a global level in 2023"



Source

World Economic Forum Global Risks Perception Survey 2022-2023.

2022-2023 Global Risks Perception Survey (GRPS) chose **"Energy supply crisis"**; **"Cost-of-living crisis"**; **"Rising inflation"**; **"Food supply crisis"** and **"Cyberattacks on critical infrastructure"** as among the top risks for 2023 with the greatest potential impact on a global scale (Figure 1.1). Those that are outside the top 5 for the year but remain concerns include: failure to meet net-zero targets; weaponization of economic policy; weakening of human rights; a debt crisis; and failure of non-food supply chains.

News headlines all over the world make these results largely unsurprising. Yet their implications are profound. Our global "new normal" is a return to basics – food, energy, security – problems our globalized world was thought to be on a trajectory to solve. These risks are being amplified by the persistent health and economic overhang of a global pandemic; a war in Europe and sanctions that impact a globally integrated economy; and an escalating technological arms race underpinned by industrial competition and enhanced state intervention. Longer-term structural changes to geopolitical dynamics – with the diffusion of power across countries of differing political and economic systems – are coinciding with a more rapidly changing economic landscape, ushering in a low-growth, low-investment and low-cooperation era and a potential decline in human development after decades of progress.

The result is a global risks landscape that feels both wholly new and eerily familiar. There is a return of "older" risks that are understood historically but experienced by few in the current generations of business leaders and public policy-makers. In addition, there are relatively new developments in the global risk landscape. These include widespread, historically high levels of public and in some cases private-sector debt; the ever more rapid pace of technological development and its unprecedented intertwining with the critical functioning of societies; and the growing pressure of climate change impacts and ambitions in an ever-shorter time frame for transition. Together, these are converging to shape a unique, uncertain and turbulent 2020s.

1.2 The path to 2025

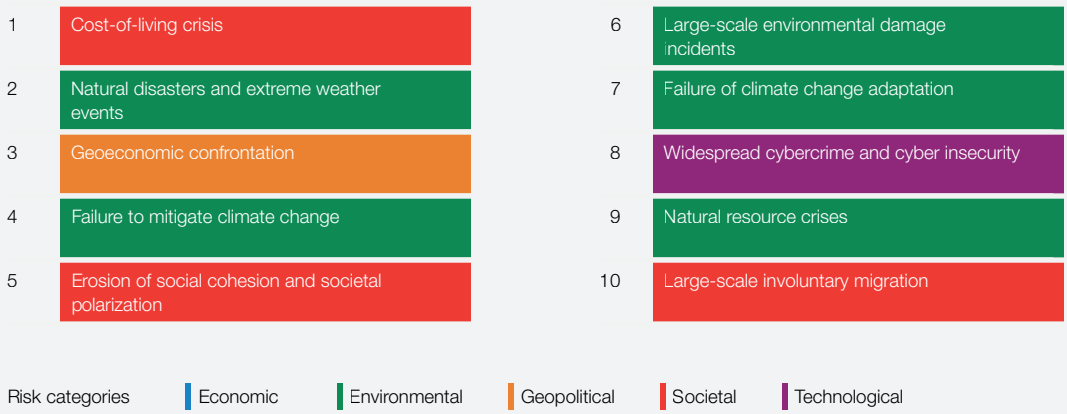
The complex and rapid evolution of the global risks landscape is adding to a sense of unease. More than four in five GRPS respondents anticipated consistent volatility over the next two years at a minimum, with multiple shocks accentuating divergent trajectories (Figure 1.10).

Respondents to the GRPS see the path to 2025 dominated by social and environmental risks, driven by underlying geopolitical and economic trends (Figure 1.2).

There were some notable differences between the responses of government and business respondents, with **"Debt crises"**, **"Failure to stabilize price trajectories"**, **"Failure to mitigate climate change"** and **"Failure of climate change adaptation"** featuring more prominently for governments, and **"Widespread cybercrime and cyber insecurity"** and **"Large-scale environmental damage incidents"** featuring higher for business (Figure 1.3).

The following sections explore the most severe

FIGURE 1.2 **Global risks ranked by severity over the short term (2 years)**



Source

World Economic Forum Global Risks Perception Survey 2022-2023.

FIGURE 1.3 **Severity by stakeholder over the short term (2 years)**

Source

World Economic Forum Global Risks Perception Survey 2022-2023.

global risks that many expect to play out over the next two years, within the context of the mounting impacts and constraints being imposed by the numerous crises felt today. These are: cost-of-living crisis, economic downturn, geoeconomic warfare, climate action hiatus and societal polarization. We describe current trends associated with each risk, briefly cover the reasons behind them and then note their emerging implications and knock-on effects.

Cost-of-living crisis

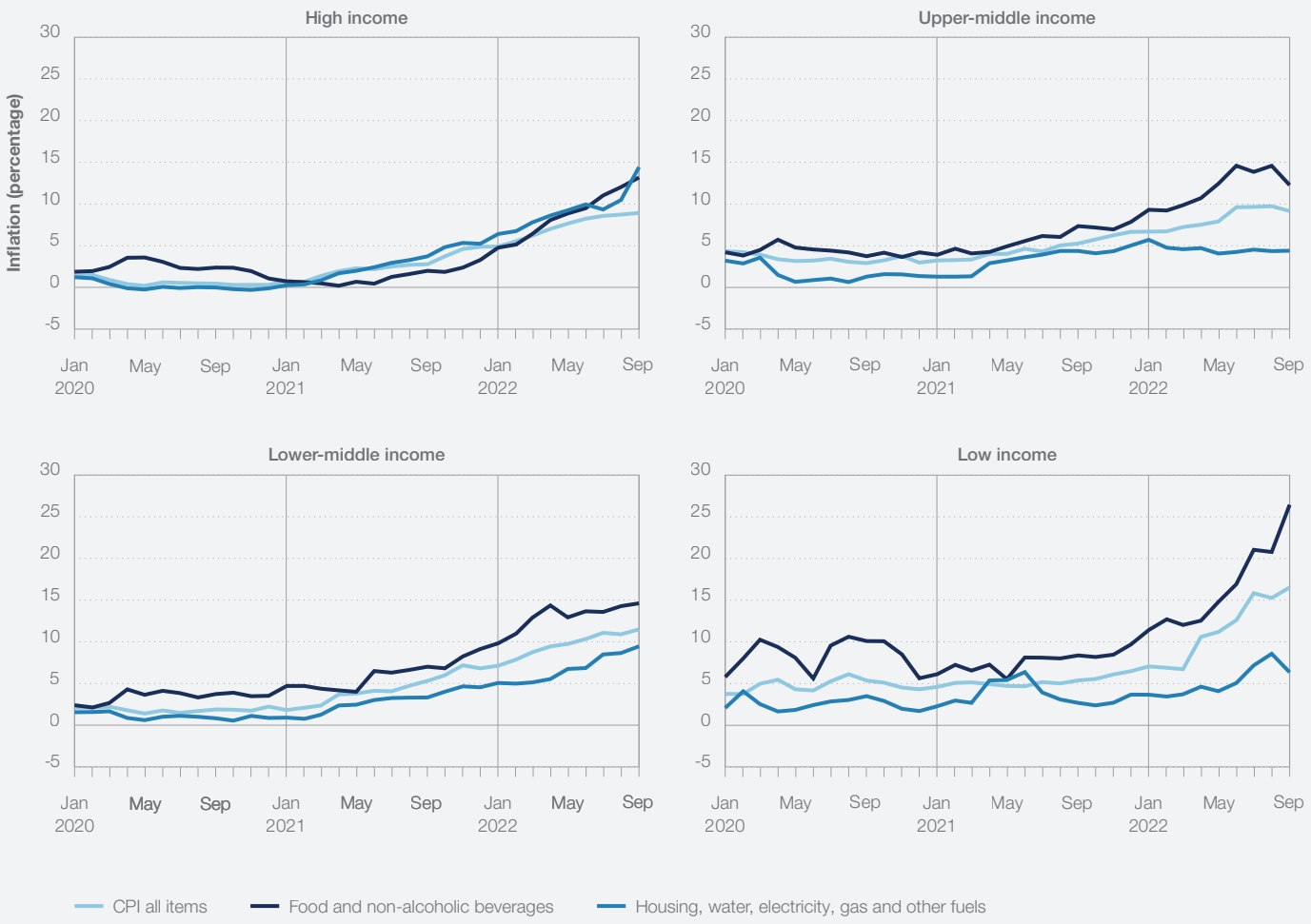
Ranked as the most severe global risk over the next two years by GRPS respondents, a global **Cost-of-living crisis** is already here, with inflationary pressures disproportionately hitting those that can least afford it. Even before the COVID-19 pandemic, the price of basic necessities – non-expendable items such as food and housing – were on the rise.[1] Costs further increased in 2022, primarily due to continued disruptions in the flows of energy and food from Russia and Ukraine. To curb domestic prices, around 30 countries introduced restrictions, including export bans, in food and energy last year, further driving up global inflation.[2] Despite the latest extension, the looming threat of Russia pulling out of the Black Sea Grain Export Deal has also led to significant volatility in the price of essential commodities.

Although global supply chains have partly adapted, with pressures significantly lower than the peak experienced in April last year,[3] price shocks to core necessities have significantly outpaced general inflation over this time (Figure 1.4). The FAO Price Index hit the highest level since its inception in 1990 in March last year.[4] Energy prices are estimated to remain 46% higher than average in 2023 relative to January 2022 projections.[5] The relaxation of China's COVID-19 policies could drive up energy and commodity prices further - and will test the resilience of global supply chains if policy changes remain unpredictable as infections soar.

Cost-of-living crisis was broadly perceived by GRPS respondents to be a short-term risk, at peak severity within the next two years and easing off thereafter. But the persistence of a global cost-of-living crisis could result in a growing proportion of the most vulnerable parts of society being priced out of access to basic needs, fueling unrest and political instability. Continued supply-chain disruptions could lead to sticky core inflation, particularly in food and energy. This could fuel further interest rate hikes, raising the risk of debt distress, a prolonged economic downturn and a vicious cycle for fiscal planning.

Despite some improvement during the pandemic, household debt has been on the rise in certain

FIGURE 1.4 **Price hikes in basic necessities, 2020-2022**



Source

IMF, Consumer Price Index.

Note

Median year-on-year inflation, by income group.

economies. Global mortgage rates have reached their highest level in more than a decade. Some estimates suggest that the increase in rates amounts to a 35% increase in mortgage payments for homeowners.[6] Rent inflation has also followed suit – in the United States of America, it is estimated to peak at over 8% in May this year before easing,[7] disproportionately affecting lower socioeconomic groups who are more likely to rent but least able to afford rental price hikes. Retirees will also be impacted as pensions fail to keep pace with higher inflation.[8] Higher costs of food, energy and housing, causing lower real incomes, will result in trade-offs in essential spending, worsening health and wellbeing outcomes for communities.

Economic impacts are often cushioned by expansive fiscal policy and government programmes in countries that can afford them.[9] Advanced economies continue to roll out measures, many of which have been broad-brush in approach – ranging from caps on electricity bills, fuel rebates and subsidized public transport tickets for consumers, to export controls on food, tax relief, enhanced state aid and support for affected companies. The resulting pressure on fiscal balances may exacerbate debt sustainability concerns, leaving emerging and developing countries with far less fiscal room to protect their populations in the future.

Both affordability and availability of basic necessities can stoke social and political instability. Last year, the increase in fuel prices alone led to protests in an estimated 92 countries, some of which resulted in political upheaval and fatalities, alongside strikes and industrial action.[10] The impact of insecurity will continue to be felt most acutely in already vulnerable states – including Somalia, Sudan, South Sudan and the Syrian Arab Republic – but may also exacerbate instability in countries facing simultaneous food and debt crises, such as Tunisia, Ghana, Pakistan, Egypt and Lebanon.[11]

A combination of extreme weather events and constrained supply could lead the current cost-of-living crisis into a catastrophic scenario of hunger and distress for millions in import-dependent countries or turn the energy crisis towards a humanitarian crisis in the poorest emerging markets. Energy shortages – as a result of supplier shut-offs or natural, accidental or intentional damage

to pipelines and energy grids – could cause widespread blackouts and fatalities if combined with seasonal extreme weather. There is also a material possibility of a global food supply crisis occurring in 2023, with the continuation of the war in Ukraine, the lagged effect of a price spike in fertilizer last year and the impact of extreme weather conditions on food production in key regions. Estimates suggest that over 800,000 hectares of farmland were wiped out by floods in Pakistan – increasing commodity prices significantly in a country that was already grappling with record 27% inflation.[12] Predicted droughts and water shortages may cause a decline in harvests and livestock deaths across East Africa, North Africa and Southern Africa, exacerbating food insecurity.[13]

Although some regions anticipate above-average yields next year, unexpected production or transportation shocks in key exporters – including water shortages in the Netherlands and droughts and large-scale insect loss in the United States of America and Brazil[14] – or controls imposed by these countries could further destabilize global food security, explored in Chapter 3: Resource Rivalries. **"Severe commodity price shocks or volatility"** was a top-five risk over the next two years in 47 countries surveyed by the Forum's Executive Opinion Survey (EOS), while **"Severe commodity supply crises"** registered as a more localized risk, as a top-five concern across 34 countries, including in Switzerland, South Korea, Singapore, Chile and Türkiye. The catastrophic effects of famine and loss of life can also have spill-over effects further afield, as the risk of widespread violence grows and involuntary migration rises.

Economic downturn

Last year's edition of the *Global Risks Report* warned that inflation, debt and interest rate rises were emerging risks. Today, governments and central banks – led by developed markets, notably the United States of America, Eurozone and the United Kingdom of Great Britain – are walking a tightrope between managing inflation without triggering a deep or prolonged recession, and protecting citizens from a cost-of-living crisis while servicing historically high debt loads. Public-sector respondents to the GRPS ranked **Debt crises** (#6), **Failure to stabilise price trajectories** (#8) and **"Prolonged economic downturn"** (#10) in the top 10 risks over the next two years (Figure 1.3).

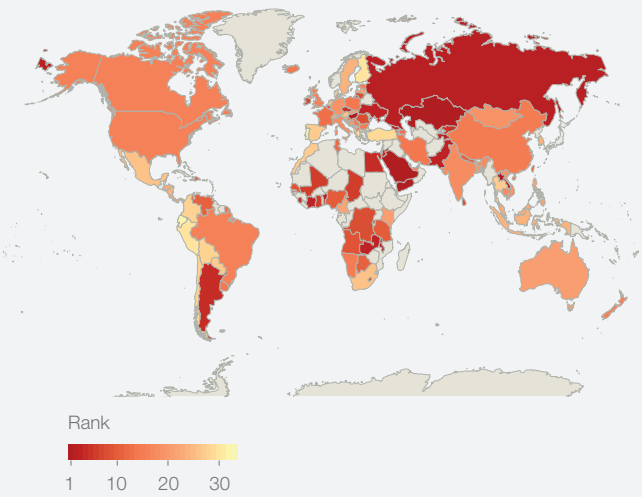
Managing inflation is a worldwide concern. **"Rapid and / or sustained inflation"** was also highlighted as a top-five risk over the next two years in 89 of the countries surveyed in the EOS, a significant increase from 2021 (Figure 1.5). It was ranked as the top threat in a number of G20 countries – including Brazil, South Korea and Mexico – although inflationary pressures have affected both developed and developing economies. Inflation rates rose above 80% in Argentina and Türkiye, while Zimbabwe, the Bolivarian Republic of Venezuela, Lebanon, the Syrian Arab Republic and Sudan witnessed triple-digit inflation. Inflation in the United States of America peaked above 9% in June last year and hit record highs in the United Kingdom of Great Britain and the Eurozone in October, at 11.1% and 10.6%, respectively, forcing interest rates higher and inflicting more pain on emerging economies.[15]

FIGURE 1.5

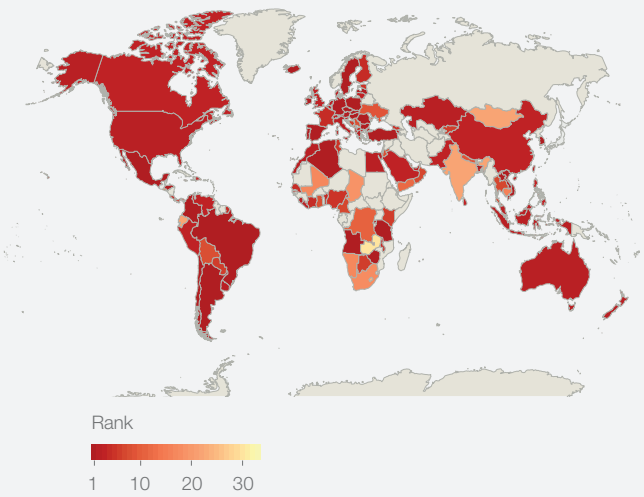
National risk perceptions: inflation

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

A. Failure to stabilize price trajectories, 2021



B. Rapid and / or sustained inflation, 2022



Source

World Economic Forum Executive Opinion Survey 2022.

The IMF's most recent projections anticipate a decline in global inflation from almost 9% in 2022 to 6.5% this year and 4.1% in 2024, with a sharper disinflation in advanced economies.[16] However, downside risks to the outlook loom large. The complexity of inflationary dynamics is creating a challenging policy environment for both the public sector and central banks, given the mix of demand and supply-side drivers, including a prolonged war in Ukraine and associated energy-supply crunch, potential for escalating sanctions, and continued bottlenecks from a lingering pandemic or new sources of supply-side controls.

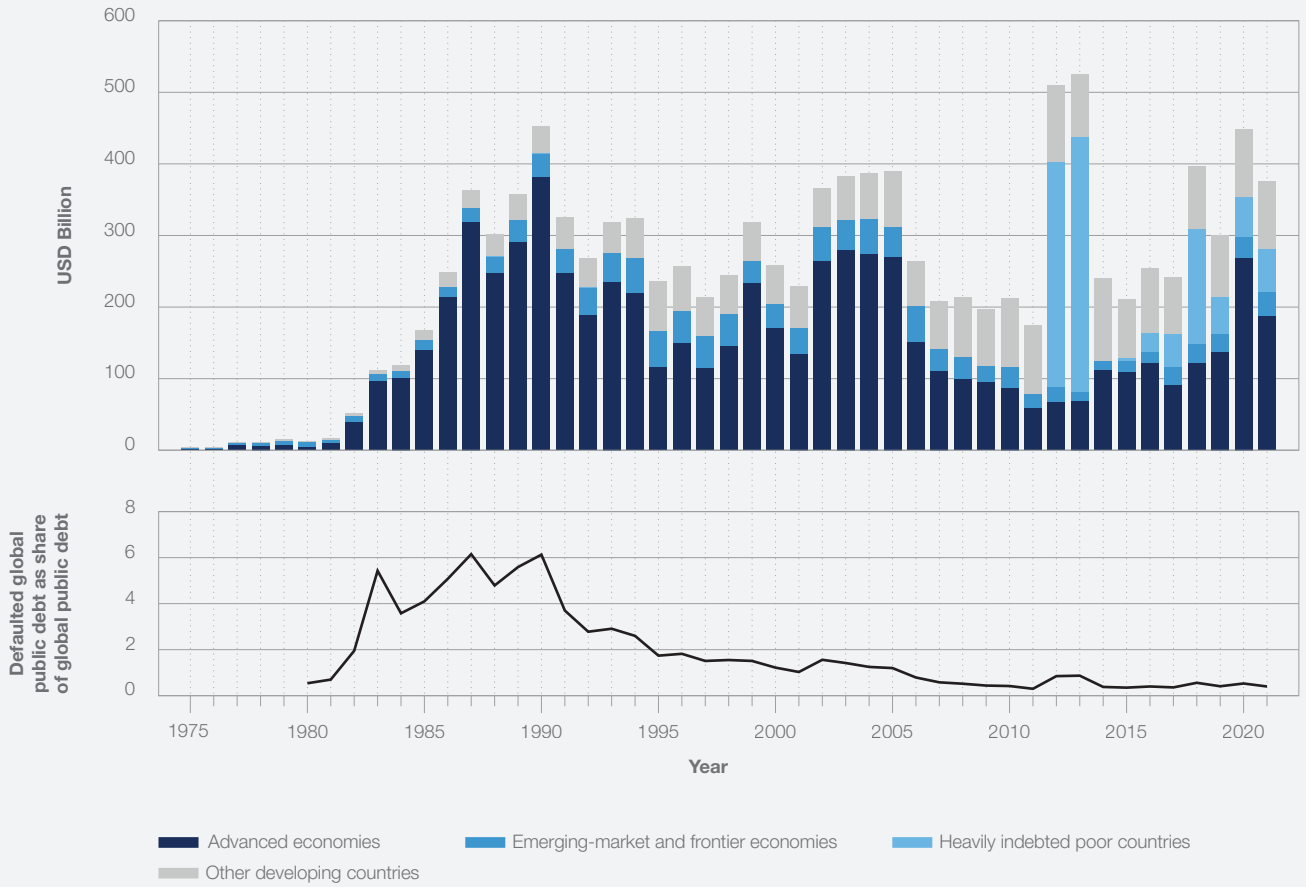
Given currently low headline unemployment in advanced economies, persistent price pressures will likely lead to higher interest rates to avoid inflation de-anchoring. Central banks have sped up the post-pandemic normalization of monetary policy. Nearly 90% (33 of 38) of central banks monitored by the Bank for International Settlements raised interest rates in 2022, a dramatic shift away from the loose financial conditions that characterized the previous decade.[17] With a rapid rise in rates, the risk of unintended consequences and policy error is high, with possible overshoot leading to a deeper and more prolonged economic downturn and potential global recession.

Even if the economic fallout remains comparatively contained, global growth is forecast to slow to 2.7% in 2023, with around one-third of the world's economy facing a technical recession – the third-weakest growth profile in over 20 years.[18] This downturn will be led by advanced markets, with projected growth falling to 1.1% in 2023, while the largest economies – the EU, China and the United States of America – face continued challenges to growth. However, for developing economies, there is a risk of further economic distress and tougher trade-offs. Stubbornly high inflation and more disorderly containment will raise the likelihood of stagnant economic growth, liquidity shocks and debt distress on a global scale. Energy importers in particular will bear the brunt of higher energy prices stemming from a strengthened US dollar, but its continued strength is importing inflation worldwide.

Globalized capital flows over recent decades have increased exposure of emerging and developing markets to rising interest rates, especially those with a high proportion of USD-denominated debt, such as Argentina, Colombia and Indonesia.[19] Early tightening of monetary policy in many markets – including Brazil, Mexico, Chile, Peru and Colombia – minimized initial exposure. But while some countries have resorted to foreign-exchange interventions

FIGURE 1.6

Sovereign debt in default



Source

Bank of Canada and Bank of England, 2022.[20]

to limit currency depreciation and debt-servicing loads, heightened volatility continues to drive demand for US assets. This has led to record capital outflows from markets with weaker macroeconomic fundamentals, with investors already withdrawing $70 billion from emerging market bond funds by October last year.[21]

Growth agendas, including the critical pivot to greener economies, have been based on the availability of cheap debt. The extent to which countries can continue to finance development will be dependent on domestic political and debt dynamics. Sri Lanka's recent crisis provides a very real example of the spiraling risks to human security and health that can arise from economic distress, where a debt default and shortage in foreign currency limited imports; disrupted access to food, fuel, healthcare and electricity; and led to violent protests and the resignation of the President.

The scale of sovereign debt defaults could significantly rise in weaker emerging markets over the next two years, in terms of both the percentage value of total global debt and number of states in default (Figure 1.6). Although unlikely under the current trajectory to reach globally destabilizing levels, the proportion of countries in or at high risk of debt distress has already doubled from 2015 levels.[22] This will increase the global influence of creditor nations and heighten state fragility as the capacity to address simultaneous crises in food and energy will be limited.[23] Some countries will be unable to contain future shocks, invest in future growth and green technologies or build future resilience in education, healthcare and ecological systems, with impacts exacerbated by the most powerful and disproportionately borne by the most vulnerable, as explored in Chapter 2.6: Economic stability.

Geoeconomic warfare

"Geoeconomic confrontation" was ranked the third-most severe risk over the next two years by GRPS respondents. Interstate confrontations were anticipated by both GRPS and EOS respondents to remain largely economic in nature over the short term. **Geoeconomic confrontation** – including sanctions, trade wars and investment screening – was considered a top-five threat over the next two years among 42 countries surveyed by the EOS and featured as the top risk in many East and South-East Asian countries, among others. In comparison, **"Interstate conflict"** was ranked as a top-five risk in 28 countries surveyed by the EOS (Figure 1.7).

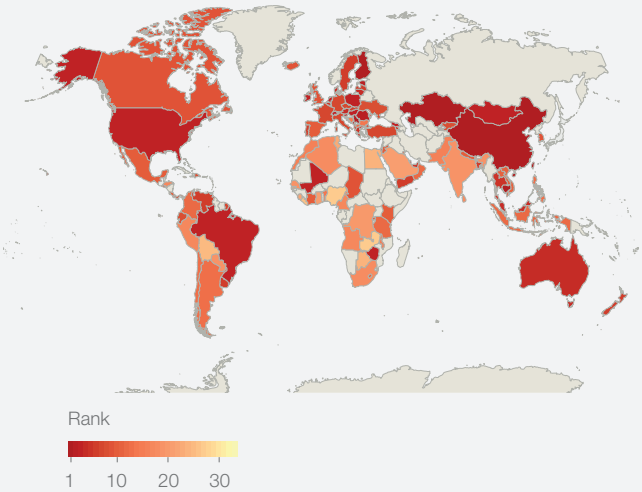
The weaponization of economic policy between globally integrated powers has highlighted vulnerabilities posed by trade, financial and technological interdependence - for the public and private sector alike. The Ukraine conflict triggered the imposition of sanctions, nationalization of key players, and government appropriation of assets, such as Germany's seizure of Russian energy companies' stakes in local refineries last year.[24] Reputational and legal risks for multinational company operations in certain markets also grew:

FIGURE 1.7

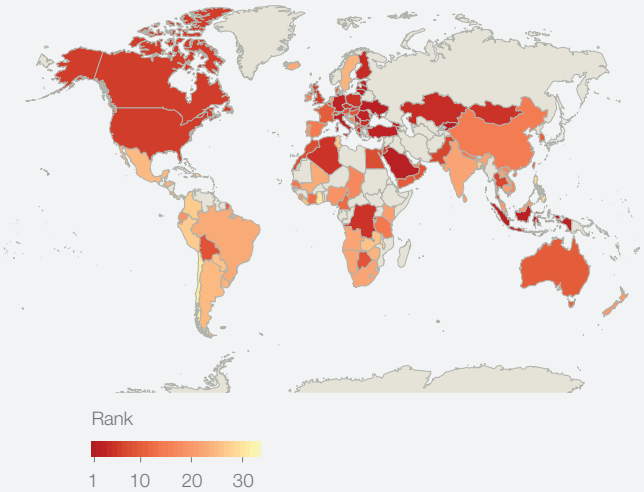
National risk perceptions: interstate confrontation

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

A. Geoeconomic confrontation

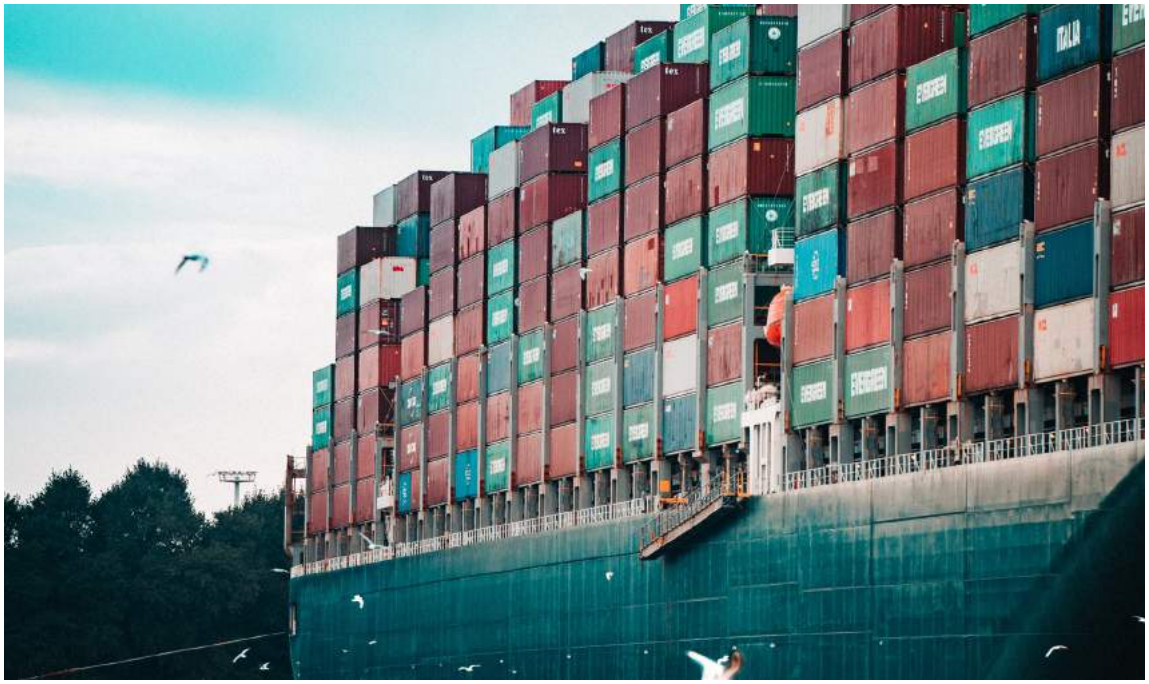


B. Interstate conflict



Source

World Economic Forum Executive Opinion Survey 2022.



consumer good companies faced boycotts after continuing to provide basic necessities to Russia, and a European energy company was accused of "complicity in war crimes" due to linkages to a Russian gas field.[25]

In the face of vulnerabilities highlighted by the pandemic and then war, economic policy, particularly in advanced economies, is increasingly directed towards geopolitical goals. Countries are seeking to build "self-sufficiency", underpinned by state aid, and achieve "sovereignty" from rival powers, through onshoring and "friend-shoring" global supply chains. Defensive measures to boost local production and minimize foreign interference in critical industries include subsidies, tighter investment screening, data localization policies, visa bans and exclusion of companies from key markets.

While initially driven by tensions between the United States of America and China, many policies are extra-territorial in nature or have been similarly adopted by other markets, with spill-over effects across a broad range of industries. For example, Switzerland is considering the introduction of a general cross-sectoral foreign direct investment screening regime for the first time. Expanded state aid to support self-sufficiency in "strategically important products", including climate mitigation and adaptation, has also heightened competition within global blocs. The EU has already raised concerns about the USA's Inflation Reduction Act, which includes significant tax credits and subsidies for local green technologies.[26]

Economic levers are also being used to proactively constrain the rise of rivals. This includes delisting of foreign companies, extensive use of the foreign direct product rule and export controls on key technologies and intellectual property as well as broad constraints on citizens and entities working with designated foreign companies. The introduction of an outbound investment screening regime has also been contemplated by the United States of America.[27]

Together, these trends towards geoeconomic warfare risk creating widespread spillovers. More extensive deployment of economic levers to meet geopolitical goals risks a vicious and escalating cycle of distrust. Financial and technological ramifications may highlight further vulnerabilities, leading states to proactively wind back other interdependencies in the name of national security and resilience over the next two years. This may spur contrary outcomes to the intended objective, driving resilience and productivity growth lower and marking the end of an economic era characterized by cheaper and globalized capital, labour, commodities and goods.

This will likely continue to weaken existing alliances as nations turn inwards, with enhanced state intervention perceived to drive a "race to the bottom". Further pressure will be placed on multilateral governance mechanisms that act as mitigants to these risks, potentially mirroring the politicization of the World Health Organization (WHO) during the COVID-19 pandemic and the near paralysis of trade enforcement on more contentious issues by the World Trade Organization (WTO) in recent years.[28] It will also likely embed the importance of broader geopolitical spheres of influence in "dependent" markets, with global powers extensively exercising trade, debt and technological power. Although some developing and emerging markets may wield critical resources as leverage, considered in Chapter 3: Resource Rivalries, anticipated controls on capital, labour, knowledge and technological flows risk widening the developmental divide.

In addition, spheres of influence will not be purely contained to global powers, nor "dependent" developing and emerging markets. The influence and alignment of the Middle East in regional and global politics will shift. Although the challenge of longer-

term economic diversification remains a significant distraction domestically, the current energy crisis will raise economic, military and political capital of numerous countries over the next two years. Comparative ties of the United States of America and China will have significant ramifications for the balance of power in the region, as well as global military dynamics, considered further in **Chapter 2.4: Human security**.[29]

Strategies to enhance security may also come at a wider economic cost. Intensified geopolitical tensions risk weakening the economic landscape even further, resulting in lingering inflation or depressed growth even if current pressures subside. If on- and friend-shoring continue to be prioritized – particularly in strategic industries such as technology, telecommunications, financial systems, agriculture, mining, healthcare and pharmaceuticals – consumers will potentially face rising costs well into the future. As costs of compliance with divergent political and economic systems climb, multinational companies may pragmatically pick a side, speeding up divergence between various market models.

While intended to lower risks associated with geopolitical and economic disruption, shortened supply chains may also unintentionally heighten exposure to geographically concentrated risks, including labour shortages, civil unrest, pandemics and natural weather events. Geopolitical risks posed by geographic hotspots that are critical to the effective functioning of the global financial and economic system, in particular in the Asia-Pacific, also pose a growing concern.

Climate action hiatus

Despite 30 years of global climate advocacy and diplomacy, the international system has struggled to make the required progress on climate change. The potential failure to address this existential global risk first entered the top rankings of the *Global Risks Report* over a decade ago, in 2011. Today, atmospheric levels of carbon dioxide, methane and nitrous oxide have all reached record highs. Emission trajectories make it very unlikely that global ambitions to limit warming to 1.5°C will be achieved.[30]

A **Failure to mitigate climate change** is ranked as one of the most severe threats in the short term but is the global risk we are seen to be the least prepared for, with 70% of GRPS respondents rating existing measures to prevent or prepare for climate change as **"ineffective"** or **"highly ineffective"** (Figure 4.1). According to the Intergovernmental Panel on Climate Change (IPCC), the chance of breaching the 1.5°C target by as early as 2030 stands at 50%. Current commitments made by the G7 private sector suggest an increase of 2.7°C by mid-century, way above the goals outlined in the Paris Agreement.[31]

Recent events have exposed a divergence between

what is scientifically necessary and what is politically expedient. Current pressures should result in a turning point, encouraging energy-importing countries to invest in "secure", cleaner and cheaper renewable energy sources.[32] Yet geopolitical tensions and economic pressures have already limited – and in some cases reversed – progress on climate change mitigation, at least over the short term. For example, the EU spent at least EUR50 billion on new and expanded fossil-fuel infrastructure and supplies, and some countries restarted coal power stations.[33]

Despite some longer-term government action on the energy transition, such as the USA's Inflation Reduction Act and the EU's REPowerEU plan, overall momentum for climate mitigation is unlikely to rapidly accelerate in the next two years. Negotiations at the Conference of the Parties of the UNFCCC (COP27) failed to reach a much-needed agreement to phase out all fossil fuels, laying bare the difficulty of balancing short-term needs with longer-term ambitions. Policy-makers are increasingly confronted by perceived trade-offs between energy security, affordability and sustainability. The stark reality of 600 million people in Africa without access to electricity illustrates the failure to deliver change to those who need it and the continued attraction of quick fossil-fuel powered solutions – despite the risks of stranded assets, energy security challenges of exported fossil fuel commodities and lifetime carbon emissions that exceed the 1.5°C limit.

There is also growing recognition that not only the pace of the transition but also effectiveness and integrity matter: climate litigation is increasing and concerns about emissions under-reporting and greenwashing have triggered calls for new regulatory oversight for the transition to net zero.[34] While some countries have made disclosure mandatory, much of the corporate world have not yet assessed or started to manage their climate risks. In the absence

of clearer policy signals and consistent regulation and enforcement, mitigation efforts will be shaped by increasingly disruptive climate activism, raising the likelihood of stranded assets – as well as people. A just transition that supports those set to lose from decarbonization is increasingly invoked by countries heavily dependent on fossil-fuel industries as a reason to slow down efforts. These challenges, against the backdrop of a deteriorating economic landscape and inflated input costs, may postpone investments in greener production methods – particularly in heavier, "dirtier" industries.[35]

All of this implies that the risks of a slower and more disorderly transition (extensively covered in last year's Global Risks Report) have now turned into reality, potentially leading to dire planetary and societal consequences. Any rollback of government and private action will continue to amplify risks to human health (explored in **Chapter 2.3: Human health**) and spur the deterioration of natural capital, as discussed in **Chapter 2.2: Natural ecosystems**. Climate change will also increasingly become a key migration driver and there are indications that it has already contributed to the emergence of terrorist groups and conflicts in Asia, the Middle East and Africa.[36]

Indeed, with 1.2°C of warming already in the system, the compounding effect of a changing climate is already being felt, magnifying humanitarian challenges such as food insecurity, and adding another hefty bill to already stretched fiscal balances.[37] In the GRPS results, **"Natural disasters and extreme weather events"** was considered the second-most severe risk over the next two years. As with many of the global risks featured in this year's report, the impact of these events disproportionately affects low- and middle-income countries. It registered as a top-five risk in 25 countries surveyed by the EOS, in particular in developing coastal states across Latin America, Africa and South-East Asia.

As floods, heatwaves, droughts and other extreme weather events become more severe and frequent, a wider set of populations will be affected. In parallel, a consolidation of public- and private-sector resources may set up emerging and pressing trade-offs between disaster recovery, loss and damage, adaptation and mitigation. Although climate mitigation has been overwhelmingly favoured over adaptation in terms of financing to date, particularly in the private sector,[38] EOS results indicate that climate adaptation may now be seen as a more immediate concern in the short term by business leaders. **Failure of climate change mitigation** only featured in the top five risks over the next two years in one economy, Zambia, whereas the **Failure of climate-change adaptation** was a top-five risk in 16 countries, such as the Netherlands, where it ranked first (Figure 1.8). The diversion of attention and resources towards adaptation may further slow progress on global-warming targets in the economies that remain the biggest contributors to greenhouse gas (GHG) emissions.[39]

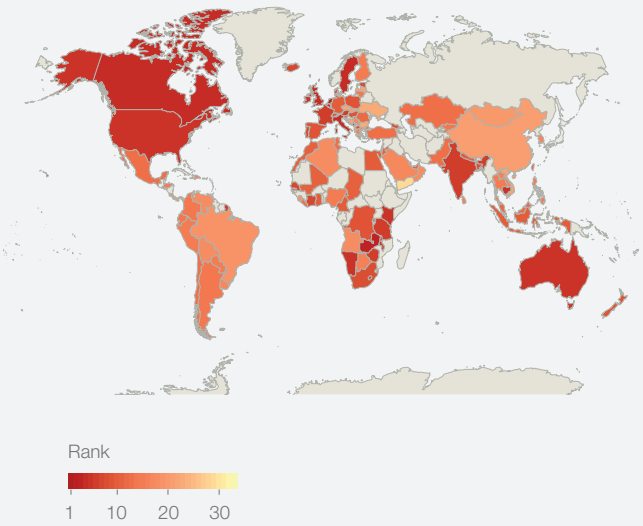
Despite plans for a global goal on adaptation to be agreed at COP28, there has also been insufficient progress towards the support required for infrastructure and populations already affected by the fallout from climate change. Adaptation has not been adequately funded, with 34% of climate finance currently allocated to adaptation worldwide.[40]

FIGURE 1.8

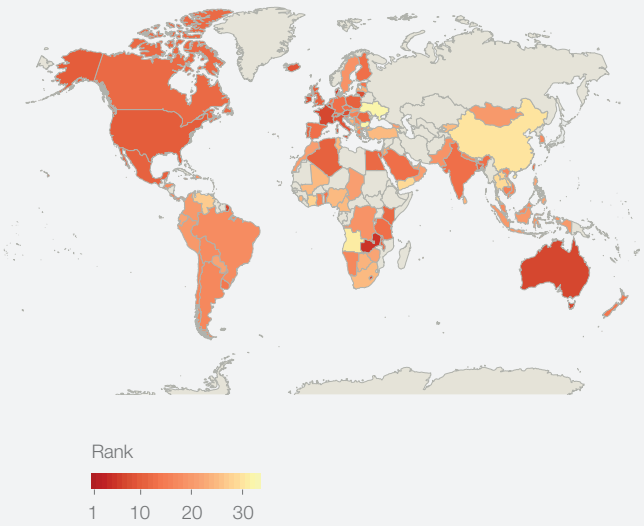
National risk perceptions: climate action

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

A. Failure of climate-change adaptation



B. Failure of climate-change mitigation



Source

World Economic Forum Executive Opinion Survey 2022.

Nor do new investments in infrastructure or capital allocation decisions adequately consider current and future risks. Investors and policy-makers are locking themselves into costly futures, likely to be borne by the most vulnerable. Disagreements on what constitutes adaptation, and the lack of shared goals and best practices, robust regulatory frameworks and metrics, add to a high risk of overshooting and undershooting adaptation efforts.

Limits to adaptation are also increasingly evident. This has been highlighted by the Loss and Damage agenda which, after decades on the sidelines of the climate discourse, has now reached the mainstream. A new financing mechanism was tentatively agreed at COP27, although the contribution to this fund by high-emitting economies remains unclear. Even as more funding is unlocked, there is a risk of ignoring or avoiding climate-proofing against future disasters, as governments scramble to provide relief and support in disaster-hit areas. Market-based mechanisms for managing financial shocks are inadequate and may diminish further within the next two years. There is a risk of retreat by insurers from some areas of natural catastrophe coverage, with the gap in insurance estimated to have grown from $117 billion in 2020 to $161 billion in 2021.[41] Only 7% of economic losses from flood events in emerging markets – and 31% in advanced economies – have been covered by insurance in the last 20 years.[42]

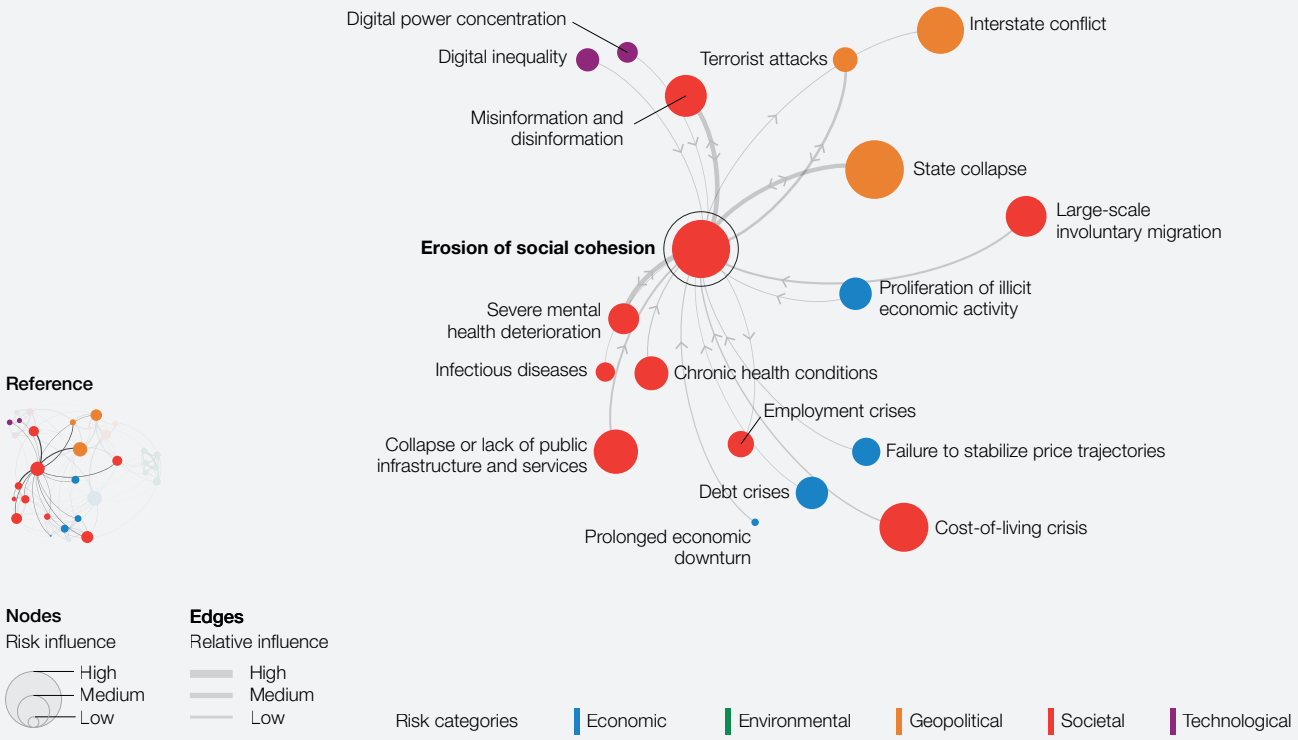
Societal polarization

"Erosion of social cohesion and societal polarisation" has been climbing in the ranks of perceived severity in recent years.[43] Defined as the loss of social capital and fracturing of communities leading to declining social stability, individual and collective wellbeing and economic productivity, it ranked as the fifth-most severe global risk faced in the short term by GRPS respondents. It was also seen as one of the most strongly influenced risks in the global network, triggered by many other short- and longer-term potential risks – including debt crises and state instability, cost-of-living crises and inflation, a prolonged economic downturn and climate migration (Figure 1.9).

A widening gap in values and equality is posing an existential challenge to both autocratic and democratic systems, as economic and social divides are translated into political ones. Polarization on issues such as immigration, gender, reproductive rights, ethnicity, religion, climate and even secession and anarchism[44] have characterized recent elections, referendums and protests around the world – from the United States of America and China to the Islamic Republic of Iran. Mounting citizen frustration at perceived gaps in direct governmental action, human development and social mobility manifested

FIGURE 1.9

Risk interconnections: the erosion of social cohesion



Source

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

in frequently divisive and unruly civil protests last year. More protests were observed between January and October than in all of 2021.[45]

Consequences of societal polarization are vast, ranging from a drag on growth to civil unrest and deepening political fissures. And there are indications that increasing polarization is contributing to the decline of democracies and accompanying rise in hybrid regimes, with the share of the world's population living in autocratizing countries rising from 5% in 2011, to 36% in 2021. Only 13% of the world's population are currently living under a liberal democracy, compared to 44% living under an electoral autocracy.[46]

The erosion of the social and political centre risks becoming self-perpetuating. Divisions incentivize the adoption of short-term, more extreme policy platforms to galvanize one side of the population and perpetuate populist beliefs. Notably, the contest between two, non-centrist candidates or positions is often close.[47] Although heralded as a resurgence of leftist movements, the Brazilian presidential election of 2022 was won by President Lula by 1.8 points – the slimmest margin recorded since it became a democratic nation.[48] As such, a large proportion of the population can feel alienated and angered by leadership in the following term, acting as a multiplier to existing societal concerns and civil unrest. This is further amplified by social media, which increases polarization and distrust in institutions alongside political engagement.[49]

"Misinformation and disinformation" are, together, a potential accelerant to the erosion of social cohesion as well as a consequence. With the potential to destabilize trust in information and political processes,[50] it has become a prominent tool for geopolitical agents to propagate extremist beliefs and sway elections through social media echo chambers. It was perceived as a moderately severe risk by GRPS respondents, ranking 16th over the short term. Regulatory constraints and educational efforts will likely fail to keep pace, and its impact will expand with the more widespread usage of automation and machine-learning technologies, from bots that imitate human-written text to deepfakes of politicians.[51]

Polarization undermines social trust and, in some cases, has reflected power struggles within a political elite more than underlying divisions in ideologies.[52] Often, hardened polarization on key issues lead to government gridlocks. "Swings" between parties each electoral cycle may stymie the adoption of a longer-term policy outlook, causing greater strife, especially when navigating the difficult and uncertain economic outlook of the coming years. Additionally, although less likely in more democratically robust states, an increasing presence of anocracies (those forms of government that are part democracy, part autocracy, referred to in **Chapter 2.5: Digital rights**) and factionalism may radicalize polarization. This could lead to increased incidences of threat campaigns and political violence, hate crimes, violent protests and even civil war.[53]

Social and political polarization may also further reduce the space for collective problem-solving to address global risks. The far right has been elected in Italy and are now the second largest party in Sweden, while the left has resurged in Latin America. National elections will take place in several G20 countries within the next two years, including the United States of America, South Africa, Türkiye, Argentina, Mexico and Indonesia. The election of less-centrist leaders and adoption of more "extreme" policies in economic superpowers may fracture alliances, limit global collaboration and lead to a more volatile dynamic.

1.3 Looking ahead

The way risks play out over the next two years has ramifications for the decade to come. Nearly one in five respondents to the GRPS felt optimistic about the outlook for the world in the longer term, predicting limited volatility with relative – and potentially renewed – stability over the next 10 years (Figure 1.10). Yet, over half anticipated progressive tipping points and persistent crises leading to catastrophic outcomes over the next 10 years, or consistent volatility and divergent trajectories. Notably, younger age groups were more hopeful for the future: one in three respondents under the age of 40 shifted to a neutral or positive stance over the longer time frame.

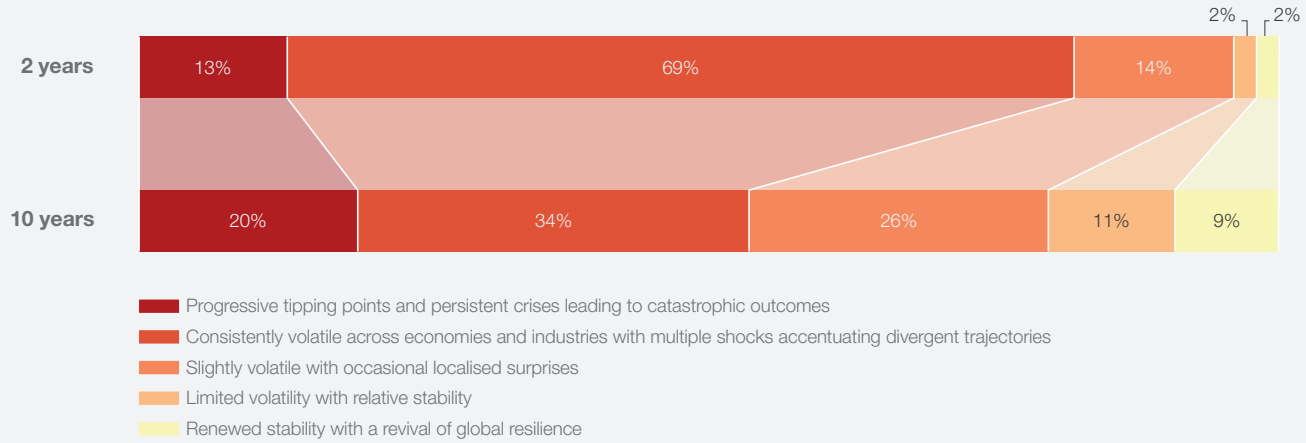
Shocks of recent years – most notably, the war in Ukraine and COVID-19 pandemic – have reflected and accelerated an epochal change to the global order. Risks that are more severe in the short term are embedding structural changes to the economic and geopolitical landscape that will accelerate other global threats faced over the next 10 years. And as the confluence of current crises distracts focus and resources from risks arising over the medium to longer-term horizon, we may face increasing burdens on natural and human ecosystems. Some of these risks are close to a tipping point, but there is a window to shaping a more secure future. Understanding them is vital.

The next chapter considers the potential global shocks we are heading towards over the next decade, highlighting worrying developments emerging from the crises of today that are eroding the resilience and stability of the global system. It highlights a series of such emergent risks – the shocks of tomorrow – that can be reduced through collective attention and action today.

FIGURE 1.10

Short- and long-term global outlook

"Which of the following best characterizes your outlook for the world over the short-term (2 years) and longer-term (10 years)?



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2

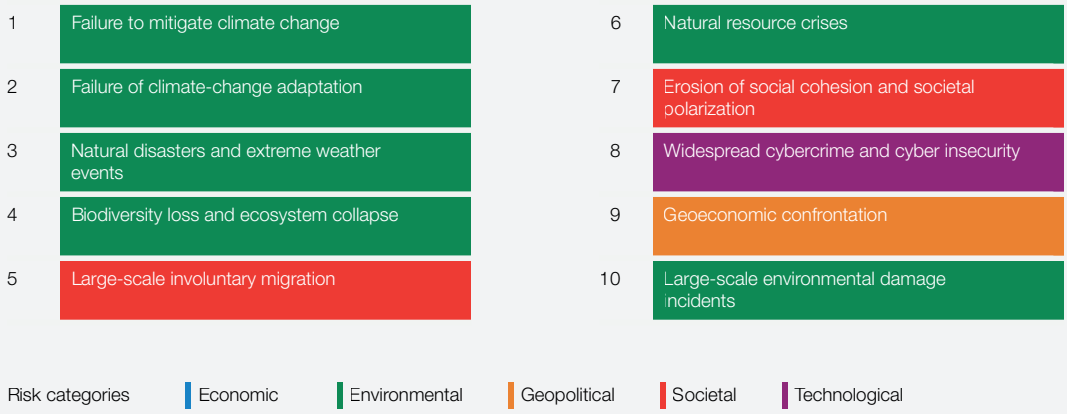
Global Risks 2033: Tomorrow's Catastrophes

2.1 The world in 2033

As risks highlighted in the past chapter unfold today, much-needed attention and resources are being diverted from global risks that may become tomorrow's shocks and crises. The Global Risks Perceptions Survey (GRPS) addresses a one-, two- and 10-year horizon. Chapter one addressed the present and two-year time frame, focusing on currently unfolding and shorter-term risks. This chapter focuses on the third time frame: risks that may have the most severe impact over the next 10 years.

Based on GRPS results, the longer-term global risks landscape is also dominated by deteriorating environmental risks (Figure 2.1). More specifically, climate- and nature-related risks lead the top 10 risks, by severity, that are expected to manifest over the next decade. Differentiated as separate risks for the first time in the GRPS, **Failure to mitigate climate change** and **Failure of climate-change adaptation** top the rankings as the most severe risks on a global scale, followed by **Natural disasters and extreme weather events** and **"Biodiversity loss and ecosystem collapse"**.

FIGURE 2.1 **Global risks ranked by severity over the long term (10 years)**



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

Comparing the two-year and 10-year time frames provides a picture of areas of increasing, decreasing and continued concerns according to GRPS respondents (Figure 2.2). The top right of the graph indicates global risks that are perceived to be the most severe in both the short and long term. These are consistent areas of global concern and, arguably, attention. Four environmental risks have worsening scores over the course of the 10-year time frame, indicating respondents' concerns about increased severity of these risks in the longer term. **"Large-scale involuntary migration**, rises to fifth place in the 10-year time frame, while **Erosion of social cohesion and societal polarization** is perceived to be slightly more severe over the longer term.

Risks that are growing in severity over the longer term include **"Biodiversity loss and ecosystem collapse"** and **"Misinformation and disinformation"**. Among other technological risks, as indicated in the far left of the graph, **"Digital inequality and lack of access to digital services"** and **"Adverse outcomes of frontier technologies"** are also anticipated to significantly deteriorate over the 10-year time frame.

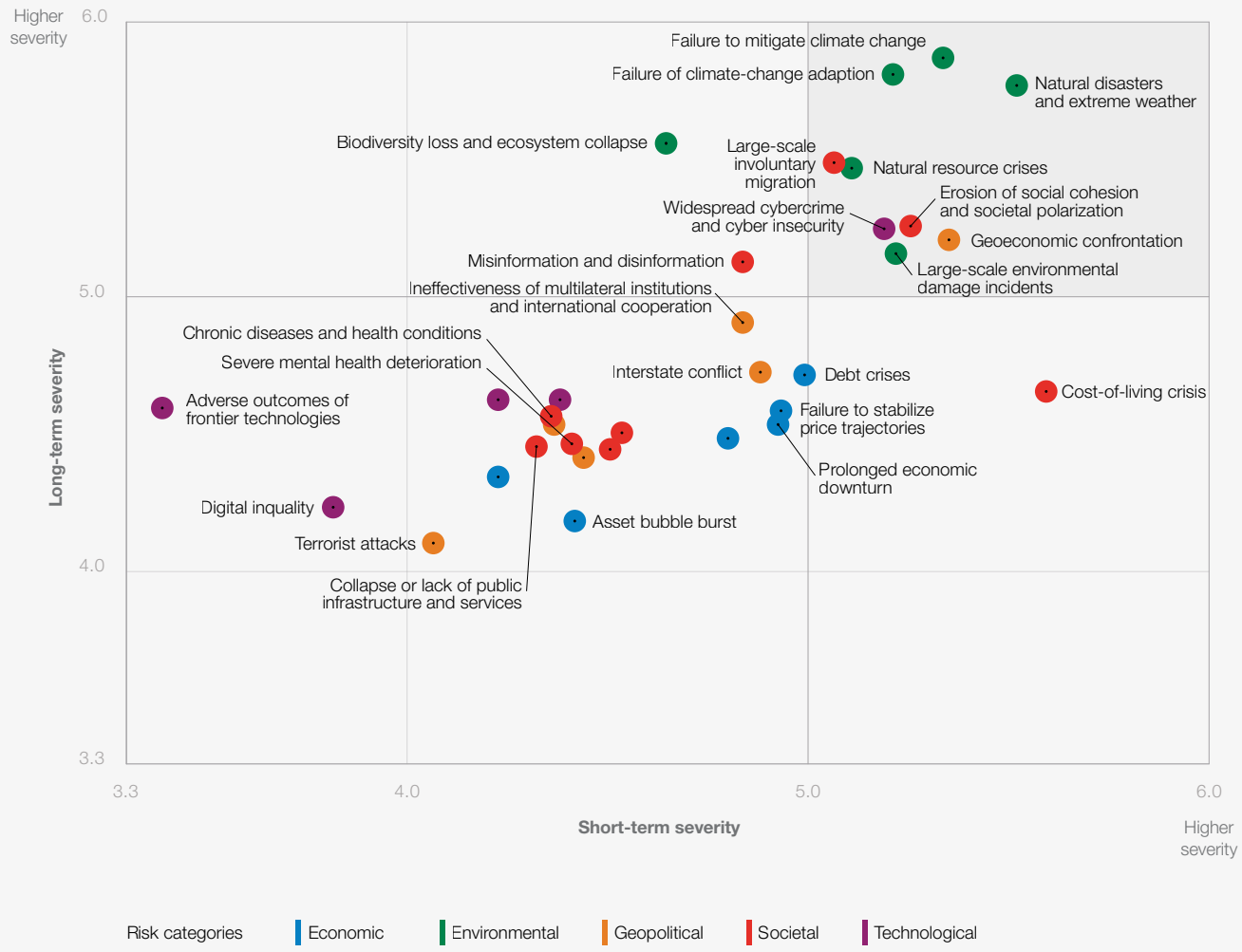
The scores of multiple social risks are also worsening, including **"Severe mental health deterioration", "Collapse or lack of public infrastructure and services"**, and **"Chronic diseases and health conditions"**. In contrast, economic risks such as **"Failure to stabilize price trajectories", "A prolonged economic downturn", "Collapse of a systemically important industry or supply chain"**, and **"Asset bubble burst"** are perceived to fall slightly in expected severity over the 10-year time frame.

The far right of the graph indicates that today's most prominent risk, the **"Cost-of-living crisis"**, is anticipated to drop in severity over the longer term. Towards the center, the scores of geopolitical risks were mixed, with the **"Use of weapons of mass destruction"** remaining consistent, **"State collapse or severe instability"** and **"Ineffectiveness of multilateral institutions"** worsening and **Interstate conflict** perceived as decreasing in severity.

This year, we look at five newly emerging or rapidly accelerating risks clusters – drawn from the economic, environmental, societal, geopolitical and technological domains, respectively – that could become tomorrow's crisis. We explore their current drivers and emerging implications, and briefly touch on opportunities to forestall and reshape these outcomes by acting today.

FIGURE 2.2

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



Source

World Economic Forum Global Risks Perception Survey 2022-2023.

Note

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

These include:

- *Natural ecosystems:* deteriorating risks to natural capital ("assets" such as water, forests and living organisms) due to growing trade-offs and feedback mechanisms relating to climate change, taking us past the point of no return.
- *Human health:* chronic risks that are being compounded by strained healthcare systems facing the social, economic and health aftereffects of the COVID-19 pandemic.
- *Human security:* a nascent reversal in demilitarization and growing vulnerability of nuclear-armed states to emerging technologies, emerging from new weapons and multi-domain conflicts.
- *Digital rights:* the potential evolution of data and cyber insecurity, given the slow-burning, insidious erosion of the digital autonomy of individuals, putting privacy in peril.
- *Economic stability:* growing debt crises, with repercussions for financial contagion as well as collapse of social services, emerging from a global reckoning on debt and leading to social distress.

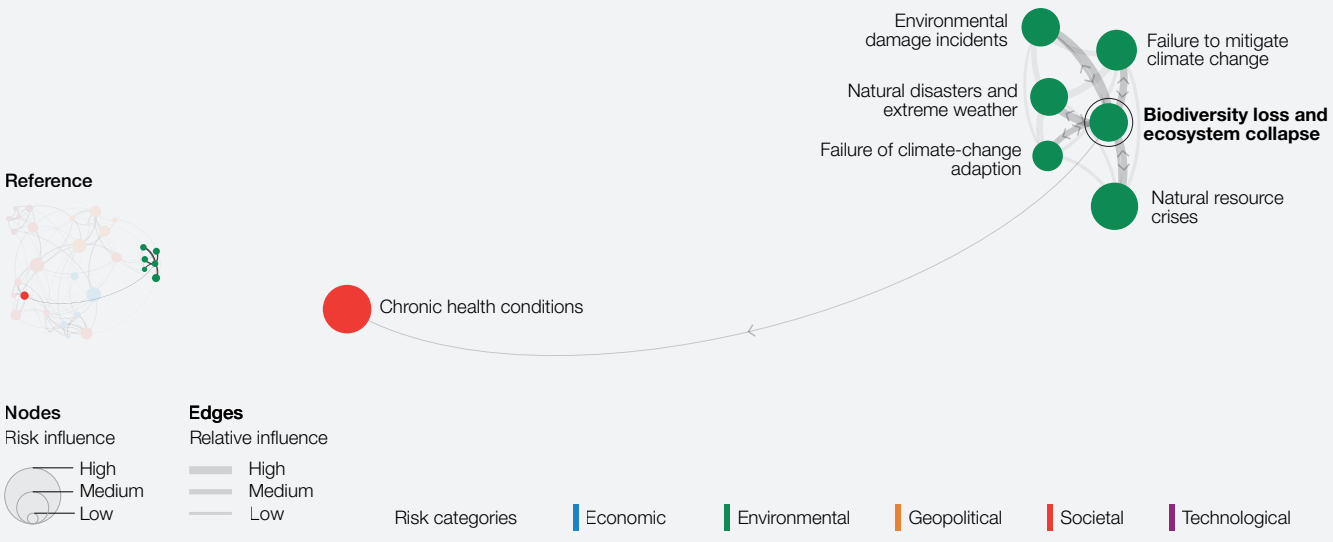
The newly emerging or rapidly accelerating risk clusters identified this year are not intended to be exhaustive. Rather, they aim to provide topic-specific analysis, nudge pre-emptive action and attention, and serve as examples for applying similar analysis to a range of other future risk domains.

2.2 Natural ecosystems: past the point of no return

Biodiversity within and between ecosystems is already declining faster than at any other point during human history.[1] Unlike other environmental risks, **Biodiversity loss and ecosystem collapse** was not seen as pressing of a concern by GRPS respondents over the short term. Yet it accelerates in perceived severity, rising to 4th place over the 10-year time frame (Figure 2.1).

Human interventions have negatively impacted a complex and delicately balanced global natural ecosystem, triggering a chain of reactions. Over the next 10 years, the interplay between biodiversity loss, pollution, natural resource consumption, climate change and socioeconomic drivers will make for a dangerous mix (Figure 2.3). Given that over half of the world's economic output is estimated to be moderately to highly dependent on nature, the collapse of ecosystems will have far-reaching economic and societal consequences. These include increased occurrence of zoonotic diseases, a fall in crop yields and nutritional value, growing water stress exacerbating potentially violent conflict, loss of livelihoods dependent on food systems and nature-based services like pollination, and ever more dramatic floods, sea-level rises and erosion from the degradation of natural flood protection systems like water meadows and coastal mangroves.

FIGURE 2.3 **Compounding environmental crises**



Source

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

Terrestrial and marine ecosystems are facing multiple pressure points due to their undervalued contribution to the global economy as well as overall planetary health. While not the sole drivers, at the heart of this potential catastrophe are key trade-offs and feedback mechanisms emerging from current crises. Without significant policy change or investments, the complex linkages between climate change mitigation, food insecurity and biodiversity degradation will accelerate ecosystem collapse.

Exponentially accelerating nature loss and climate change

Nature loss and climate change are intrinsically interlinked – a failure in one sphere will cascade into the other, and attaining net zero will require mitigatory measures for both levers.[2] If we are unable to limit warming to 1.5°C or even 2°C, the continued impact of natural disasters, temperature and precipitation changes will become the dominant cause of biodiversity loss, in terms of composition and function (Figure 2.4).[3] Heatwaves and droughts are already causing mass mortality events (a single hot day in 2014 killed more than 45,000 flying foxes in Australia), while sea level rises and heavy storms have caused the first extinctions of entire species.[4] Arctic sea-ice, warm-water coral reefs and terrestrial ecosystems have been found most at risk in the near term, followed by forest, kelp and seagrass ecosystems.[5]

The impacts of climate change on ecosystems can further constrain their mitigation effects. Increased severity and frequency of extreme weather events and other natural disasters are already degrading nature-based solutions to climate change, such as wildfires in forests used for carbon offsetting.[7] In addition, a variety of ecosystems are at risk of tipping over into self-perpetuating and irreversible change that will accelerate and compound the impacts of climate change. Continued damage to carbon sinks through deforestation and permafrost thaw, for example, and a decline in carbon storage productivity (soils and the ocean) may turn these ecosystems into "natural" sources of carbon and methane emissions.[8] The impending collapse of the Greenland and West Antarctic ice sheets may contribute to sea-level rise and coastal flooding, while the "die-off" of low-latitude coral reefs, the nurseries of marine life, are sure to impact food supplies and broader marine ecosystems.

Trade-offs between food security and nature conservation

Land-use change remains the most prolific threat to nature, according to many experts.[9] Agriculture and animal farming alone take up more than 35% of Earth's terrestrial surface and are the biggest direct drivers of wildlife decline globally. The ongoing crisis in the affordability and availability of food supplies positions efforts to conserve and restore terrestrial biodiversity at odds with domestic food security, as explored in Chapter 3: Resource Rivalries.

Conservation efforts and nature-based solutions (which can offer biodiversity co-benefits) will struggle to be commercially competitive with intensive, yield-focused agricultural practices, particularly in

FIGURE 2.4

Impacts of climate change on ecosystems

Confidence in attribution to climate change

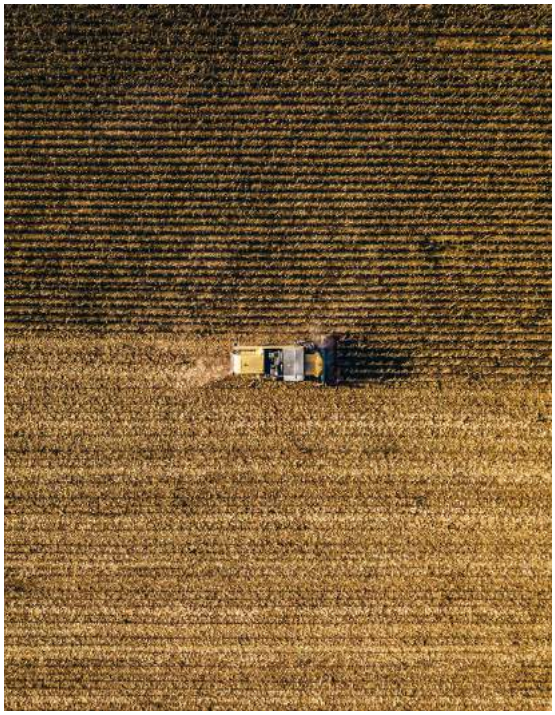
	Changes in ecosystem structure			Species range shifts			Changes in timing (phenology)		
Ecosystems	Terrestrial	Freshwater	Ocean	Terrestrial	Freshwater	Ocean	Terrestrial	Freshwater	Ocean
Global	High	High	High	High	High	High	High	High	High
Africa	High	High	High	High	Lim. evidence	High	Lim. evidence	Low	Low
Asia	High	Medium	High	Low	Medium	Lim. evidence	Low	Low	Medium
Australasia	High	High	High	High	Lim. evidence	High	High	Lim. evidence	Low
Central and South America	High	High	High	High	High	High	Lim. evidence	Lim. evidence	Low
Europe	High	High	High	High	High	High	High	High	High
North America	High	High	High	High	High	High	High	High	High
Small Islands	High	High	High	High	High	High	High	Lim. evidence	Medium
Arctic	High	Medium	High	High	High	High	High	Medium	High
Antarctic	Medium	Lim. evidence	Medium	Medium	Lim. evidence	Medium	Medium	Lim. evidence	Lim. evidence
Mediterrean region	High	Lim. evidence	High	High	Medium	High	High	Lim. evidence	Medium
Tropical forest	High	Lim. evidence	N/A	Medium	Lim. evidence	N/A	Lim. evidence	Lim. evidence	N/A
Mountain regions	High	High	N/A	High	Medium	N/A	High	Low	N/A
Deserts	High	N/A	N/A	High	N/A	N/A	Lim. evidence	N/A	N/A
Biodiversity hotspots	High	Lim. evidence	High	High	Lim. evidence	High	High	Lim. evidence	Not assessed

Source

IPCC, 2022.[6]

densely populated, agrarian nations. State incentives to boost local production and reduce reliance on imports – in a reaction to current geopolitical and supply pressures – could come at the cost of ecosystem preservation. Technology will provide partial solutions in the countries that can afford it. For example, the global vertical farming market has been predicted to grow at a compound annual rate of 26% and hit $34 billion by 2033.[10] These agricultural production techniques increase food output per unit area with a smaller water and biodiversity footprint, but can actually be more carbon-intensive and may have an indirect land footprint that exceeds open-field farming in some regions.[11]

Given a highly uncertain economic outlook, developing and emerging markets may struggle to close the funding gap to increase agricultural productivity. Pressure on biodiversity will likely be further amplified by continued deforestation for agricultural processes, with an associated demand for additional cleared cropland,[12] especially in subtropical and tropical areas with dense biodiversity such as Sub-Saharan Africa and Southeast Asia.[13] Biodiversity and ecosystem preservation could be supported through the expanded use of concessional financing and debt restructuring: 58 developing countries exposed to climate change have almost $500 billion in collective debt reservicing payments due in the next four years.[14] Increased deployment of debt-for-nature swaps, for example, could be targeted towards conservation and restoration. In fact, this type of restructuring is being pursued by Ecuador, Sri Lanka and Cape Verde.[15] However, these mechanisms could contribute to shorter term challenges of food insecurity, rising cost of living and declining government revenue.[16] In addition, indigenous communities can be disproportionately at risk from these activities. "Fortress conservation" can encroach on indigenous land tenure and has previously been linked to forced evictions, even fatalities.[17]



Yet, there is a more existential feedback mechanism to consider: biodiversity contributes to the health and resilience of soil, plants and animals, and its decline puts both food production yields and nutritional value at risk.[18] This could then fuel deforestation, increase food prices, threaten local livelihoods and contribute to diet-related diseases and mortality (explored in **Chapter 2.3: Human health**). It may also lead to **Large-scale involuntary migration**, a new entrant in the Top 10 rankings in the GRPS survey (Figure 2.1) and analysed in last year's Global Risks Report chapter 'Barriers to Migration'.

New battlefronts between ecosystems and "green" energy sources

The transition to clean energy is critical for the mitigation of climate change by reducing the carbon footprint of energy compared to fossil fuels. Yet the rapid expansion of green infrastructure in a quest for energy security may have unintended impacts on domestic and broader ecosystems, as the dependencies on and risks to natural ecosystems of these technologies are, presently, less well understood. Although renewable energy infrastructure can be "nature-positive" – for example, wind farms acting as a "safe haven" for the recovery of marine populations and the seabed – green sources of energy can also cause environmental degradation, such as habitat loss, sound and electromagnetic pollution, introduction of non-indigenous species and changes to animal migratory patterns.[19]

Renewable energy technologies are also reliant on non-renewable, abiotic natural capital (metals and minerals, as explored in **Chapter 3: Resource Rivalries**). These are sourced from the geosphere, which, together with the hydrosphere, provide the physical habitat for the global ecosystem. These resources are often concentrated in countries with poor governance of nascent, artisanal and illicit mining, or less stringent environmental and social regulations – increasing the likelihood of more widespread destruction of nature and devastation of local communities and indigenous groups. Mining of rare earth elements in Myanmar and the Democratic Republic of the Congo have already caused widespread deforestation, habitat destruction of endangered species and water pollution, and have been linked to human rights abuses and financing of militia groups.[20] While offering the possibility of socioeconomic development and diversification, the expansion of green metals mining in nature-rich or ecologically sensitive areas, such as the Plurinational State of Bolivia and Greenland, has the potential to destabilize water tables and disrupt ecosystems.[21] The pressure to push ahead with deep-sea mining also entails significant risks, due to the unknown impacts to critical oceanic ecosystems.[22]

It is clear that both the scale and pace needed to transition to a green economy require new technologies. However, some of these technologies

risk impacting natural ecosystems in new ways, with limited opportunity to "field-test" results. The urgency of climate change mitigation is incentivizing the deployment of new technologies, potentially with less stringent testing and protocols. Carbon removal technologies will be particularly essential to achieve a net zero world if anthropogenic emissions do not sufficiently decline, or emissions from natural resources continue to increase. Gene editing to enhance natural carbon capture productivity, geoengineering for carbon removal,[23] and solar radiation management all pose major future risks – from enhanced water stress, nutrient "robbing" and redistribution of diseases to termination shock and the weaponization of stratospheric aerosol technologies.[24] Unintended consequences relating to technological "edits" to the atmosphere, biosphere, hydrosphere and geosphere can occur at speed, raising the risk of accidental extinction events.

Acting today

Averting tipping points requires a combination of conservation efforts, interventions to transform the food system, accelerated and nature-positive climate mitigation strategies, and changes to consumption and production patterns. This involves realigning incentives and upgrading governance structures, fueled by better data and tools to capture the interdependencies of food, climate, energy and ecosystems.

There are already initial signs of shifts in this direction. The increasing visibility and influence of multilateral and market-led initiatives such as the Taskforce for Nature-related Financial Disclosures (TFND) set to launch later this year, are positive developments. The 15th Conference of Parties to the Convention of Biological Diversity (CBD COP15) resulted in the Montreal-Kunming agreement, setting out new global targets for 2030 such as reforming environmentally damaging subsidy systems and restoring 30% of the planet's degraded ecosystems. These significant steps confirm that the global community recognizes that the risks associated with nature loss, food production, energy generation and climate change cannot be fully mitigated in isolation. However, the translation into public- and private-sector action remains to be seen, particularly given limited progress on previous biodiversity – and climate – targets to date.

Although the relationship between climate and nature heightens the likelihood of a series of escalating and potentially irreversible feedback loops, it can equally be leveraged to broaden the impact of risk mitigation activities. Given increasing financial and capacity trade-offs, investment in resilience must focus on solutions that build preparedness for multiple risks. By restoring biodiversity in soils, for example, regenerative agriculture has the potential to store large amounts of carbon.

A focus on biodiversity preservation should drive and prioritize local adaptation and community resilience – and in doing so, contribute to the mitigation of climate change globally. Altered land management practices like afforestation, micro-irrigation and agroforestry are a low-cost way to increase resilience to extreme weather. The protection and restoration of marine biodiversity, such as mangrove systems, can enhance rather than compete with domestic food web productivity and security. It can also support local industries and livelihoods and provide protection from extreme weather. Such activities also produce co-benefits at a global level, such as enhancing carbon sequestration and climate regulation, offering potential revenue streams for developing nations in the form of carbon credits. Similarly, scaling up practices such as biocultural preservation, indigenous community management and integration of traditional knowledge into food production and cultivation can provide dual socioeconomic and environmental benefits.[25]

2.3 Human health: perma-pandemics and chronic capacity challenges

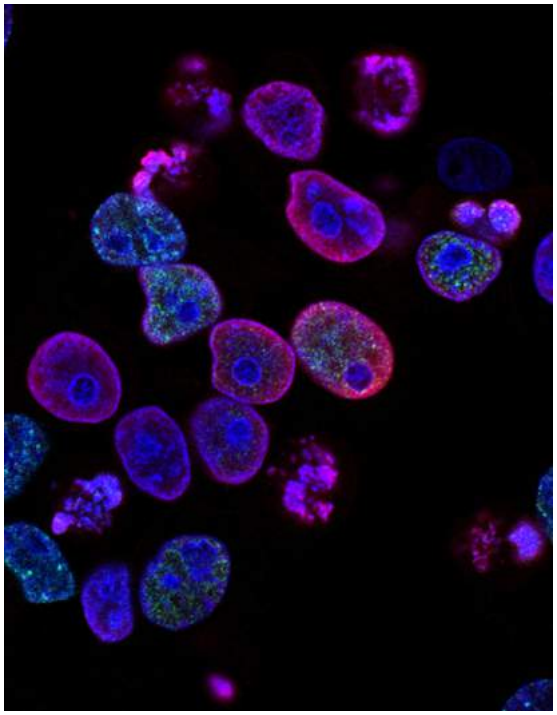
Global public health is under growing pressure and health systems around the world are at risk of becoming unfit for purpose. The COVID-19 pandemic further amplified ever-present spectres and emerging risks to physical and mental health, including antimicrobial resistance (AMR), vaccine hesitancy and climate-driven nutritional and infectious diseases (described in *'False Positive: Health Systems under New Pressures'* in our 2020 edition, published before the pandemic took hold). Given current crises, mental health may also be exacerbated by increasing stressors such as violence, poverty and loneliness.

There is also a rising risk of a "panic-neglect" cycle. As COVID-19 recedes from the headlines, complacency appears to be setting in on preparing for future pandemics and other global health threats. Healthcare systems face worker burnout and continued shortages at a time when fiscal consolidation risks deflecting attention and resources elsewhere. More frequent and widespread infectious disease outbreaks amidst a background of chronic diseases over the next decade risks pushing exhausted healthcare systems to the brink of failure around the world.[26]

Pandemic aftershocks meet silent health crises

Global health outcomes have been weakened by the COVID-19 pandemic, with lingering effects. Early evidence points to a post-COVID-19 condition impacting the quality of life and occupational status of individuals – contributing to work absences and early retirements, tighter labour markets and a decline in economic productivity. The resulting economic hit is estimated to be from roughly $140-600 billion to up to $3.7 trillion in the United States of America, and close to AUD$5 billion per year in Australia if current costs persist, reflecting loss of quality of life, lost earnings and output, and higher spending on medical care.[27] The pandemic also diverted resources from other diseases such as cancer screening and tuberculosis,[28] and immunization campaigns were put on hold. Vaccination rates for polio fell to the lowest level in 14 years, perhaps ushering in the return of the wild strain to Africa in 2021.[29]

Beyond the lingering impact of COVID-19, the potential stresses imposed by climate change and nature loss on health are likely to grow, ranging from air pollution and heightened exposure to wet heatwave days (which increase heat stress on humans), to disrupted access to safe water and sanitation and increases in waterborne diseases due to floods. Urbanization, land use change

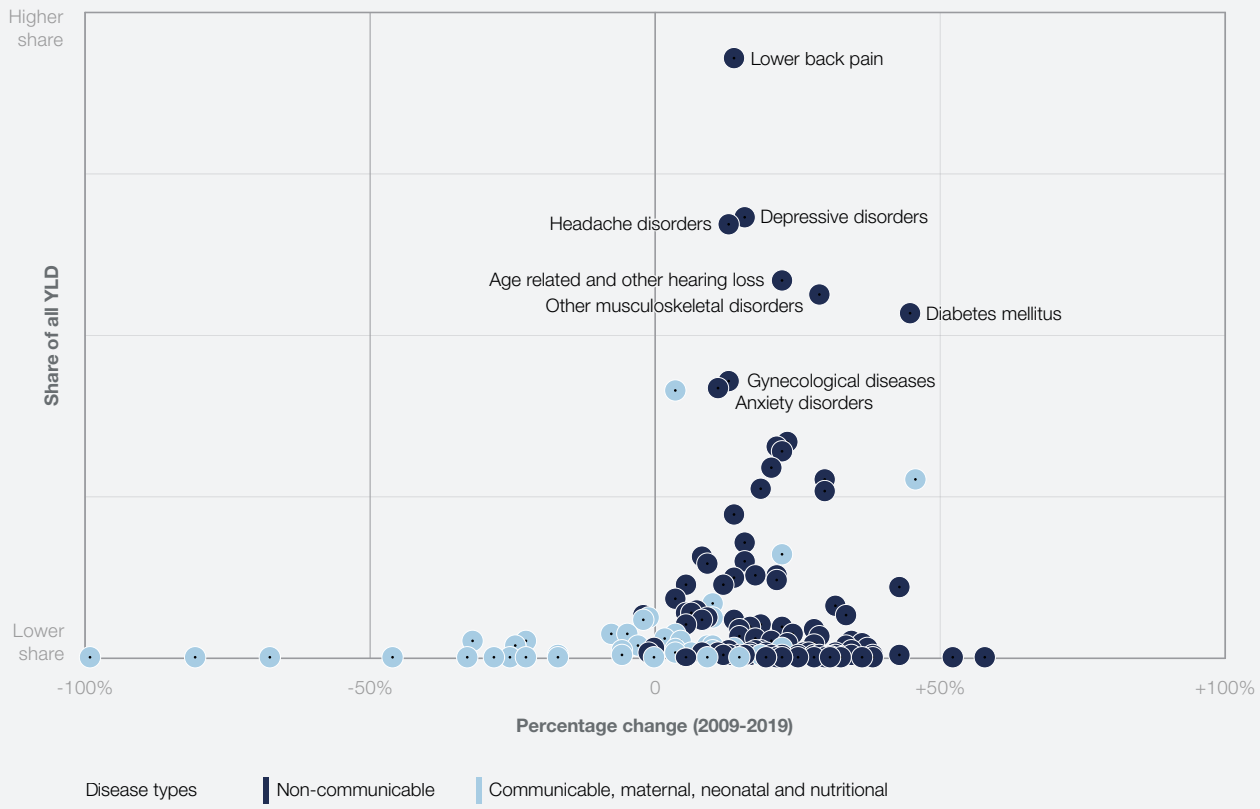


and nature loss are heightening the emergence and re-emergence of diseases, including invasive fungal diseases, while global warming is increasing the number of months suitable for transmission of existing diseases such as malaria and dengue fever.[30] Climate change is also expected to exacerbate malnutrition as food insecurity grows. Increased levels of carbon dioxide in the atmosphere can result in nutrient deficiencies in plants, and even accelerated uptake of heavy minerals, which have been linked to cancer, diabetes, heart disease and impaired growth.[31]

Expanding sources of disease will combine with persistent disease burdens to entrench a growing health burden in developing and advanced economies alike. There has been a noticeable shift towards non-communicable diseases over the past decade (Figure 2.5), linked to population growth and ageing alongside lagging coverage by health systems. A key implication is the resulting loss of functional health and rise in disabilities, rather than deaths. Medical advances have made it possible for people to live with multiple co-morbidities (such as diabetes, hypertension, heart disease and depression), but these remain complex and expensive to manage. People are living more years in poor health, and we may soon face a more sustained reversal in life expectancy gains beyond the influence of the pandemic.

Notably, although some disease burdens are growing, all health-related risks fell into roughly the bottom third of the GRPS' global risk rankings over both the two- and 10-year period (Figure 2.2). **"Infectious diseases"** plummeted in risk

FIGURE 2.5 **Loss of functional health**



Source
IHME, 2020.[32]

Note
Annual percentage change to years lived with disability (YLD) from 2009 to 2019.

perceptions, from the sixth-most severe risk on a global scale over the next 10 years in last year's Global Risks Report, to 27th place this year. Further, female respondents to the GRPS consistently assessed health-related risks as more severe than their male counterparts. **Chronic diseases and health conditions** and **Severe mental health deterioration** were ranked 13th and 14th by female respondents, with the related **Collapse or lack of public infrastructure and services** in 19th place, compared to rankings of 23rd, 28th and 27th, respectively, by male respondents.

The decline in risk perception is likely driven by pandemic fatigue and the human tendency to focus on fresh, recent and more visible crises. Yet "silent" crises with cumulative impacts can quickly outpace a one-off, catastrophic event. The COVID-19 pandemic has been linked to nearly 6.6 million deaths globally at the time of writing noting that this figure will likely increase with China's lifting of stringent COVID-19 restrictions after three years.[33] In comparison, an estimated 4.95 million deaths were associated with drug-resistant bacteria (AMR) in 2019 alone, with roughly 1.27 million of these considered directly attributable to AMR.[34] Air pollution was estimated to be responsible for a further 9 million deaths in the same year, corresponding to one in six deaths worldwide.[35] While there are limitations to the collection and analysis of data in all three cases, and COVID-19's outcomes may have been far worse in the absence of rapid action, the comparisons highlight the potential of silent crises to create compounding, runaway damage.

Chronic capacity challenges

As disease burden grows and innovation widens the scope of what medicine can treat, inexorable demand for healthcare is running up against chronic capacity challenges. The COVID-19 pandemic disrupted the delivery of prevention and treatment services, resulting in a backlog for hospital and community care that may prove challenging to clear. More than 7 million people in the United Kingdom of Great Britain (more than one-tenth of the population) were waiting for non-emergency medical care in September 2022, while 10% of job posts remained vacant as the National Health Service struggled to retain staff.[36]

Health systems are likely to face intensifying financial pressure – with budget cuts or revenue loss as well as higher costs of goods and labour – as inflation persists, economies grow slowly or stagnate, and governments reprioritize expenditure to address more salient social and security concerns. Even before the COVID-19 pandemic aggravated staff shortages, the World Health Organization (WHO)

predicted a global shortfall of 15 million health workers by 2030.[37] Some health systems are seeing productivity decline as experienced employees leave due to exhaustion, burnout and concerns about staff and patient safety. Skills and infrastructure gaps undermine capacity further as staff become overwhelmed by challenges for which they are not adequately equipped or supported to solve, leading to more strikes over pay and staffing levels.

Medical inflation is expected to continue to outstrip GDP growth in many countries,[38] and financial pressures on working populations will intensify as dependency ratios rise. The United States of America already spends nearly 20% of its GDP on healthcare, even before its largest population cohort (the "Baby Boomers") has retired.[39] Governments, insurers or employers may respond by limiting coverage and shifting a greater proportion of the costs to individuals, reducing access and affordability of healthcare. Two-tier health systems, already prevalent in many advanced and developing economies, may become further entrenched, with a profitable private sector catering to patients with greater ability and willingness to pay, while poorer people remain reliant on increasingly threadbare public provision.[40]

A persistent mismatch between demand and supply gradually weakens the ability of health systems even in richer countries to cope and adapt, eroding care quality and shrinking healthcare access. Fragile health systems could quickly become overwhelmed by one or more catastrophic events. A large-scale cyberattack, war, extreme weather event or new or re-emergent infectious diseases could trigger health system collapse within one or more regions, resulting in a sudden surge of deaths from all causes. More gradual deterioration of health systems would also weaken overall health, widen health disparities, slow economic activity and undermine political and societal stability as a safety net disintegrates.

Socioeconomic syndemics

Combined with fragile health systems, there is a risk of a rise in "syndemics": a set of concurrent, mutually enhancing health problems that impact the overall health status of a population, within the context of political, structural or social environments.[41] The concept has long been applied to HIV research. More recently, it has been considered in the context of the COVID-19 pandemic and chronic disease burdens, which have resulted in higher morbidity and mortality rates among socially disadvantaged communities.[42] A similar pattern could now play out at a systemic level: deteriorating social, economic and political contexts will contribute to endemic diseases and lead to poorer health outcomes for select communities.

Inequality and conflicts in societal values could precipitate regulatory changes regarding education, employment, housing, gender, immigration and the

environment, some of which could have unintended compounding effects on specific diseases. For example, a lack of LGBTQ protection has been linked to poorer health outcomes relating to HIV, due to the resulting avoidance of healthcare.[43] Current crises might further derail health outcomes and equity. Chronic financial stress and rationing of essentials – such as having to choose between heating and eating – will have long-term physical and psychological impacts even on healthy people.[44] Lower confidence in public institutions has already resulted in less effective pandemic responses, and growing misinformation and disinformation could further increase vaccine hesitancy, which has already led to the re-emergence of locally-eradicated diseases such as polio.[45] These patterns may be reinforced as there is a clear rise in the erosion of social cohesion (see **Chapter 1.2: Societal polarisation**).

Geopolitical tensions could limit the co-development and sharing of new scientific breakthroughs, limiting respective abilities to address ever-present risks such as AMR as well as new ones. Export restrictions applied to medicine and medical products could cause a humanitarian crisis and spiral into controls over even more existential resources – most notably food – with compounding effects on health. Disparities in healthcare access may also worsen across and within countries as a result of economic inequality. For example, while advances such as in personalized, genomic and proteomic medicine can vastly improve health outcomes for chronic and degenerative conditions, they come with hefty price tags that may constrain widespread use; gene therapies can cost upwards of $2 million.[46] A rise in state instability and conflict would further limit the delivery of aid, disrupt vaccination programmes and put health workers at risk. This was evident in the case of polio vaccination workers killed in Afghanistan last year.[47]

Acting today

It is essential that we embed hard-earned lessons in preparedness for the next iteration of health crises. A continued focus on public health policy and interventions can have outsized impacts at national and regional levels, as a great deal of chronic disease burden is, in fact, preventable.[48] Realizing public health gains will require governments and business to promote the conditions that underpin wellbeing and encourage healthy lifestyles, such as good food, clean air, secure housing and social cohesion.

Public health agencies, healthcare providers and funders can play a key role by improving interactions and coordination between different parts of the health system to share information, expand capacity and improve overall population health. Planning for the long run will help governments better assess and manage health system risks, as will aligning policies that directly or indirectly affect health (such as agricultural policies that drive antibiotic use and increase AMR risk). Governments and businesses will also need to add a health dimension to crisis preparedness plans to withstand emerging risks.

In parallel, national and global health institutions and systems need to be strengthened in the face of multiple challenges. Innovation in care delivery, staffing and funding models are required for health systems to provide disease prevention, early detection and complex care cost-effectively for an increasingly frail and chronically ill population. There is also potential for healthcare to reap the advantages of technological advances and digital transformation that other sectors have embraced, such as augmenting capacity with technology and combining virtual and in-person care to reduce costs.

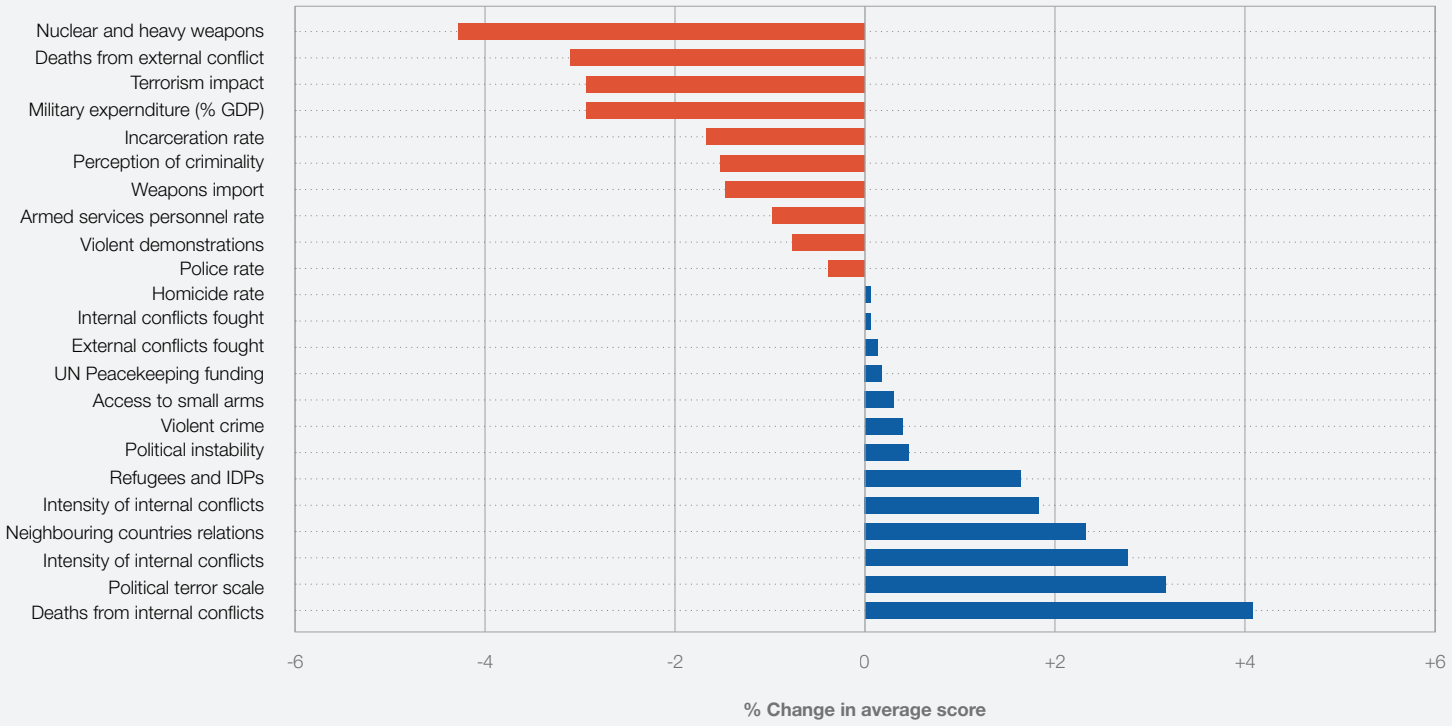
Opportunities to strengthen public health exist across countries, too, especially in the areas of pandemic surveillance and preparedness, scientific collaboration, and in mitigating global threat drivers such as climate change and AMR. It is essential that health nationalism is avoided in the face of the geopolitical and security considerations already underway today. Continued collaboration and information flows in the field of healthcare, pharmaceuticals and life sciences underpin efforts to ensure that our understanding and capability can continue to effectively address emerging health risks.

2.4 Human security: new weapons, new conflicts

GRPS results suggest that economic and information warfare will continue to pose a more severe threat than hot conflict over the next decade. **Interstate conflict** and **Use of weapons of mass destruction** were ranked lower in anticipated severity compared to **"Geoeconomic confrontation"** and **Misinformation and disinformation** over the 10-year time frame (Figure 2.2).

Past decades were defined by the non-deployment of humanity's most powerful weapons and no direct clashes between global powers. Prior to 2022, militarization had fallen in all regions, with recent data showing an overall decline in nearly 70% of the countries covered by the Global Peace Index 2022 over the past 15 years.[49] Even between 2021 and 2022, the holdings of nuclear and heavy weapons, military expenditure, weapons imports and armed services personnel rates declined (Figure 2.6). Yet the world still became less peaceful, with more violent demonstrations, external conflict and intense internal conflicts during the same fifteen-year period.[50]

FIGURE 2.6 **Pre-2022 trends in militarization and conflict**



Source

IEP, 2022.

Note

Percentage change in global score by indicator, 2021-2022.

A reversal of the trend towards demilitarization will heighten the risk of conflict, on a potentially more destructive scale. Growing mistrust and suspicion between global and regional powers has already led to the reprioritization of military expenditure and stagnation of non-proliferation mechanisms. The diffusion of economic, technological and, therefore, military power to multiple countries and actors is driving the latest iteration of a global arms race. Unlike previous power dynamics that were shaped by weapons of deterrence, the next decade could be defined by devastation from precision attacks and expanded conflicts.

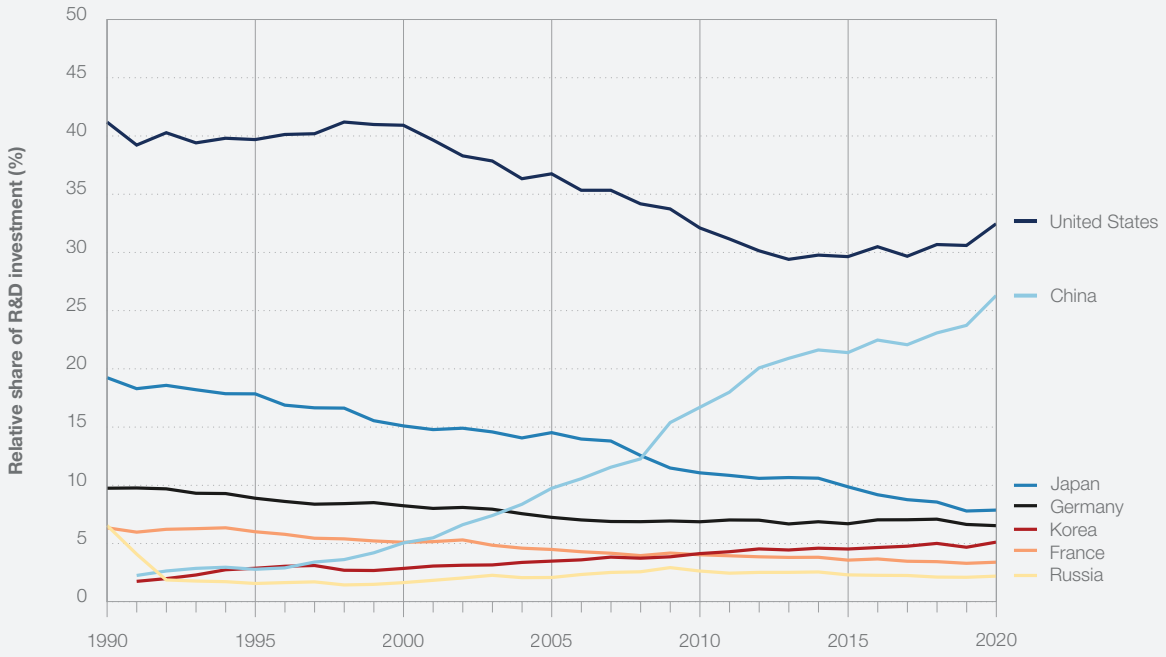
New military architects and architecture

The 2010s saw global military expenditure growing in line with GDP and government budgets (5% of expenditure, down from 12% in the early 1990s).[51] However, today, global military expenditure as proportion of GDP is rising, driven predominantly by higher spending by the United States of America, the Islamic Republic of Iran, Russia, India, China and Saudi Arabia. Japan announced a proposal to double its defence budget to $105 billion (2% of its GDP) in May last year, and Qatar has increased spending by 434% since 2010 in response to blockades.[52] The war in Ukraine – as well as lukewarm condemnation by a few key geopolitical players – has driven recent pledges by NATO members to meet or exceed the target of 2% of GDP, which, if met by all members, would represent an increase in total budget by 7% in real terms.[53] Widespread defence spending, particularly on research and development, could deepen insecurity and promote a race between global and regional powers towards more advanced weaponry.[54]

The private sector is set to increasingly drive the development of military technologies, yielding advancements in semiconductor manufacturing, AI, quantum computing, biotechnology and even nuclear fusion, among other technologies.[55] Many of these are general purpose in nature with civilian applications, but are also a force multiplier of military power, enhancing the capabilities of autonomous weapons, cyberwarfare and defensive capabilities. Emerging technologies will be increasingly subject to state-imposed limits to cross-border flows of talent, IP, data and underlying technologies (such as extreme ultraviolet lithography equipment) and resources (such as critical metals and minerals), to constrain the comparative rise of foreign rivals. Enhanced focus and investment will drive innovations – global research and development expenditure hit 2.63% in 2021, the highest in decades.[56] There are sure to be multiple architects (Figure 2.7), with parallel innovations and interoperable ecosystems that will not only undermine efficiencies and duplicate efforts – even prior to the tightening of market conditions, technological fragmentation was estimated to result in losses of up to 5% GDP for many economies[57] – but may also increase risk.

Military-driven innovations in relevant fields will

FIGURE 2.7 **Diffuse research and development**



Source

Congressional Research Service, 2022.[58]

Note

Share of Global R&D of selected economies, 2000-2020. Global R&D includes the expenditures of the OECD countries, Argentina, China, Romaina, Russia, Singapore, South Africa and Taiwan, China. Share computed in Purchasing Power Parity terms.

have knock-on benefits for economic productivity and societal resilience, including personalized and preventative medicine, climate modelling and material science development. The influence of blocs will grow, closely tying together alliances across security, investment, trade, innovation, talent and standards. For example, Australia, Japan, South Korea and New Zealand were recently invited to participate at a NATO summit for the first time.[59] As developing economies seek to enhance their security in the new military architecture, they will be pulled deeper into the wider economic and military expansion of larger powers.[60] However, the Global South also risks being priced out of security and broader technological advancements. For example, the diffusion of dual-use technologies may be constrained or subject to high royalties, widening global inequality.

Next-generation technologies and multi-domain conflicts

New technologies will change the nature of the threat to national and international security, with a rise in multi-domain conflicts that blur the definition of conventional warfare. "Future battlefields" and methods of confrontation are expanding, encompassing the land, sea, air, cyberspace and outer space (explored in the Crowding and Competition in Space Chapter in last year's Global Risks Report).[61] Anti-satellite and hypersonic weapon capabilities have already been demonstrated by some states.[62] Directed Energy Weapons are expected to make significant progress over the next decade, with the potential to disable satellites, electronics, communications and positioning systems, and some of these weapons may be more cost-effective than traditional munitions.[63] Quantum computing may be harnessed to identify new materials for use in stealth technologies, and cyber and information warfare will be deployed to target vulnerabilities in increasingly sophisticated military technologies, which could range from disinformation campaigns to hacking hardware in nuclear defence systems.[64]

Importantly, these technologies are emerging in parallel – with the potential for simultaneous and compounding impacts on global security.[65] The testing and demonstration of enhanced capabilities could destabilize geopolitical relationships and accelerate an arms race, even in the absence of triggering conventional or nuclear strikes. This race will also slow the development of and adherence to norms, standards and safety protocols governing the development and use of these technologies, leaving fundamental questions unanswered – such as how to pursue fields like quantum computing, without simultaneously destabilizing the world's encryption systems and accelerating a global arms race.[66] As a result, self-regulation by the private sector will likely rise, as will consumer campaigning against military applications of technologies, such as the "Stop Killer Robots" coalition.

While social and global norms constraining the use

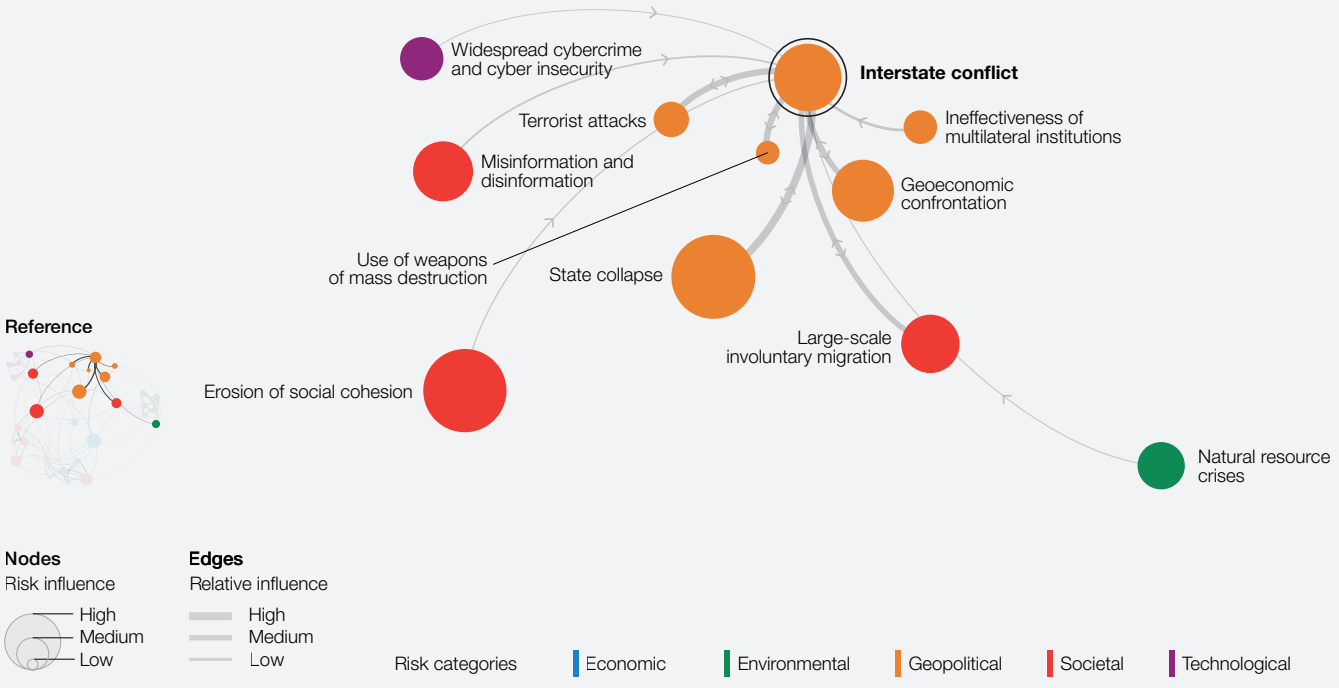
of nuclear weaponry remain high, the unconstrained pursuit of lower-yield weaponry and stronger defensive military technologies could undermine the perceived security provided by nuclear weapons, putting in jeopardy a delicate strategic balance. Emerging technologies heighten the actual or perceived vulnerability of countries to attack, including nuclear-armed ones.[67] Advanced sensing technologies, particularly once enabled by quantum computing, could theoretically expose second-strike capabilities (mobile nuclear weapons) to real-time targeting and elimination.[68] The potential for lower-yield, more targeted nuclear weaponry has already brought into question the viability of the current threshold of activation for the "nuclear umbrella" of the United States of America. An escalating arms race may cause countries to roll back the no-first-use principle to enhance deterrence.

Together, these new technologies are escalating rhetoric and the pressure on existing governance mechanisms. This could lead to an increase in the global inventory of nuclear warheads for the first time since the Cold War,[69] raising the risk of accidental, miscalculated or deliberate clashes, with devastating results. Nuclear-armed countries continue to modernize arsenals and develop new types of delivery systems; late last year, the United States of America unveiled its first new nuclear-capable strategic bomber in more than three decades. The Treaty on the Prohibition of Nuclear Weapons, which entered into force in early 2021, continues to be opposed by all nine declared nuclear-armed states.[70] North Korea conducted the largest number of annual ballistic missiles launches last year, and there is escalating rhetoric in the context of the war in Ukraine.[71] The possibility of nuclear-sharing arrangements or even potential acquisition in limited circumstances has been raised in some non-nuclear states, such as Japan and the South Korea.[72] Negotiations on the revival of the Joint Comprehensive Plan of Action (JCPOA) have also stalled.[73] Although both the United States of America and Russia have continued to adhere to the New START Treaty, and disarmament technically continues, the usable military stockpiles of both countries - accounting for 90% of all nuclear weapons - remained stable in 2021.[74]

A rise in rogue actors

Proliferation of more destructive and new-tech military weaponry may enable newer forms of asymmetric warfare, allowing smaller powers and individuals to have a greater impact at a national and global level. Financial, information and intelligence thresholds are lower in many dual-use technologies. For example, advances in biotechnologies could enable the creation of pathogens by small groups or even individuals.[75] Low-cost drones utilizing swarm intelligence can be used to attack high-value units, including bases and fuel tanks.[76] The most recent available data suggests a consolidation of arms exports, with North America and Europe accounting for 87% of all arms exports from 2017-2021, alongside an accompanying decline from China and

FIGURE 2.8 **Key drivers of interstate conflict**



Source

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

Russia.[77] However, any future diffusion of market share will increase the likelihood of advanced military systems being shared with more adversaries, across a broader geographic area.[78]

The lower cost and potential spread of conventional or chemical, biological, or nuclear weaponry to rogue actors will further erode the government's "monopoly on violence". This can increase the vulnerability of states and fuel migration, corruption and violence that can spill over borders.[79] Drones have already been used by non-state actors in Syria, Libya and Yemen, and both military and civilian drones have been used by formal security forces, paramilitary groups and non-combatants in Ukraine.[80] Despite limited transparency and accountability, there has also been a growing reliance on private militia and security services to protect assets and infrastructure, including vessels, commercial shipping, offshore platforms and ports. The use of these proxy, hybrid and private armies in multiple security contexts has been linked to violations of human rights and international law in conflict, post-conflict and peacetime settings.[81]

The distinction between civilian and military spheres is blurring further: these technologies expose populations to direct domestic threats, often with the objective of shattering societal functioning. This includes the physical and virtual disruption of critical resources and services at both a local and national level, such as agriculture and water, financial systems, public security, transport, energy, and domestic, space-based and undersea communication infrastructure. **"Breakdown of critical information infrastructure"** was ranked tied 16th by GRPS respondents in terms of perceived severity over the next 10 years, but its relationship with **Interstate conflict** was not highlighted (Figure 2.8). Concerted attempts at cyberattacks against Ukraine were made last year, including against communication services, financial websites and electricity grids. Data theft and deep-fake technology also sought to prevent access to services, targeting flows of refugees, medicines, food and relief supplies.[82] The critical functioning of whole economies will only become more exposed with breakthroughs in dual-use technologies, most notably quantum computing.

Acting today

An international environment that is at greater risk of conflict and the less transparent attribution of unconventional engagement may weaken the shared moral, reputational and political costs that partially act as a deterrent to the deployment of destructive weaponry, including nuclear engagement. Undoubtedly, the strengthening of arms control, disarmament and non-proliferation agreements and norms, covering both existing and newer forms of military technologies, are essential to provide transparency. This can also reduce the risk of unintended escalation, for example by limiting the spillover of conflicts across domains, such as a cyberattack on critical infrastructure escalating into a targeted destructive exchange with lethal autonomous weapons.[83] Establishing norms will be essential to ensuring the right balance is struck so that technological innovation can continue to be harnessed to improve socioeconomic outcomes for humanity.

However, achieving effective arms control will be even more challenging than in the past. It will require engagement with a broader range of actors – including academic researchers and the private sector – given the dual-usages of many of these technologies. Developments are quickly outpacing global governance processes. An escalating arms race will further hinder collaboration, but the regulation of new weapons technologies to control proliferation and usage can only be achieved through transnational cooperation. The first step should include greater recognition by global powers of the strategically beneficial value to agreements on key arms control issues. In the longer term, new strategies for global governance that can adapt to this new security context must be explored to assuage the concerns of nations and avoid a spiral of instability and accidental or intentional destruction.

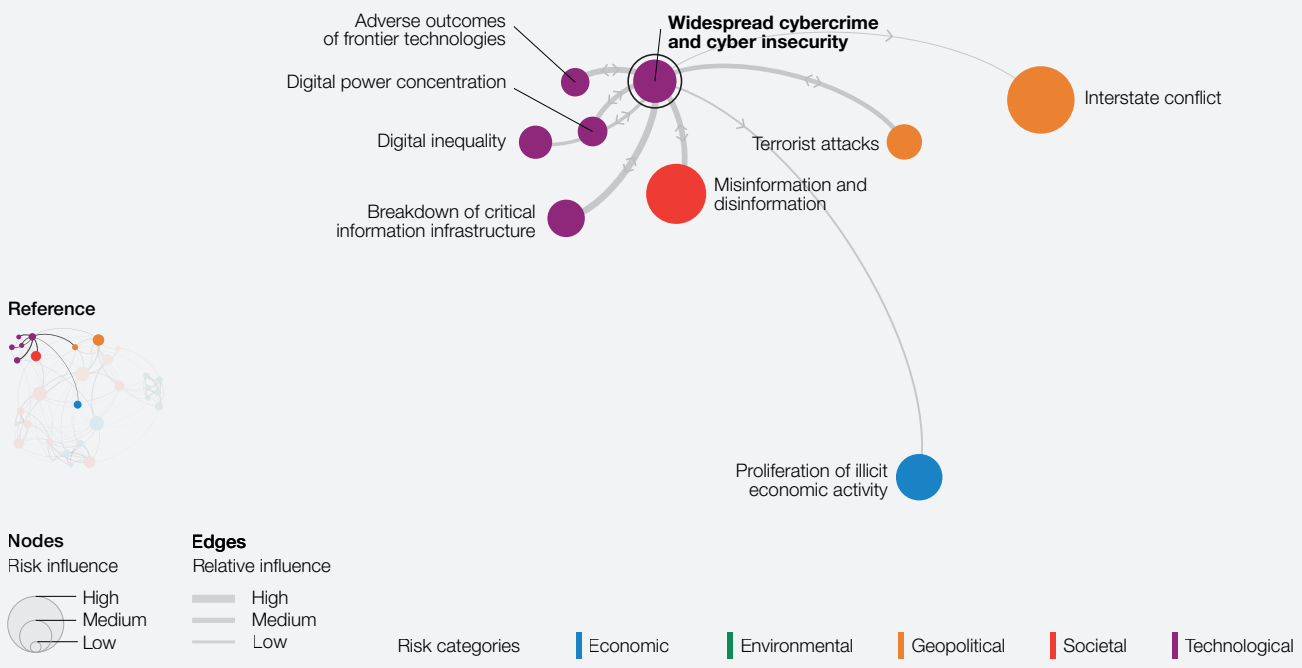
2.5 Digital rights: privacy in peril

Digital tools - increasingly sophisticated AI applications, interoperable edge computing and Internet of Things (IOT) devices, autonomous technologies - underpin the functioning of cities and critical infrastructure today and will play a key role in developing resilient solutions for tomorrow's crises. Yet these developments also give rise to new challenges for states trying to manage the existing physical world and this rapidly expanding digital domain.

Based on GRPS results, **"Widespread cybercrime and cyber insecurity"** is a new entrant into the top 10 rankings of the most severe risks over the next decade. As highlighted in last year's Global Risks Report chapter 'Digital Dependencies and Cyber Vulnerabilities', malicious activity in cyberspace is growing, with more aggressive and sophisticated attacks taking advantage of more widespread exposure. It was seen as a persistent threat by GRPS respondents as well as a strong driver of other risks (Figure 2.9).

The proliferation of data-collecting devices and data-dependent AI technologies could open pathways to new forms of control over individual autonomy. Individuals are increasingly exposed to the misuse of personal data by the public and private sector alike,

FIGURE 2.9 **Risk interconnections: cyber insecurity**



Source

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

ranging from discrimination of vulnerable populations and social control to potentially bioweaponry.[84]

Not all threats to the digital autonomy and sovereignty of individuals are malicious in nature. Larger data sets and more sophisticated analysis also heighten the risk of the misuse of personal information through legitimate legal mechanisms, weakening the human right to privacy,[85] even in democratic and strongly regulated regimes. Legal incursions on privacy can be motivated by public safety considerations, crime prevention and response, economic development and better health outcomes. The privacy of personal and sensitive data is coming under increasing pressure by national security concerns, combining the protection of societies and states and the desire to gain a competitive technological and economic advantage.

Commercialized privacy

The right to privacy as it applies to information about individuals incorporates two key elements: the right not to be observed and the right to control the flow of information when observed.[86] As more data is collected and the power of emerging technologies increases over the next decade, individuals will be targeted and monitored by the public and private sector to an unprecedented degree, often without adequate anonymity or consent.[87]

Surveillance technologies are becoming increasingly sophisticated through new technologies and techniques for gathering and analyzing data. The oft-cited examples are biometric identification technologies. In recognition of the potential risks posed to privacy and the freedom of movement, some companies have self-regulated the sale of facial recognition to law enforcement, and the use of this technology in public spaces faces an upcoming ban in the EU.[88] Concerns also extend to the use of biometric technologies to analyze emotions. Other forms of monitoring are already becoming commonplace. Automated AI-based tools such as chatbots collect a wide amount of personal data to function effectively. The mass move to home working during the pandemic has led to tracking of workers through cameras, keystroke monitoring, productivity software and audio recordings – practices which are permitted under data-protection legislation in certain circumstances, but which collect deeper and more sensitive data than previous mechanisms.[89]

More insidiously, the spread of networked data is increasing surveillance potential by a growing number of both public- and private-sector actors, despite stringent regulatory protection.[90] As our lives become increasingly digitalized over the next decade, our "everyday experience" will be recorded and commodified through internet-enabled devices, more intelligent infrastructure and "smart" cities – a passive, pervasive and persistent form of networked observations that are already being used to create targeted profiles.[91] This pattern will only be enhanced by the metaverse, which could collect and track even more sensitive data, including facial

expressions, gait, vital signs, brainwave patterns and vocal inflections.[92]

Individuals have usually consented to the collection of data for the associated beneficial use of the service or product, given the wave of new and stronger data protection policies in many markets.[93] However, as the collection, commercialization and sharing of data grows, consent in one area may reveal far more than intended when aggregated with other data points. This is known as the "mosaic effect", which gives rise to two key privacy risks: re-identification and attribute disclosure.[94] Research suggests that 99.98% of US residents could be correctly re-identified in any data set – including those that are heavily sampled and anonymized – using 15 demographic attributes.[95] Researchers have used this theory to uncover the political preferences of streaming users,[96] match DNA from publicly-available research databases to randomly selected individuals,[97] and link medical billing records from an open data set to individual patients.[98]

In consequential terms, this means that an international organization may share anonymized data with partner governments to support effective and efficient crisis responses. However, when combined with other data sets, it could allow the identification and tracking of vulnerable refugees and displaced persons – or compromise the location of camps and the supply chains of critical goods.[99] Data on race, ethnicity, sexual orientation and immigration status can be legally obtained in some markets and re-identified to varying degrees, enabling civil harassment and abuse. In one such example, the sexual orientation of a priest was obtained through the purchase of smartphone location data and announced by a religious publication.[100]

Data-enabled anocracies

The right to privacy is not absolute; it is traded-off against government surveillance and preventative policing for the purposes of national security. However, the surveillance potential of data has meant that access to sensitive information can increasingly be obtained without due process or transparency.[101] In some cases, data protection laws that require consent effectively waive the legal protections against electronic surveillance of private communications and location data.[102]

In the United States of America, data is aggregated and sold on the open market with limited regulatory restrictions, meaning enforcement agencies can purchase GPS location data without warrants or public disclosure. For example, theoretically, police could use automated licence plate data (obtained by both private- and public-sector organizations) to prosecute out-of-state abortions – leading Google to announce that it would auto-delete location data for users that visit related centres.[103] There is also increasing political and regulatory pressure to weaken encryption mechanisms adopted by private companies, particularly as it relates to terrorist investigations, despite broader implications to the ongoing security of civilians' data.[104]

Potential for misuse will be especially problematic for users residing in countries with poor digital rights records, inadequate regulatory protection frameworks, or authoritarian tendencies. Forms of digital repression to quell politically motivated uprisings, such as the use of spyware to track activist activities, are already driving significant human rights violations in the Middle East.[105] Recent reports have also highlighted potential digital rights violations in Africa stemming from the rapid expansion of biometric programmes that include voter registration, CCTV with facial recognition, mandatory SIM card registration and refugee registration.[106] As more emerging markets look towards progressing their smart city plans, the collection of sensitive citizen data could expose societies to additional peril if poorly governed and protected.[107]

Security concerns posed by sensitive data and its potential abuse are well-recognized by governments. Countries have adopted more widespread data localization policies, tightened regulation of research collaborations, and banned some foreign-owned companies from certain markets, including telecommunications, surveillance equipment and mobile applications, to limit the collection and possession of sensitive data by non-allied states.[108] Yet, less attention is being paid to the potential for overreach and abuse of this data in the name of national security. The slow and legal erosion of the digital sovereignty of individuals can have unintended and far-reaching consequences for social control and the erosion of democracies – including, for example, by compromising freedom of the press.

Growing trade-offs between innovation and security

Data is an important factor of production, and collection and flows are essential to fuel innovation for enhanced economic productivity (including automation), as well as socially beneficial uses.[109] More expansive and innovative applications of AI and other emerging technologies will require cross-industry and public-private data aggregation. The centralization and consolidation of some types of data can lend a competitive advantage to economies, such as through improved health outcomes associated with advances in biotechnology.[110] Yet governments may also increasingly struggle to balance the potential harm of privacy loss against the benefits of more rapid development of emerging technologies.

At the same time, to address the growing concentration of data in the hands of a small number of private-sector companies, governments may increasingly push for open-data policies from both public- and private-sector sources, mirroring recent regulatory moves by the EU around data spaces and marketplaces.[111] Such policies – like the creation of public data trusts for research purposes – will likely affect both domestic companies and industries, as well as allied countries. This may benefit more widespread and diffused innovation, but it will also expand risks as they enable privacy breaches at a much larger scale. Privacy will strongly influence these agreements: the US government recently committed to heightened safeguards for transatlantic data flows, including from US intelligence activities.[112]

However, many of these data sets may still be subject to the threat of re-identification, even with recent developments in privacy-enhancing technologies such as synthetic data, federated learning and differential privacy.[113] Research suggests that sensitive databases and technologies, such as pools of biological data and DNA sequencing, are already vulnerable to attack.[114] Sensitive health data is governed inconsistently and the creation of large pools of personal data are creating lucrative targets for cybercriminals, particularly given the less stable geopolitical environment and limited norms currently governing cyberwarfare. The potential consequences of the large-scale theft of biometric or genomic information are largely unknown but may allow for targeted bioweaponry.

Acting today

At a national level, a patchwork of fragmented data policy regimes at local or state levels raises the risk of accidental and intentional abuses of data in a manner that was not considered by the individual's original consent. Harmonizing policies at a national

level will enable more effective, less complicated cross-border data-sharing mechanisms to power innovation while still ensuring adequate protection for individuals.

Developing a more globally consistent taxonomy, data standards, and legal definition of personal and sensitive information is a key enabler. These frameworks should recognize that sensitivity can rise from data-driven inferences that are enabled by large data sets, the proliferation of online social networks, and the blurring of personal and industrial data in the roll-out of the IOT and implementation of "smarter" cities.[115] For example, one company was recently fined under the EU's GDPR (General Data Protection Regulation) for targeted advertising that inferred a medical condition (deemed as a special category of data) on the basis of purchase history.[116]

Historically severe fines for data loss are also helping change the cost-benefit assessment around investment in cybersecurity measures, but questions remain around the individual rights to action, damage and compensation in cases of breach.[117] It will be incumbent on organizations to consider the ethics of data collection and usage to minimize reputational considerations beyond regulatory compliance. In addition, spurred by both increased cyberattacks and tighter data laws, the voluntary disposal and destruction of personal data may become a stronger priority – with potential environmental co-benefits of minimizing data storage needs. Finally, governments will also need to development emergency capabilities to respond to data breaches and violation of privacy to minimize follow-on repercussions.

2.6 Economic stability: global debt distress

The threat of a sovereign debt crisis has been brewing, with public debt growing as interest rates have fallen. Governments have leveraged cheap money to invest in future growth and help stabilize distressed financial systems, providing massive fiscal support during the pandemic and to shield households and businesses from the current cost-of-living crisis. However, high levels of debt may not be sustainable under tighter economic conditions. The rapid and widespread normalization of monetary policies, accompanied by a stronger US dollar and weaker risk sentiment, has already increased debt vulnerabilities that are likely to remain heightened for years.

Stagflation on a global scale, combined with historically high levels of public debt, could have vast consequences.[118] Even with a softer landing, the consequences of debt-trap diplomacy and rockier restructuring raise the risk of debt distress – and even default – spreading to more systemically important markets, paralysing the global economic system. Further, even comparatively orderly fiscal consolidation is likely to impact spending on human capital and development, ultimately threatening the resilience of economies and societies in the face of the next global shock, whatever form it might take.

The rising price of debt

General government gross debt in advanced economies hit 112% of GDP in 2022, compared to roughly 65% of GDP for emerging and developing markets.[119] Yet as identified in **Chapter 1.2, Economic downturn**, some developing and emerging markets are feeling the impacts of tightening monetary policy and deteriorating economic conditions first and most acutely. For example, Ghana recently reached an agreement with the IMF regarding a $3 billion bailout and Zambia is seeking to conclude restructuring of $15 billion in external debt early this year. A broad-based global recession within the year[120] could temper inflation and cap interest rate rises, but there is a higher risk of balance-of-payments crisis in the short-term, alongside a credit crunch over the mid to longer term.[121] Emerging market banks also hold a larger proportion of domestic public debt, with the potential for distress to spread to banks, households and pension funds.[122] Larger emerging markets exhibiting a heightened risk of default include Argentina, Egypt, Ghana, Kenya, Tunisia, Pakistan and Türkiye.[123]

Downside risks loom large, and another global shock could result in deeper and more prolonged economic disorder. Stagflation remains a severe risk for many economies. Current crises, such as the war in Ukraine and lingering impacts of COVID-19, are still impacting basic inputs, including labour, energy and food. Continued tightness in major labour markets

may exacerbate wage inflation – meaning there may need to be a material increase in unemployment to contain consumer inflation. Extended supply-driven inflation could drive more painful interest rate rises, even amidst a slowdown in growth, leading to a harder landing and more widespread debt distress. A more systemically important emerging and developing economy – the likes of Mexico, South Africa and Poland – could face distress in coming years, raising the risk of financial contagion.[124]

As cautioned by the International Monetary Fund (IMF), miscalibration between fiscal and monetary policies could exacerbate this further, and in unexpected markets.[125] Questions around the independence of central banks risk de-anchoring market expectations, and monetary intervention to counteract inflationary fiscal policies will only heighten the risk of longer economic malaise. The United Kingdom of Great Britain's near-crisis in September last year is an example of the potential instability that could arise. The interest payable on the country's public debt is expected to hit £120.4 billion for the financial year ending March 2023, up from £69.9 billion, the highest on record.[126] The Bank of England raised rates from 0.1% in December 2021 to 3.5% in December 2022, yet was forced to intervene with an emergency quantitative easing programme in September to counter the market reaction to the UK government's proposed fiscal stimulus.[127] In the absence of a global shock, the "veto power" of the markets will increasingly limit fiscal expansion, even in advanced economies.[128]

The new geopolitics of debt

For now, the ratio of defaulted versus total global public debt remains very low by historic standards

and far lower than peaks experienced in the 1980s (Figure 1.6). However, this partially reflects the growth in absolute public debt levels. Despite record IMF emergency lending and a $650 billion allocation in special drawing rights,[129] more than 54 countries are currently in need of debt relief, representing less than 3% of the global economy. Yet these countries represent 18% of the global population and account for more than 50% of people living in extreme poverty.[130] Fears of contagion and further capital flight could weaken debt sustainability in a growing number of lower-income countries. The scale of debt defaults will influence the depth of available restructuring, with some creditor countries hesitant to bail out distressed states on sufficiently concessionary terms, due to their own tightening fiscal space and rising domestic needs. There may also be a shift away from overseas development assistance towards loans to continue to support development and wield economic power. This has a lower domestic cost but exacerbates the debt burden on these markets and increases the risk of a larger wave of defaults in the future.

It is not only the scale but the complexity of potential debt restructuring and need for global cooperation that will determine the extent to which defaults can be contained (Figure 2.10). Creditors have expanded to include quasi-sovereign entities and the private sector, such as commodity traders and producers. Although this expansion has provided new avenues of financing, the coordination of relief between international organizations, the "Paris Club" and other state creditors, as well as the private sector will continue to complicate attempts at restructuring. For example, only three countries – Chad, Ethiopia and Zambia – are currently undergoing treatment under the G20 Common Framework for Debt Treatments. All remain unresolved, reflecting challenging geopolitical and economic dynamics as well as a lack of transparency.[131]

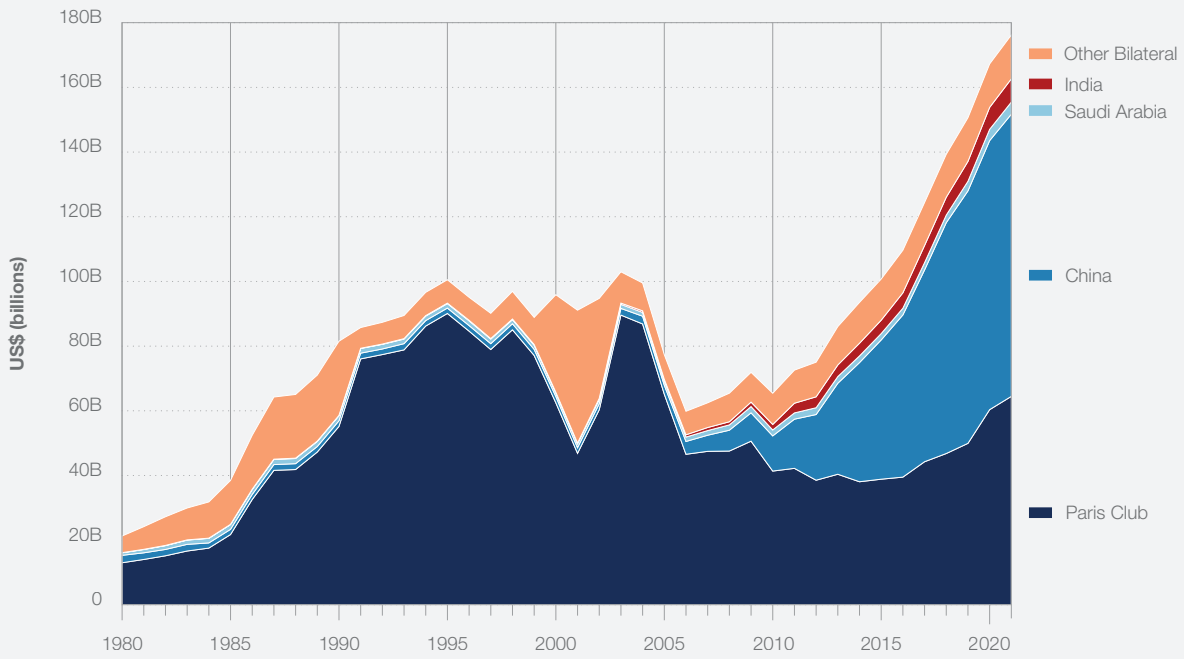
The call for wealthier economies to intervene bilaterally is growing – likely increasing longer-term geopolitical tensions. China has become a large bilateral creditor to many low-income countries and, by some estimates, has become the largest official creditor globally.[132] Energy exporters, such as the Middle East and the United States of America, are also well-placed to step into the gap over the medium-term. Renewed soft power approaches and debt-trap diplomacy could redraw regional and global political lines, driving currency blocs and possibly exacerbating pressures on developing countries as supply chains shift to mirror economic alliances.[133] This trend could also destabilize security dynamics, as debt is leveraged to pull developing economies into the military expansion of larger powers (see Chapter 2.4: Human security).

Yet as the number of sovereign defaults grow, creditor countries and companies could become more exposed to debt contagion, including systemically important banks, pension funds and state creditors. This will interact with other domestic debt vulnerabilities, including the private sector

FIGURE 2.10

The composition of public debt

A. Bilateral general government debt



Source

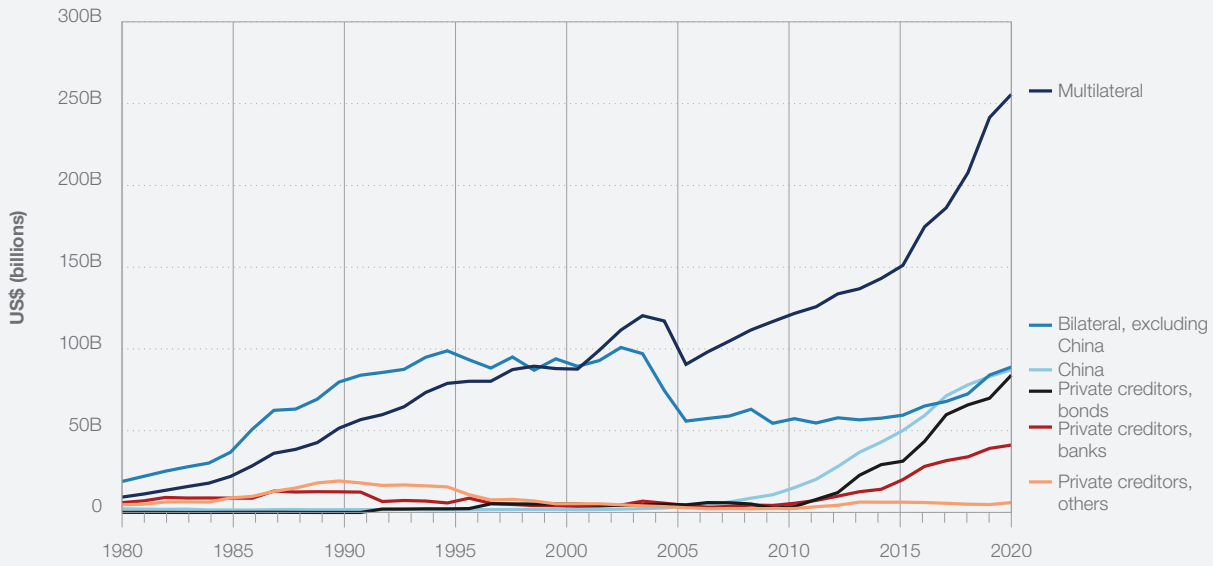
World Bank, International Debt Statistics database.[134]

Note

Bilateral Government Debt for 68 of the 72 Debt Service Suspension Initiative (DSSI) countries by creditor.

FIGURE 2.10 | The composition of public debt

B. General government debt



Source

World Bank, International Debt Statistics database.[134]

Note

General Government Debt for 68 of the 72 Debt Service Suspension Initiative (DSSI) countries by creditor type.

and state-owned entities,[135] to raise aggregate exposure and place pressure on the solvency of even advanced and large emerging economies. A sovereign debt default in a systemically important economy could result in systemic proliferation with a devastating impact on a global scale.

A looming investment shortfall

Even in the absence of a global crisis, the 1980s "lost decade" of development in Latin America and Sub-Saharan Africa provides a very real example of the economic and humanitarian crisis that can arise from a sovereign debt default, including currency free falls, collapses in output, cost-of-living crises and rapid increases in poverty. The 41 countries that defaulted on their debt in the first half of the decade required eight years, on average, to reach their pre-crisis GDP per capita.[136] Debt distress and restructuring will also have an impact on investment. According to GRPS results, the risk of **Debt crises** drops in perceived severity over the longer-term time frame, but the **Collapse or lack of public infrastructure and services** becomes more severe. The ability to finance continued productivity and resilience will be hampered by economic and political dynamics on both a global and national level.

Advanced economies will have more autonomy to invest in future priorities, while developing markets may be more beholden to the demands of the creditor, meaning money could be diverted from the areas of greatest social need, including expenditure in public goods and infrastructure. Beyond the growing financial cost of natural disasters, emerging and developing economies will need to spend a higher proportion of GDP on the green transition and sustainable infrastructure, with knock-on ramifications for other public spending and services.[137] By contrast, within the limits of inflationary pressures, advanced economies can continue to leverage more accessible financing for economic development, such as stronger industrial policy, to underpin the energy transition, widening the divide between countries. Necessary fiscal consolidation in emerging and developing economies may also rely heavily on spending cuts, which could rapidly remove social protection available to low-income and vulnerable populations, increasing poverty and inequality within countries, alongside social and political unrest.

Yet in a structurally different low-growth, low-investment economic era, even advanced economies will need to make trade-offs. Rising unemployment, social unrest and political polarization, and even technologically-driven churn in both blue- and white-collar jobs may influence the prioritization of current expenditure over longer-term capital expenditure, while security considerations may mean there is less fiscal headroom for social and environmental development over the medium term. The potential result is the de-prioritization of investment and slow decay of public infrastructure and services in both developing and advanced markets.[138] Around two-fifths of low- and lower-middle-income countries

cut expenditure on education by an average of 13.5% since 2020, which, despite a minor rebound, fell again in 2022.[139] As referenced in **Chapter 2: Human health**, the lingering economic, educational and healthcare overhang of the pandemic continues to weaken the capacity of public systems that also face compounding pressure from ageing populations in advanced economies, and rapidly expanding populations in some developing markets. This is a slow-burning risk: impacts are subtle, lagged and cumulative in nature, but can be highly corrosive in overall impact to the strength of human capital and development – a critical mitigant to the impact and likelihood of other global risks.

Acting today

In recognition of the risks posed to broader financial stability, timely and deeper debt write-downs could allow a faster return to developmental progress for vulnerable countries and render a future default less likely. The private sector could be incentivized to participate in debt restructuring through a variety of mechanisms, including issuing of new bonds with stronger legal protections, loss reinstatement commitments and value recovery instruments – with the latter enabling private creditors to gain from upside developments in debtor countries in the future, such as GDP-linked instruments in Costa Rica, Argentina, Greece and Ukraine.[140]

As a complementary mechanism to more comprehensive debt restructuring, there may be increased deployment of debt-for-development deals (see **Chapter 2.2: Natural ecosystems**), particularly relating to climate-positive adaptation, to help break the correlation between exposure to climate change and debt vulnerability.[141] However, this should not just be limited to environmental concerns. Social bond issuances have already jumped sevenfold, to $148 billion in 2022, targeting healthcare, education and small and medium-sized enterprises.[142] While debt swaps may not create fiscal space beyond the specific objective, SDG-linked conditionality may enhance the willingness of creditors to consider debt relief, particularly for countries where other forms of fiscal support, including write-downs and conditional grants, may be less likely.[143]

Finally, we are unlikely to be able to double down on debt to the same extent to cushion the next crisis. A more proactive approach to countries that are not yet on the verge of debt distress could help mitigate the systemic risk of sovereign debt contagion. Recognition of simultaneous crises – debt, climate impacts and food security – could be integrated into greater flexibility and more concessional forms of financing available to vulnerable markets. With particular respect to the climate agenda, there is a growing expectation that packages will include grants, rather than rely solely on loans that add to overall debt burdens.[144] Bilateral and multilateral underwriting of risk could also enable much-needed flows of private capital, while support for longer-term projects that can help crowd-in private capital, such as the IMF's Resilience and Sustainability Trust, is also critical.[145]

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3

Resource Rivalries: Four Emerging Futures

3.1 Anticipating "polycrises"

Chapter one and Chapter two highlighted newly emerging and rapidly accelerating risks over the current, two- and 10-year time frame to provide analysis on risks currently unfolding or those that may become the next global shock. However, these present and future risks can also interact with each other to form a "polycrisis" – a cluster of related global risks with compounding effects, such that the overall impact exceeds the sum of each part.[1]

Scenario thinking can be a useful tool to enable better anticipation of polycrises, as key drivers can interact in unanticipated ways and lead to unexpected consequences. Bearing this in mind, this chapter explores how connections between the emerging risks outlined in previous sections may evolve by 2030. This year, we explore **Resource Rivalries** - a potential cluster of interrelated environmental, geopolitical and socioeconomic risks relating to the supply of and demand for natural resources. The intent is not to exhaustively outline all scenarios but to provide a structured approach to identifying potential futures for the polycrisis that may be triggered, providing a framework for better preparedness and risk mitigation efforts today.

3.2 Polycrisis: natural resources, climate and cooperation

A growing demand-supply gap for natural resources

Supply-chain crises of recent years have highlighted the need for resilience in traditional strategic sectors. Reliable and cheap access to the most basic of necessities – food, water and energy – underpins the critical functioning of societies. Early data suggests that current crises are driving a worrying reversal of recent progress. An additional 200 million people faced acute food insecurity last year compared to 2019, and the number of people worldwide without electricity rose to an estimated 774 million, the equivalent of pre-pandemic levels.[2] As noted in **Chapter 1.2, Cost-of-living crisis**, supply crises of this nature can be highly destabilizing, exposing the fragility of states and leading to loss of life, widespread violence, political upheaval and involuntary migration.

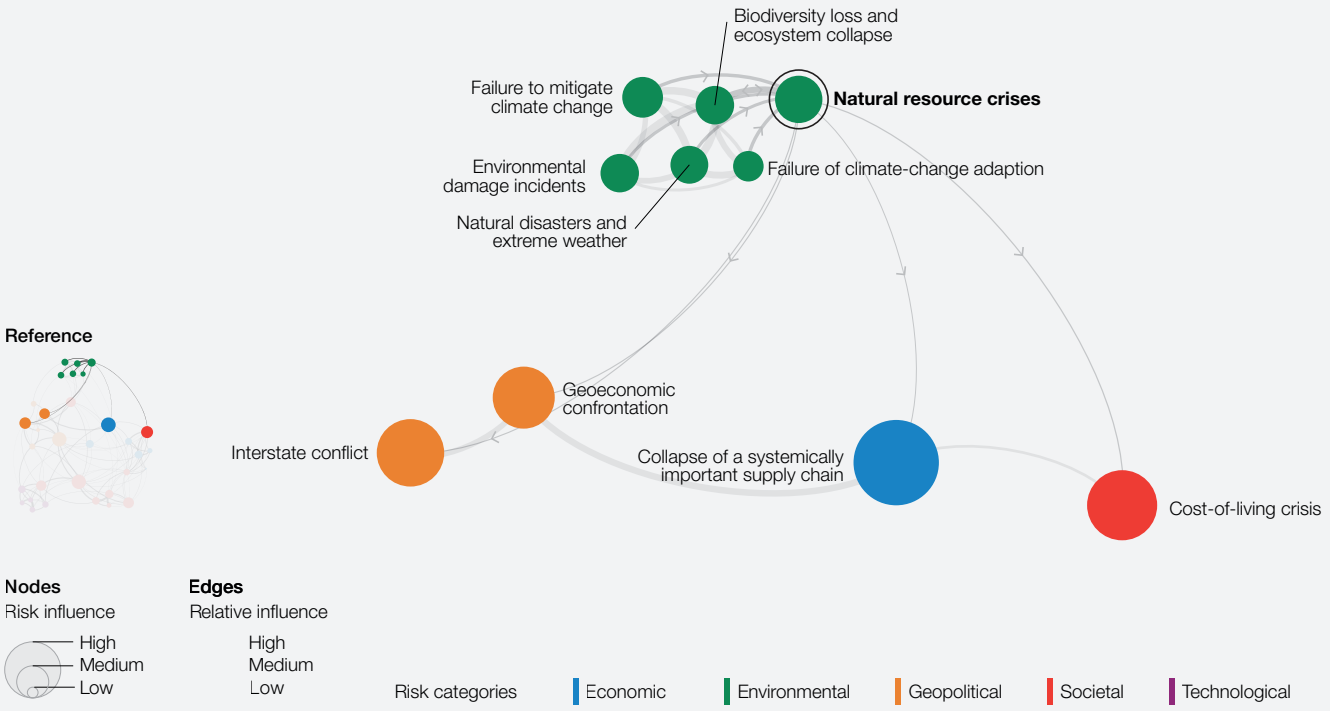
Demand for food, water and critical metals and minerals is escalating. This reflects a range of factors, including continued population growth, anticipated to reach 8.5 billion by 2030,[3] and socioeconomic advancement, with a push to achieve the UN's Sustainable Development Goals (SDGs) by the target date of 2030. Global food consumption is projected to increase by 1.4% annually over the next decade, concentrated in low- to middle-income countries, versus a 1.1% per annum increase in production.[4] One estimate places the gap between water demand and supply at 40% by 2030, with a dramatic and unequal increase in demand between

countries.[5] The continued expansion into secure, renewable energy and related infrastructure will also drive exponential demand for finite critical metals and minerals.[6] Significant even in absolute terms, annual demand for these resources, such as graphite, lithium and cobalt, is anticipated to hit 450% of 2018 production levels by 2050.[7]

Together, the set of emerging demand and supply concerns around natural resources are already becoming an area of growing alarm. GRPS respondents identified strong relationships and two-way linkages between **"Natural resource crises"** and the other risks identified in previous chapters (Figure 3.1), pointing to the potential polycrisis that may evolve over the medium term.

FIGURE 3.1

Natural resource polycrisis



Source

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

Cooperation and climate as key forces for disruption

In the 2030 time frame, two critical factors will determine the trajectory of our ability to match supply and demand for these resources as well as the scale of the associated polycrisis: 1) the degree of global cooperation that allows the flow of resources across national borders, and 2) the impact of climate change on the supply of natural resources and speed of the low-carbon transition (Box 3.1).

Together, these two axes lead to four hypothetical futures for 2030:

- **Resource collaboration – the danger of natural scarcity:** effective climate action measures and flexible supply chains enabled by global cooperation largely absorb the impacts of climate change on food production. However, shortages in water and metals and minerals cannot be avoided. Persistently high commodity prices slow climate mitigation – despite ambitions – and add to inflationary pressures in broader value chains, while water stress leads to a growing, but comparatively contained, health and humanitarian crisis in developing nations.
- **Resource constraints – the danger of divergent distress:** current crises draw focus and slow climate action, exposing the most vulnerable countries to hunger and energy shocks, even as countries cooperate to partially address constraints. In the absence of intervention, the water and mineral shortages experienced in the **Resource collaboration** scenario act as a multiplier to broader risks. A multi-resource, humanitarian crisis emerges in developing markets as food and water resources are impacted by the physical consequences of climate change, alongside global disruptions to trade, political stability and economic growth.

- **Resource competition – the danger of resource autarkies:** distrust drives a push for self-sufficiency in high-income countries, limiting the need for rivalry over food and water to a degree, but widening divides between countries. State intervention is centred on the resource most exposed to a concentration in supply – critical metals and minerals – leading to shortages, price wars and the transformation of business models across industries. Resource power shifts, driving the formation of new blocs as well as wedges in existing alliances between mineral-rich and -poor countries, while the potential for accidental or intentional conflict escalates.

- **Resource control – the danger of resource wars:** alongside the weaponization of metals and minerals explored in **Resource competition**, geopolitical dynamics exacerbate climate-induced shortages in food and water. This results in a truly global, multi-resource crisis, with widespread socioeconomic impacts that exceed those faced in other futures in both scope and scale, including famine and water scarcity refugees. Geoeconomic warfare is widespread, but more aggressive clashes between states become one of the few means to ensure supply of basic necessities for populations.

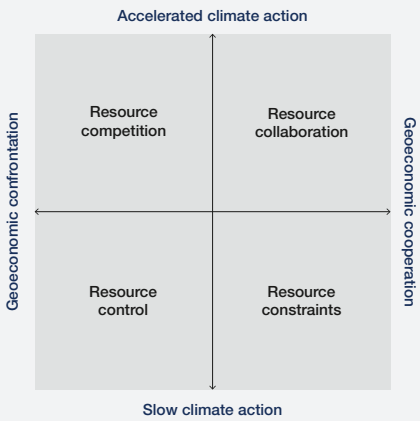
Given the nature of the polycrisis in each scenario, we face various environmental and socioeconomic upsides and downsides. The following section outlines an illustrative, but non-exhaustive set of mid-term futures to help support business leaders and policy-makers in preparing for – and preventing – the progression of the crises we are facing today.

BOX 1

Futures framework

FIGURE 3.2

Natural resource polycrisis: futures framework



Source
Global Risks Report 2023.

We use two global drivers – geoeconomic confrontation and speed of climate action – to create four futures we may face by 2030, considering potential implications based on the evolution of these risks and their interactions (Figure 3.2).

First, we explore the potential risks of a failure of climate-change adaptation and failure of climate mitigation efforts, described in **Chapter 1.2, Climate action hiatus**, and the extent to which these failures could result in conditions of scarcity, on a continuum (y-axis):

- **Accelerated climate action:** climate action and associated funding and innovation are prioritized. By 2030, we see persistently expanding but largely well-managed impacts of climate change, nature loss, natural disasters and extreme weather events at a global level, alongside a more rapid energy transition and other climate mitigation efforts as well as more rapid adaptation.

- **Slow climate action:** trade-offs between environmental, social and security goals slow the prioritization of attention and resources to address climate change. By 2030, there has been insufficient or ineffective progress towards the adaptation support required to protect infrastructure and populations from changing climactic conditions. Paired with relatively slow efforts at mitigation, this has resulted in continued damage to natural ecosystems and an increasing financial and humanitarian impact.

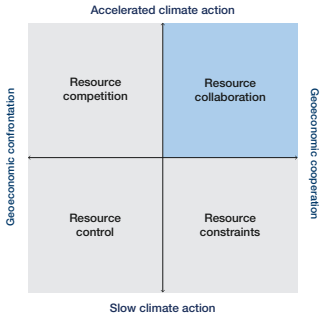
In parallel, the intensity of the demand-supply gap in natural resources will reflect the mechanisms by which states look to boost security in key resources. We consider the extent to which the evolution of **Geoeconomic confrontation**, highlighted in **Chapter 1.2, Economic warfare**, could create conditions of scarcity, by considering two ends of a continuum (x-axis):

- **Geoeconomic cooperation:** characterized by open dialogue and broadscale, but not always successful, economic and trade collaboration between powers through relevant bilateral and multilateral mechanisms and forums. Well-established principles governing trade policies and state aid are respected.

- **Geoeconomic confrontation:** direct and indirect clashes between global and regional powers through the extensive exercise of hard or soft economic, industrial and technological power. There is limited collaboration on global economic and trade issues and a breakdown or paralysis of mechanisms of cooperation, as well as alliances.

3.3 Four futures for 2030

Resource collaboration – the danger of natural scarcity



By 2030, the world is subject to more widespread and dramatic climate impacts – but we are prepared. Capital, intellectual property and technological innovations flow relatively freely across borders (x-axis). Multilateral and market-led initiatives have unlocked a range of financing mechanisms and innovation to support climate-proofing against future disasters and a rapid shift to climate mitigation efforts (y-axis). In response to public pressure, governments have broadly prioritized spending towards adaptation – and in some cases mitigation – alongside other social and security concerns, dampening the impact of climate change on societal vulnerabilities. In this future, the scaling of food has been supported by international flows of financing and technology, and shortages muted by flexible supply chains. Downside impacts are primarily focused on resources that face barriers to trading or scaling: water and critical minerals.

Climate-driven declines in agricultural productivity have been met with a range of measures in most countries, with climate and nature-based interventions helping to transform food systems to be regenerative, climate-smart and healthy. Global sharing of data and technologies has allowed more effective pre-emptive adaptation measures to be taken, such as the targeted use of flood- and drought-resilient seeds in some vulnerable geographies. Although environmental degradation continues to threaten aquaculture and fisheries, targeted nature-based adaptation measures have shored up domestic food networks (see **Chapter 2.2: Natural Ecosystems**).

The allocation of risk has begun to shift away from vulnerable workforces and communities. The burden of continued weather shocks has been partially offset through adaptation actions, financed by fit-for-purpose financial products, including weather-based index insurance, climate-related loan products, guaranteed credit lines, and well-managed risk-based exits from extreme-event-prone geographies.[8] Supply shocks stemming from natural disasters are quickly absorbed by flexible, market-driven supply chains, and global food insecurity continues to slowly trend downwards.

Risks remain: some natural resources are scarce, even in a climate-adapted, geopolitically cooperative world. Demand for geographically concentrated critical metals and minerals has risen dramatically, reflecting a push for secure, renewable energy sources in the wake of the war in Ukraine, and renewed urgency of net-zero ambitions over recent years. Despite sufficient resource deposits in most minerals,[9] this exponential increase in demand has proved difficult to meet through a rapid expansion of supply. Shortages initially stemmed from limited exploration and significant capital requirements, but the rise in commodity prices have subsequently helped to scale production, with companies now targeting deposits previously deemed unextractable for economic or technological reasons.

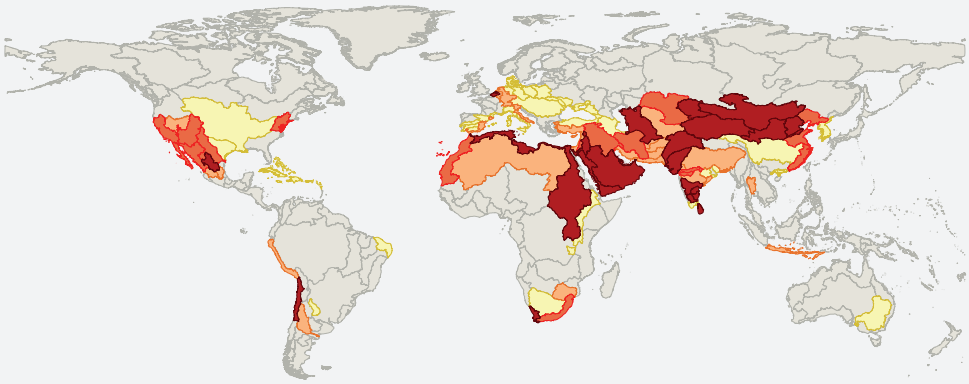
However, shortages in key materials remain a near- and mid-term concern, given time lags to production. Further, environmental concerns have limited domestic extraction in several advanced and some emerging economies, as well as by multinational mining companies headquartered in the West. Scrutiny from investors, downstream industries and the public have led to longer approval processes and more stringent environmental and social standards. For example, since the early 2020s, the expansion of lithium mining in Portugal has been significantly delayed due to environmental approvals; projects in Canada and Australia have slowed based on concerns relating to indigenous communities; and a rare species of buckwheat has limited domestic mining in key locations in the United States of America.[10]

Higher commodity prices have driven inflationary impacts along the wider value chain, explored further (and felt more acutely) in the section on **Resource competition**. This has encouraged some countries and multinational companies to accelerate efforts to turn towards the circular economy as a means of securing and diversifying the supply of critical minerals and metals, reducing the need for extraction and associated emissions. Industry coalitions are working with future-focused governments to establish the incentives, policy frameworks, standards and certifications, and circularity-focused capabilities that are necessary to scale.[11] In some markets, business models are being transformed to decrease demand and increase both the recovery potential and actual recovery of metals and minerals, partially mitigating the demand-supply gap going forward.

Despite these efforts and continued climate ambitions, higher prices and shortages are slowing momentum for the green energy transition in the short-term. In lower-income economies without local minerals and metals assets, the promise of support with green energy infrastructure is partly unfulfilled, and some are considering reverting to carbon-intensive energy sources to secure energy.[12]

The ability to scale water supply has similarly been

FIGURE 3.3 **Level of water stress by major river basin, 2018**



Water stress

No stress (0-25%) | Low (25-50%) | Medium (50-75%) | High (75-100%) | Critical (>100%)

Source

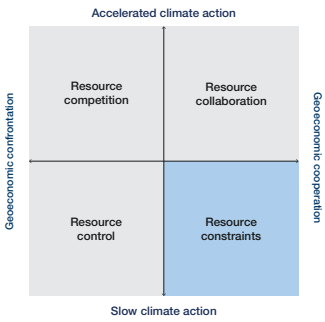
FAO, Aquastat database, 2022.[13]

Note

Level of water stress (SDG 6.4.2) by major river basin (reference year 2018). It is calculated as the ratio between (a) the amount of total freshwater resources withdrawn in the three economic sectors (Agriculture, Service and Industry) and (b) the total renewable freshwater resources after detracting the amount of water needed to support existing environmental services.

constrained. Water monitoring, efficiency and production measures have been prioritized by cities, local and national governments to address more frequent and severe droughts and the growing water footprint of food production. Water remains heavily subsidized, but pricing is used to curb demand and encourage investment by the private sector and households in water-efficient, re-usable solutions, including rainwater harvesting and stormwater runoffs. Some countries have limited the use of price controls to industrial use, while others apply them more broadly across populations, further fueling inflation, cost-of-living pressures and unrest. But even significant drops in water demand and waste have not kept pace with the impact of climate change on water resources in the most exposed regions (Figure 3.3). The capacity to scale supply through mechanisms such as desalinization and purification differ between countries for geographical and economic reasons. Water security continues to be threatened in some of these countries, with growing regional impacts from hygiene and health crises, urban migration, internal displacement and involuntary migration.

Resource constraints – the danger of divergent distress



Despite strong headwinds in the early 2020s, geoeconomic cooperation resumes in the latter half of the decade, with stronger global trade as well as efforts on climate cooperation (x-axis), mirroring **Resource collaboration**. However, domestic funding – and therefore overall investment – in adaptation measures as well as technological innovation has not kept pace with climate impacts to date (y-axis), given competing priorities, a growing insurance gap and continued costs of disaster recovery. In this future, even international coordination cannot address triple-shortages in food, water and energy in the most vulnerable nations, with extended climate-induced distress and disruptions to trade, and political and economic stability.

In the absence of appropriate intervention, water availability is now a concern in all regions. Snowmelt, glacial melt and groundwater availability has diminished, while 10% of global land area has experienced an increase in extremely high and low river flows in the same location. Continued geopolitical cooperation is evident through widespread engagement in the range of multilateral mechanisms governing these resources, from the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) and the 1997 Convention on the Law of the Non-navigational Uses of International Watercourses (Watercourses Convention), to bilateral and regional agreements.

However, water stress acts as a multiplier to shortages of other key resources. In the absence of effective adaptation, agricultural productivity is severely impacted by climate change, diverging in intensity between regions. Crop yields have fallen in volume and nutritional value due to heat, changing

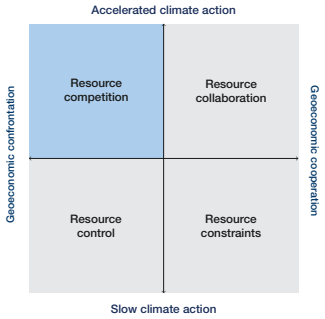
weather patterns, dry and wet precipitation extremes, and shifts to the distribution of insects, pests and diseases.[14] Agricultural output in the United States of America has declined overall due to decreased production of rice, corn, soy and wheat.[15] Russian agricultural yields have fallen in the country's most productive southern regions and have not been fully balanced by the expansion of arable land in the country's north, where soils remain less productive.[16] Climate change has reduced rice, wheat and corn yields by 8% in China.[17] Without focused conservation and restoration efforts, ocean warming and acidification has caused broadscale declines in aquaculture and fisheries, threatening not only food security but also livelihoods in some of the most climate-exposed countries.

High-latitude, high-income and high-tech countries are comparatively less impacted, either due to contained climate impacts for now, or leveraging of rapid innovation to address food and water security challenges.[18] Free-flowing global supply chains have helped distribute the overall hit to food production levels, but the most resource-insecure countries are those vulnerable to two prolonged crises: debt and climate change. Given the extended capital flight earlier in the decade, and without the fiscal space to speed up adaptation measures (see **Chapter 1.2, Economic downturn**), these countries have become even more heavily import-dependent, unable to scale food production to meet the demands of population growth, given water stress and deteriorated soil conditions.

Green-energy supply is also at risk. Companies mining critical metals and minerals in water-stressed regions face regular interruptions to operations or closures, or are forced to invest in water sources that do not directly compete with human consumption, partially exacerbating shortages, as described in **Resource collaboration**. This elevates commodity prices further, slowing the roll-out of green energy infrastructure. In parallel, the frequency and severity of heatwaves and droughts has forced green energy sources – biofuels, hydropower and nuclear – into periodic production cuts, and some are on the verge of becoming stranded assets. Electrical supply has been destabilized in the near-term for many countries, including Brazil, South Africa, China, Germany and the United States of America, increasingly turning these markets towards alternate energy sources.

Even in the absence of geopolitically fuelled shocks or constraints, continued price pressures on food, water and energy have resulted in an elongated cost-of-living crisis in selected markets, ushering in wage strikes, violent protests and state instability. Socioeconomic impacts have also begun to spread to more advanced economies, with a risk of partial deindustrialization caused by combined energy-water shortages. The shutdown of waterborne transport of trade is more regularly disrupting global supply chains, placing pressure on road and rail transports and dampening global economic growth.[19] Energy- and water-intensive strategic industries, such as semiconductor manufacturing, located in resource-insecure areas, have become new geopolitical hotspots, raising the risk of prolonged disputes and possible conflicts.

Resource competition – the danger of resource autarkies



In this future, there is accelerated climate action by 2030 (y-axis) but global powers are aiming for self-sufficiency in key resources, leaving many emerging and developing countries comparatively exposed. Heightened geopolitical confrontation is focused in the most geographically concentrated resource: metals and minerals (x-axis).

In anticipation of a deteriorating geopolitical environment, self-sufficiency in sources of food production has been scaled up in countries that can afford it, alongside a focus on adaptation, as considered in **Resource collaboration**. Food productivity has been enhanced, in part via technology, such as gene editing of crops, even in the absence of extensive multilateral cooperation on such technology. A sharper focus on productivity of existing farmlands, dietary shifts and reductions in food loss and waste are being utilized as levers. Efficiency in agricultural practices, land-use and food systems have allowed some countries to decouple food security and biodiversity trends, partially addressing the estimated 33% of global food production previously wasted through unsustainable production and consumption.

While this has led to enhanced food production

FIGURE 3.4 **Relevance of critical metals and minerals**

Indicative supply chains: key producers and consumers

Oil and gas	Upstream			Refining/minstream			Consumption		
Oil	US	Saudi Arabia	Russia	US	China	Russia	US	China	India
Natural Gas	US	Russia	Iran	Russia	Qatar	Australia	US	Russia	China

Clean technologies	Mining		Processing		Battery material			Battery cell/pack			Electric vehicle deployment		
Copper	Chile	Peru	China	Chile	China	Korea	Japan	China	US	Korea	China	US	EU

	Mining		Processing		Polysilicon			Solar panel			Photovoltaic system installation		
Lithium	Australia	Chile	China	Chile	China	Korea	Germany	China	Korea	Canada	China	EU	US
Nickel	Indonesia		China	Indonesia	China	Korea	Germany	China	Korea	Canada	China	EU	US

	Mining		Processing		Wind turbine & components					Wind installation		
Cobalt	DRC		China		China	India	US	Spain	Germany	China	EU	US
Rare earths	China		China		China	India	US	Spain	Germany	China	EU	

Source

Leruth, et al. 2022.[20]

Note

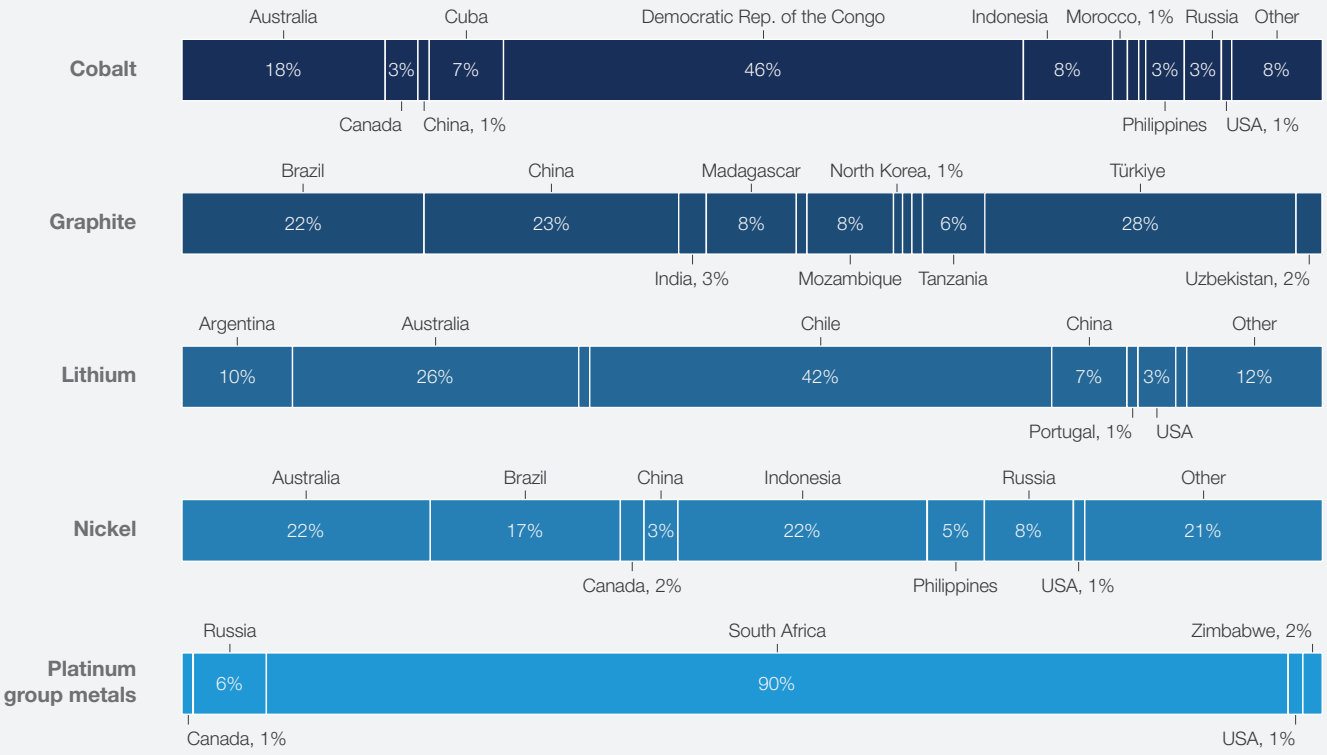
Largest producers and consumers are indicative only.

overall in many advanced economies, the benefits have not been widely shared, with significant divergence in the level of food security between countries. Even as some global trade in protein has continued, shortages and higher prices have hit lower socioeconomic groups, and developing and emerging countries the hardest, particularly those least able to scale food production in the absence of international support. This includes parts of Africa, Central and South America, Small Island Developing States (SIDS) and South Asia, where many economies have faced nearly decade-long triple crises: debt, population growth and climate change. Global poverty, climate-sensitive livelihood crises, malnutrition and diet-related diseases, state instability and involuntary migration have all risen, elongating and spreading the instability and humanitarian crises described in **Chapter 1.2, Cost-of-living crisis**.

Critical metals and minerals are a key area of geopolitical confrontation due to their geographic concentration. These resources are not only essential to renewable energy capture, storage and efficiency, but also continue to be leveraged for a wide range of other industrial applications, including technological and military end-uses (Figure 3.4).[21] Indium is part of touch screens as well as solar panels; lithium compounds are utilized by the pharmaceutical industry; cobalt has multiple aerospace applications but is also of increasing interest as a catalyst for green hydrogen production; and vanadium is used as an input for industrial-scale batteries as well as a steel alloy in nuclear reactors, space vehicles and aircraft carriers. The resulting demand-supply gap described in **Resource collaboration** is exacerbated in this future because of geopolitical rivalries, exposing the brittleness of global supply chains with limited opportunities for geographic diversification. For example, in the early half of the 2020s, the United States was 100% net import-reliant for 14 critical minerals, including gallium, natural graphite, indium and vanadium.[22] At the time, China was the leading producer for 16 of the 32 strategic minerals, including the aforementioned resources, representing 98%, 82%, 58% and 66%, respectively, of the world's total production.[23]

With a trend towards remilitarization (see **Chapter 2.4: Human security**), these strategic resources have become one of the primary fronts of economic warfare over the latter half of the decade. Despite competing fiscal priorities, more states have sought to diversify supply through domestic extraction where available, although many face environmental constraints outlined in **Resource collaboration**. Enhanced capacity in processing and refining has been targeted in particular by states with limited resource reserves (Figure 3.5). Resilience, particularly for import-reliant markets, has partially translated into redundancies, with the building of stockpiles of key materials exacerbating supply crises. Inbound investment screening – which only advanced economies have been able to afford the opportunity cost – has been expanded to mining and related industries to minimize foreign interference. Other countries have followed the lead of Canada, ordering certain foreign companies to unwind investments in mining due to the perceived threats to national security.[24] With limited options, outbound investment screening is now being contemplated by import-reliant markets as a potential lever, although most major powers continue to leverage increasingly state-directed investment in emerging export markets across Latin America and Africa as a means of securing access to these resources.

FIGURE 3.5 **Reserves of critical metals and minerals**



Source

IEA, World Energy Outlook Special Report: The Role of Critical Minerals in Clean Energy Transitions, 2022, US Geological Study, Mineral Commodity Summaries (various), 2022.[25]

Note

References to 1% refer to ≤1%.

The importance and influence of allied blocs have grown, with countries building and favouring domestic and "trusted" supply chains in their search for resource security. The geographic distribution of numerous metals and minerals has ensured a degree of mutual interdependence. For example, Brazil has scaled lithium, rare earth elements and nickel production, but has remained dependent on others for refining and on neighbours for other resources such as copper and cobalt.[26] The EU and Canada have continued their Strategic Partnership on Raw Materials, extending the scope of the agreement beyond the development and financing of critical mineral projects to increased collaboration on related technologies.[27]

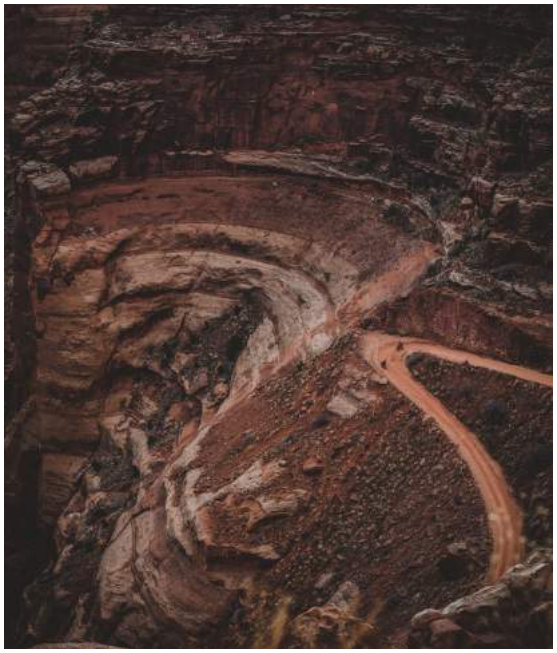
Yet resource nationalism has also driven cracks in existing alliances – becoming the next *Airbus vs. Boeing* – with disputes arising first around the application of state aid to boost domestic mining and processing industries. The expanding use of the national security exemption at the WTO has also increasingly paralysed multilateral trade mechanisms, rendering them ineffective in addressing geopolitical confrontation in a world where local resilience and security is prioritized over comparative advantage and efficiency. Bilateral mechanisms are elevated in importance as the primary vehicle for disputes.

Shortages artificially inflated by geoeconomic rivalries and price volatility, including of related products such as batteries and semiconductors, have reverberated throughout the supply chains of multiple industries. Shorter supply chains reflecting geopolitical alliances have ensued. State intervention has become more common and stringent, with government planning directly and indirectly allocating available resources for prioritised industries; some followed Mexico's suit by renationalizing assets associated with key metals and minerals.[28] Multiple "civilian" sectors have been forced to adapt to greater cross-industry competition. For example, Tesla built a lithium refinery in the United States of America,[29] and an uptick in offtake agreements have quickly spiralled into direct investments and more vertical integration, creating fresh challenges for competitiveness regulations.

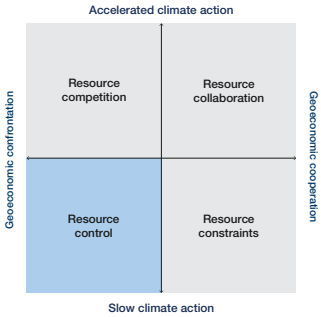
A number of developing and emerging markets have become net beneficiaries of this heightened interest of both the public and private sector, including Indonesia, Morocco and the lithium triangle of Plurinational State of Bolivia, Argentina and Chile. However, these countries have had to walk a tightrope as global powers exert control through trade, investment and technological ties and seek to constrain access by rival states. Alongside enhanced nationalization, this has led to the relatively

recent creation of OMEC: an organization of mineral exporting countries, similar to OPEC.[30] While the resource boom has offered a path to growth for some of these countries, for others the focus on these assets has created a "Dutch Disease" phenomenon, or led to increased corruption, inequality, violence and humanitarian crises.[31]

Further, illicit activities and the risk of accidental or intentional escalation into hot warfare over resources has risen, particularly in the border zones and global commons. Export constraints on minerals have placed upwards pressure on broader international governance and enforcement mechanisms that oversee new exploration zones – including those relating to mining in international waters, polar regions and in space. As the hunt for new mineral sources turns to the ocean, national marine jurisdictions are increasingly contentious, with a growing proportion of territory under dispute.[32]



Resource control – the danger of resource wars



By 2030, investment in adaptation measures has not kept pace with climate impacts to date (y-axis). At the same time, geopolitical dynamics have turned the natural resource crisis from one of affordability to one of availability (x-axis), creating a cascading economic, environmental and humanitarian crisis in all but a handful of select countries – but even these remain exposed through cross-border effects. In this future, the resulting socioeconomic fall-out exceeds the scope and scale of all other futures, and state intervention turns even more aggressive, expanding beyond economic confrontation to secure supply of necessities for populations.

Building on **Resource constraints**, both affordability and availability concerns are widening inequality. Reflecting **Resource competition**, self-sufficient sources of food production have been scaled up, but with limited sharing of innovation and financing, the tipping point of overall productivity growth in agriculture has already passed. Without effective policy, financing and technological support for adaptation practices, lower socioeconomic communities and countries have resorted to changes in crop choice and large shifts in land-use patterns to maintain current production growth.[33] Agriculture has become an even larger driver of global emissions. Land-clearance for crops and grazing have led to deforestation, and an increase in livestock has resulted in even more emissions, including the very potent methane. Intensive and inefficient farming has exacerbated soil degradation, water stress, pollution and the decline in production capacity. This has created broader domestic trade-offs, particularly with sectors directly dependent on biological resources, with knock-on impacts for economic growth and productivity and the speed of the green transition. Arable land has been increasingly prioritized for agriculture, shifting away from biofuels and green energy infrastructure.

Similar to **Resource constraints**, water stress is now widespread. In developing countries, this particularly impacts women and girls responsible for water collection, with knock-on impacts for health and education outcomes. More widespread scarcity, combined with paralysis of international cooperation mechanisms, has necessitated a degree of water nationalism, resulting in prolonged disputes between neighbouring countries.[34] In the face of spreading humanitarian crises and state instability, water infrastructure continues to be used both as a weapon and target, mirroring past water conflicts and terrorism in India, Pakistan and Afghanistan.[35] In addition, there is less visible abuse and depletion of shared "non-renewable" groundwater reserves, such as in Saharan Africa and the Middle East, raising the risk of conflict.[36]

Conditions of scarcity initially consolidated the influence of geopolitical blocs, heavily reflecting raw resource trade dependences, as well as innovation and information flows. Increasingly however, distrust between global powers is artificially exacerbating supply crises on a global scale. Beyond **Resource competition**, all three resources are weaponized by resource-rich countries where possible, as both offensive and defensive tools in a more zero-sum geopolitical environment (see **Chapter 1.2, Economic warfare**). In this world, the export of resources will soon supplant investment as a measure of global soft power, although economic

power will continue to be leveraged to achieve strategic objectives by more subtle, indirect means. Facing actual or perceived shortages, states continue to quickly and regularly exercise control over key resources to protect their own population, which will fracture alliances, deepen conditions of scarcity, and result in escalating trade tensions that restrict the flow of climate technologies. Exposed on multiple fronts, state intervention grows in a broader range of industries, including renationalization of industries.

Confrontations regularly extend beyond the economic sphere. Transboundary conflicts and violence have become more common as one of the few ways in which states can secure supply of strategic resources. Hotspots reflect shifts to biodiversity patterns, heightened competition over terrestrial and marine foodstocks, and the pressing need for metals and minerals that underpin secure energy and technological development. Food, energy and water insecurity becomes a driver of social polarisation, civil unrest and political instability in advanced and developing economies alike. It also becomes a driver for cross-border terrorism, with devastating impacts given the proliferation of high-tech weaponry (see **Chapter 2.4: Human security**).

In this future, there has been little incentive – or fiscal room – to invest in climate change and environmental protection. Overexploitation and pollution – the tragedy of the global commons – has expanded, but continues to go unpunished or undiscovered, and existing agreements and regulations are regularly breached or not enforced. Famine has returned at a scale not seen in the last century. The sheer scale of humanitarian and environmental crises showcases broader paralysis and ineffectiveness of key multilateral mechanisms in addressing crises facing the global order, spiralling downwards into a self-perpetuating and compounding polycrises.

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4

Conclusion: is preparedness possible?

While ongoing shocks unfold, the world stands at a crossroads. As we enter a low-growth, low-investment and low-cooperation era, the actions that we take today will dictate our future risk landscape. We must ensure that addressing current crises does not detract from the longer-term view.

Recent and current events such as COVID-19 and the cost-of-living crisis are steadily eroding economic, educational and health-related gains in a widening proportion of the population, with a growing divergence between advanced and developing countries. This in turn is interacting with a multiplicity of environmental and geopolitical risks – climate change, ecosystem collapse, multi-domain conflicts – to further threaten the security and stability of societies around the world.

In this context, defensive, fragmented and crisis-oriented approaches are short-sighted and often perpetuate vicious cycles. Lack of preparedness for longer-term risks will destabilize the global risks landscape further, bringing ever tougher trade-offs for policy-makers and business leaders scrambling to address simultaneous crises. A rigorous approach to foresight and preparedness is called for, as we aim to bolster our resilience to longer-term risks and chart a path forward to a more prosperous world.

Each risk requires concerted, specific and customized efforts but several cross-cutting principles can support preparedness across themes. In this concluding section, we outline four principles for preparedness in this new era of concurrent shocks: 1) strengthening risk identification and foresight, 2) recalibrating the present value of "future" risks, 3) investing in multi-domain risk preparedness, and 4) strengthening preparedness and response cooperation.

Improving risk identification and foresight

A wide range of disciplines aim to gather intelligence about the future, ranging from economics, business management, investment funds and insurance, to urban planning, climatology, virology and civil protection – but the track record around the use of foresight to enhance risk mitigation efforts remains mixed. The underestimation of – and therefore lack of preparedness for – emerging macro risks (like "grey rhinos" and "black swans") reflect challenges posed by high levels of uncertainty, low levels of information, conflicting data and cognitive biases. Yet systematic progress is possible. Enhanced risk identification and foresight can be a key enabler for strategic decision-making, agenda-setting and resilience measures, helping to prioritize areas that would benefit from data collection and monitoring, risk controls and resources, and redundancies.

The first task of foresight is to identify future developments, risks and opportunities. Both horizon scanning and scenario planning are useful tools that can examine and build on "weak signals" in qualitative and quantitative data sources to better anticipate emerging trends. Established methods can help crystallize expert disagreements,[1] while a greater distinction between risk and uncertainty – imperfect knowledge, such that likelihood cannot be scientifically quantified or known – will help challenge core assumptions. Greater levels of uncertainty should shift the focus from the probable to the possible: the study of potential outcomes needs to be expanded to ensure that risk mitigation and preparedness addresses the full scope of possible impacts.[2] This is then complemented by risk monitoring, which focuses on providing early warning for when specific risks are about to materialize to enable advanced preparedness measures.

Another step to enhance risk foresight is to explore dynamics of change, to map interconnections between risks, including dependencies between critical systems. More sophisticated methods of analyzing interconnected risks (beyond linear relationships) can support the evaluation and prioritization of risk resources. Risks that are most influenced by or exposed to other risks will be the most challenging to mitigate, while those that exert an outsized influence on the outcome of the network can be prioritized as key points of intervention. The need for a systemic view of and approach to global risks is reflected in the rising call for the appointment of National Risk and Resilience Officers, to mirror the increasingly important role of the Chief Risk Officer in the private sector. While the mandate of this role may vary in practice, it reflects the need for a cross-cutting and whole-of-society view around external risk foresight, mitigation and crisis management.[3]

Rethinking 'future' risks

Cognitive biases channel public attention towards recent, "catastrophic" events. Business and political imperatives tend to prioritize risks with a direct, immediate and localized impact, such as food, fuel or other commodities' shortages or local environmental disasters. This is necessary to manage crises, especially when millions of lives and livelihoods are at risk. However, when such risks manifest, resources and attention are often diverted from addressing global risks, especially those that form the root causes of local catastrophes or those that may arise outside the time frames relevant to today's leaders.

This can skew preparedness efforts in the public

FIGURE 4.1

Perceptions around preparedness and governance

Source

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

and private sector alike. For better planning and preparedness, institutions must de-anchor risk prioritization from shorter-term incentives. Despite regularly featuring in the top rankings, the most severe global risks – pertaining particularly to climate and nature – are those we are still the least prepared for. The majority of GRPS respondents assessed existing measures to prevent or prepare for the **Failure to mitigate climate change**, **Failure of climate-change adaptation**, and **Biodiversity loss and ecosystem collapse** as **ineffective** or **highly ineffective** (Figure 4.1). Similarly, most respondents considered preparedness to be inadequate for **Misinformation and disinformation**, **Erosion of social cohesion and societal polarization**, **Involuntary migration** and **Cost-of-living crisis**.

The growing global awareness of these risks is clear, but further action will likely continue to be stymied, given perceived shorter-term and localized crises and trade-offs. Without minimizing the need for an effective response, the over-prioritization of current challenges can quickly descend into a doom-loop of continuous global shocks, whereby resources are absorbed by crisis management, rather than directed to preparedness for future risks. Complex challenges cannot be solely solved by short-term decision-making – and yet long-term thinking alone is insufficient in the face of currently unfolding crises.

To break the cycle, business leaders and policy-makers need to embrace complexity and adopt a dual vision that more effectively balances current crisis management with a longer-term lens. For example, in the wake of the COVID-19 pandemic, governments will not only need to target resources to stabilize distressed healthcare systems, but at the same time work to ensure that environments conducive to zoonotic disease spread are adequately monitored, gain-of-function research is regulated, and that synthesis requests to bio-laboratories are screened to prevent future outbreaks from natural spillovers, accidents and threat actors.[4]

Investing in multi-domain, cross-sector risk preparedness

In addition, actions taken to address current challenges should, at a minimum, avoid exacerbating future risks, such as the potential trade-off between food security, nature loss and climate change. Recent crises have seen an extraordinary level of fiscal intervention to protect individuals and companies from the financial impacts of crises – from the COVID-19 pandemic to energy prices. While necessary and perhaps unavoidable in the circumstances at hand, it remains to be seen how significantly these rapid, large-scale actions will result in debt sustainability concerns and how widely they distracted decision-makers from other risks highlighted in this report.

Conversely, many shorter-term actions can also act as wider stabilizers, embedding and accelerating

longer-term, multi-domain resilience. Not all global risks pose a preparedness trade-off, and solutions that address both current needs and future risks can rebalance the cost-benefit ratio for necessary investment. For example, investment in health and education, key tenets of managing present needs in all societies as well as longer-term human capital and economic development, strengthens societal resilience to multiple shocks and risks including climate change.

Additionally, many global risks have the potential to impact economies and societies in an analogous way, with similar consequences. For example, cyberattacks, social unrest or extreme weather could each cause the outage of critical information infrastructure; or, on a more catastrophic scale, volcanic eruptions and war may disrupt food security.[5] Strengthening resilience efforts in critical areas therefore pays off in all scenarios and improves preparedness for a multiplicity of risks, both known and unknown, and short and long term.

Following recent shocks – the pandemic, inflation, war, among others – national governments are increasingly focusing on addressing vulnerabilities in critical systems, including potential disruptions to food, water, shelter, basic communication services and public safety, and developing multi-domain responses. A bill has been introduced in the United States of America to form an interagency committee to assess all global catastrophic risks over the next 30 years and develop strategies to ensure continuity of operations and critical infrastructure if these risks arise.[6] In addition, the UK Government is developing a tool to measure socioeconomic resilience to key civil contingencies risks, to provide a more nuanced, data-driven view on how risks impact across different communities and groups.[7]

As global risks become more intertwined, preparedness also needs to become more of a

shared responsibility between sectors, with local and national governments, business and civil society each playing to their strengths, rather than traditional models of governments addressing market failures when they occur.[8] For example, private-public partnerships can help close key gaps in innovation, financing, governance and implementation of preparedness measures for emerging and well-established risks, such as food and water insecurity, weakened education and healthcare systems, and insufficient regulation of dual-use technologies, or addressing the looming insurance gap relating to cyberwarfare.[9] Innovative collaborations can also minimize overall exposure to potential impacts, as organizations across geographies and sectors are rarely exposed to the same risks at the same time. For example, data centres of different institutions in differing geographies are highly unlikely to be exposed to the same cyber or extreme weather risks, meaning effective mitigation could include regular backups of each other's systems.[10]

Re-building and strengthening global risk preparedness cooperation

While national risk preparedness can enhance the ability of societies and economies to rebound from shocks, most global risks are 'owned' by no one and sit outside the direct control of any one public or private sector entity – meaning many global risks are most effectively tackled through coordinated, global action. Respondents to the GRPS shared their views on which stakeholders were best prepared to tackle the key risks covered in the survey (Figure 4.1). The majority consider national governments, multi-country efforts and international organizations to be the most relevant stakeholders for governing these global risks – recognizing that global risks are complex, and effective preparedness can require action at local, national, regional and global levels.

International cooperation has reached levels that may have been unimaginable even a century ago. However, the recent overload of crises has turned the focus of nations inwards and the emerging outlook for international cooperation is deteriorating. Actions taken to shore up national resilience can be self-perpetuating. For example, stockpiling and export controls can directly exacerbate global shortages and position trade, financial and technological dependencies as a strategic vulnerability, spurring further disintegration. Similarly, the pursuit of domestic and global security goals may have unintended consequences for the geopolitical landscape, leading to spiralling distrust, declining safeguards against mutually assured economic destruction, and currency and technological tools that are less influential. Even areas traditionally open to collaboration, such as international climate research, are under threat. For example, data regarding Russia's boreal forests –the biggest land-based carbon store on the planet – is no longer available for international scientific research because of the war in Ukraine.[11]

International organizations will continue to play an essential role in global preparedness, even as they face significant headwinds that risk degrading the guardrails in place to address well-established issues. There have been numerous examples of the politicization and partial paralysis of key international mechanisms and organizations in recent crises. These pressures may impede the development of meaningful norms and agreements required to mitigate emerging global risks – from the proliferation of military technologies to governing the global commons. Re-invigorating multilateral processes and organizations is critical to the future of preparing for and managing global risks.

Additionally, specific cooperation at sectoral, bilateral and regional levels will become even more important in this environment. Robust data exchange and collaborative monitoring processes have already been established for some global risks (natural disasters, extreme weather events and terrorist attacks, among others). Further, open-source data and scenario development have helped increase the effectiveness of individual risk responses, such as the extensive work undertaken by the IPCC to develop a range of climate scenarios that has improved understanding, informed decarbonization strategies and allowed for collective alignment on science-based targets. However, efforts are more nascent or non-existent in other areas, such as the long-term trajectory and impact of transformative AI. Greater collaboration across industries and between countries – in terms of coordinated funding, research and data sharing – is critical to help identify weak signals of emerging threats at both a national and global level.

In a complex risks outlook, there must be a better balance between national preparedness and global cooperation. We need to act together, to shape a pathway out of cascading crises and build collective preparedness to the next global shock, whatever form it might take. Leaders must embrace complexity and act on a balanced vision to create a stronger, prosperous shared future.

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Appendix A

Technical Notes: Global Risks Perception Survey 2022-2023

A "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.

Table A.1 presents the list of 32 global risks and definitions adopted in the Global Risks Perception Survey 2022-2023.

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 A.1 **Definitions of global risks**

Global risks	Description
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, energy prices, housing prices, and stock markets.
Collapse of a systemically important industry or **supply chain**	Collapse of a systemically important global industry or supply chain 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, food and fast-moving consumer goods.
Debt crises	Corporate or public finances struggle to service debt accumulation, resulting in mass bankruptcies or insolvencies, liquidity crises or defaults and sovereign debt crises.
Failure to stabilize price trajectories	Inability to control the general price level of goods and services, including commodities. Inclusive of an unmanageable increase (inflation) or decrease (deflation) of prices.
Proliferation of illicit economic activity	Global proliferation of illicit economic activities and potential violence that undermine economic advancement and growth due to organized crime or the illicit activities of businesses. Includes, but is not limited to: illicit financial flows (e.g. tax evasion); and illicit trade and trafficking (e.g. counterfeiting, human trafficking, wildlife trade).
Prolonged economic downturn	Near-zero or slow global growth lasting for many years leading to periods of stagnation; or a global contraction (recession or depression).
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.
Failure of climate-change adaption	Failure of governments, businesses and individuals to enforce, enact or invest in effective climate-change measures to adapt to climate change, such as a lack of climate-resilient infrastructure.
Failure to mitigate climate change	Failure of governments, businesses and individuals to enforce, enact or invest in effective climate-change mitigation measures, such as the decarbonization of economic activity.
Large-scale **environmental damage incidents**	Loss of human life, financial loss and/or damage to ecosystems as a result of human activity and/or failure to co-exist with animal ecosystems. Inclusive of deregulation of industrial accidents, oil spills and radioactive contamination.
Natural disasters and extreme weather events	Loss of human life, damage to ecosystems, destruction of property and/or financial loss at a global scale due to extreme weather events. Inclusive of land-based (e.g. earthquakes, volcanos wildfires), water-based (e.g. floods), atmospheric (e.g. heat-waves), and extra-terrestrial based (e.g. comet strikes and geomagnetic storms).

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

TABLE A.1 | Definitions of Global Risks

Global risks	Description
Natural resource crises	Severe commodity and natural resource supply shortages at a global scale as a result of human overexploitation and/or mismanagement of critical natural resources. Includes, but is not limited to: chemicals, food, minerals and water.
Geoeconomic confrontation	Deployment of economic levers by global or regional powers to decouple economic interactions between nations, restricting goods, knowledge, services or technology with the intent of gaining geopolitical advantage and consolidate spheres of influence. Includes, but is not limited to: currency measures, investment controls, sanctions, state aid and subsidies, and trade controls on energy, minerals and technology.
Ineffectiveness of multilateral institutions and international cooperation	Ineffectiveness of international cooperation mechanisms due to a weakening of global multilateral institutions or marked geopolitical fragmentation. Includes, but is not limited to processes that underpin coordination on: finance, the environment, humanitarian aid, health pandemics and trade.
Interstate conflict	Belligerent bilateral or multilateral conflict between states manifesting as cyber attacks, proxy wars or hot war.
State collapse or severe instability	Collapse of a state with geopolitical significance due to the erosion of institutions and rule of law, internal civil unrest and military coups, or the effects of severe regional or global instability.
Terrorist attacks	Large-scale or persistent small-scale terrorist attacks carried out by non-state actors with ideological, political or religious goals, resulting in loss of life, severe injury or material damage caused by biological, chemical, nuclear or radiological weapons or other means.
Use of weapons of mass destruction	Deployment of biological, chemical, cyber, nuclear, radiological or autonomous AI weapons, resulting in loss of life, destruction and/or international crises.
Chronic diseases and **health conditions**	Widescale increase in chronic physical health conditions. Includes, but is not limited to, conditions linked to excessive consumption habits and economic activity that releases harmful pollutants in the air, water or food through agricultural, industrial and household practices.
Collapse or lack of public infrastructure and services	Non-existence, or widespread bankruptcy of social security systems and erosion of social security benefits, alongside inequitable or insufficient public infrastructure and services. Includes but is not limited to lack of disability and family benefits, as well as affordable and adequate housing, public education, child and elder care, healthcare, transportation systems and urban development.
Cost-of-living crisis	Significant inability among broad sections of populations to maintain their current lifestyle due to increases in the cost of essential goods which are not matched with a rise in real household income.
Employment crises	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; stagnant social mobility; and geographical or industry mismatches between labour supply and demand.
Erosion of social cohesion and societal polarization	Loss of social capital and fracturing of communities leading to declining social stability, individual and collective well-being and economic productivity. Includes, but is not limited to: persistent and potentially violent civil unrest; and actual or perceived inequalities in opportunities across age, income bracket, ethnicity and race, educational background, demographic characteristics, and political affiliation.
Infectious diseases	Massive and rapid spread of viruses, parasites, fungi or bacteria that cause an uncontrolled contagion of infectious diseases, resulting in an epidemic or pandemic with loss of life and economic disruption. Includes, but is not limited to: zootic diseases, accidental or intentional releases of natural or man-made pathogens, the resurgence of pre-existing diseases due to lower levels of immunity, and the rise of antimicrobial resistance.
Large-scale involuntary migration	Large-scale involuntary migration and displacement across or within borders, stemming from: persistent discrimination and persecution, lack of economic advancement opportunities, natural or human-made disasters, and internal or interstate conflict.
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, dissemination by: states, public figures, media organizations and networks of individuals.
Severe mental health deterioration	Widescale spread of mental health disorders or rising inequality globally across multiple demographics, which negatively impacts well being, social cohesion and productivity. Includes, but is not limited to: anxiety, dementia, depression, loneliness and stress.

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

TABLE A.1 | Definitions of Global Risks

Global risks	Description
Adverse outcomes of frontier technologies	Intended or unintended negative consequences of technological advances on individuals, businesses, ecosystems and/or economies. Includes, but is not limited to: AI, brain-computer interfaces, biotechnology, geo-engineering, quantum computing and the metaverse.
Breakdown of critical information infrastructure	Deterioration, overload or shutdown of critical physical and digital infrastructure or services leading to the breakdown of internet, cellular devices, public utilities or satellites. Stemming from, but not limited to, cyberattacks, intentional or unintentional physical damage, or solar storms.
Digital inequality and lack of access to digital services	Fractured or unequal access to digital networks and technologies stemming from underinvestment, low digital skills, insufficient purchasing power, or government restrictions on technologies.
Digital power concentration	Concentration of critical digital assets, capabilities or knowledge among a small number of individuals, businesses or states that can control access to digital technologies and demand discretionary pricing. Stemming from, but not limited to, the failure of anti-trust regulation, inadequate investment in the innovation ecosystem, or state control over key technologies.
Widespread cybercrime and cyber insecurity	Increasingly sophisticated cyberespionage or cybercrimes. Includes, but is not limited to: loss of privacy, data fraud or theft, and cyber espionage.

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

Technical notes

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 7 September to 5 October 2022 from the World Economic Forum's multistakeholder communities.

Updates to the GRPS 2022-2023

The list of 32 global risks included in the survey was updated in 2022.

Two new risks were added in response to observed economic, geopolitical and environmental trends:

1. "Cost-of-living crisis"
2. "Misinformation and disinformation"

In addition, "Climate action failure" was delineated into two separate risks:

1. "Failure of climate-change adaption"
2. "Failure to mitigate climate change"

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, although names and definitions were modified, the fundamental concept of each risk has remained consistent with that of previous versions of the survey.

Methodology

The GRPS 2022–2023 was further refined this year to gather more granular perceptions of risk and to incorporate new approaches to risk management and analysis. The GRPS 2022–2023 was comprised of six sections:

1. **Outlook for the World** asked respondents to characterize their outlook for the world over the short term (two years) and the long term (10 years). Respondents were provided with five options: (1) Progressive tipping points and persistent crises leading to catastrophic outcomes, (2) Consistently volatile across economies and industries with multiple shocks accentuating divergent trajectories, (3) Slightly volatile with occasional localized surprises, (4) Limited volatility with relative stability, and (5) Renewed stability with a revival of global resilience. A simple tally for each of the five options was calculated. The result is illustrated in Figure 1.10.
2. **Currently Manifesting Risks** asked

respondents to rank the top five risks among 14 pre-selected risks in order of how severe they believe their impact will be on a global level in 2023. The final rank is the average rank estimated by the respondents, weighted by the number of respondents who selected the particular risk. Options included: **Continued waves of COVID-19, Cost-of-living crisis, Cyberattacks on critical infrastructure, Debt crisis, Deployment of chemical and biological weapons** on a catastrophic scale, **Deployment of nuclear weapons** on a catastrophic scale, **Disruptions in global supply chains for non-food goods, Energy supply crisis, Failure to set and meet national net-zero targets, Food supply crisis, Rising inflation, Structural failures in health systems, Weakening of human rights**, and **Weaponization of economic policy** such as sanctions and trade controls. 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. The result is illustrated in Figure 1.1.

3. **Global Severity 2 Years and 10 Years** asked respondents to estimate the likely impact (severity) for each of the 32 global risks, on a 1-7 scale [1 – Low severity, 7 – High severity], over both a two-year and 10-year period. Respondents were asked to evaluate the severity, considering the impact on populations, GDP or environmental resources on a global scale. They were also allowed to nominate any other risk considered missing from the 32 global risks. A simple average based on the scores selected was calculated. The results are illustrated in Figure 1.2 and Figure 2.1.

4. **Global Risks Consequences** seeks to understand of 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 32 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 risks materializing. 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 do not show all connections: weaker relationships identified by less than 25% of respondents were not included as edges. "Employment crises" was not offered as a randomly selected risk, and is shown only as a consequence. "Prolonged economic downturn" was not offered as a consequence, and is only shown as a cause.

5. **Risk Preparedness and Governance** asked respondents to indicate the current effectiveness of risk management across economies and multiple stakeholders, taking into account any mechanism in place to prevent the risk from occurring or prepare to mitigate its impact. The respondent was provided 10 randomly selected global risks, and was asked to rate current effectiveness based on five options: (1) Highly ineffective, (2) Ineffective, (3) Indeterminate effectiveness, (4) Effective, and (5) Highly effective. A simple tally of the number of times a risk was identified on each level of the five-point effectiveness scale was calculated on this basis. The result is illustrated in Figure 4.1.

   Respondents were then asked to identify up to three stakeholders who can effectively manage the most severe risks identified in Section 3. Respondents could choose among the following eight entities: local government, national government, bilateral, multi-country, regional, international organization, businesses, public-private cooperation. A simple tally of the number of times a stakeholder was identified as effective was calculated on this basis. The result is illustrated in Figure 4.1.

6. **Future Outlook for the World** captured the respondents' outlook on global cooperation over the next 10 years. Respondents were asked to select from among three options: (1) Broad-base convergence to a multilateral rules-based order, (2) Fractures between competing economies which consolidate into blocs and new structures for cooperation, and (3) Wide-scale division of economies into competing blocks with divergent standards, values and paradigms with limited collaboration. A simple tally for each of the three options was calculated.

Completion thresholds

A total of 1,316 responses to the GRPS were received. From these, 1,249 were kept, using as a threshold at least one non-demographic answer.

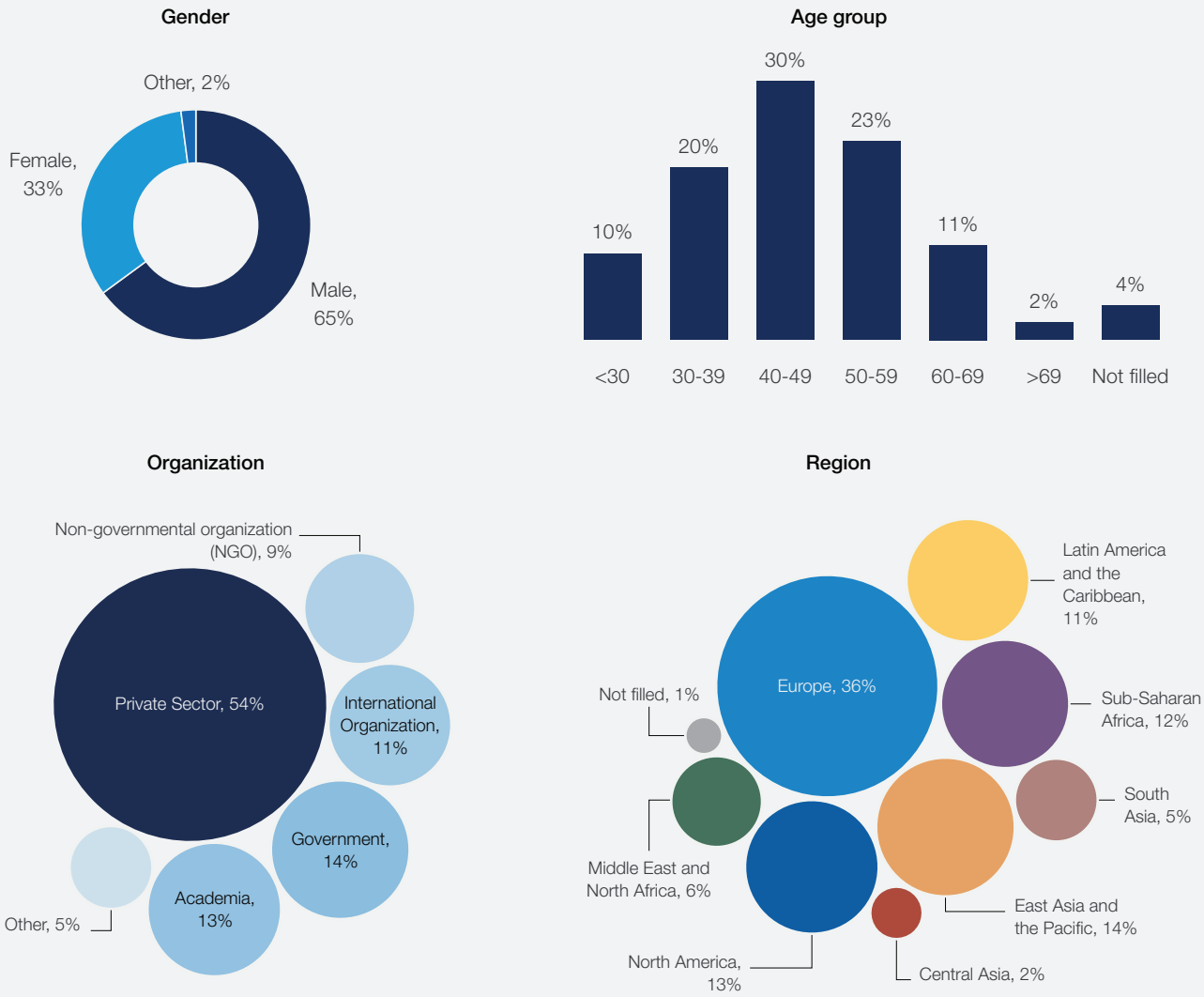
- **Outlook for the World**: 1,244 respondents selected at least one of the short-term and long-term world outlook options.
  - **Short**-term outlook for the world: 1,233
  - **Long**-term outlook for the world: 1,231
- **Currently Manifesting Risks**: 1,180 respondents ranked at least one manifesting risk.
- **Global Severity 2 Years and 10 Years**: 1,091 respondents evaluated the severity of at least one risk in one time frame.
  - Short-term severity: 1,086
  - Long-term severity: 999
- **Global Risks Consequences**: 877 respondents paired at least one materializing risk with its consequence.

- **Risk Preparedness and Governance**: 869 respondents answered at least one of the preparedness and governance questions.
  - 839 respondents scored the effectiveness level for at least one risk
  - 789 respondents mapped at least one stakeholder against at least one risk
- **Future Outlook for the World**: 869 respondents answered the Future Outlook for the World question.
- **Sample distribution**: the 1,249 respondent 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 A.2 presents some key descriptive statistics and information about the profiles of the respondents.

FIGURE A.2

Survey sample composition



Source

World Economic Forum Global Risks Perception Survey 2022-2023.

Appendix B

Executive Opinion Survey: National Risk Perceptions

Figure B.1 presents the list of 35 risks that were incorporated into the World Economic Forum's 2022 Executive Opinion Survey (EOS), which was administered between April and September 2022. 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 B.1

List of risks

Asset bubble burst	**Terrorist attacks**
Collapse of a systemically important industry	**Weapons of mass destruction**
Debt crises	**Collapse** or lack **of** social **services and public infrastructure**
Proliferation of illicit economic activity	**Cost-of-living crisis**
Prolonged economic stagnation	**Employment** and livelihood **crises**
Rapid and/or sustained inflation	**Erosion of social cohesion** and well-being
Severe commodity price shocks or volatility (e.g. energy, food, metals)	**Infectious diseases**
Blue (marine/freshwater) **biodiversity loss** and ecosystem collapse	**Large-scale involuntary migration**
Failure of climate-change adaption	**Misinformation**
Failure of climate-change mitigation	**Pollution-driven harms to human health**
Terrestrial biodiversity loss and ecosystem collapse	**Severe mental health deterioration**
Human-made environmental damage	**Widespread youth disillusionment**
Natural disasters and extreme weather events	**Automation and displacement of jobs**
Severe commodity supply crises (incl. energy, food, water)	**Breakdown of critical** information **infrastructure** through cyber attacks
Geoeconomic confrontations (incl. sanctions, trade wars, investment screening)	**Digital power concentration** and monopolies
Geopolitical contestation of strategic **resources** (incl. technology, energy, minerals)	**Failure of cybersecurity measures** (incl. loss of privacy, data fraud or theft, cyber espionage)
Interstate conflict	Lack of widespread digital services and **digital inequality**
State collapse	

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

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

Figure B.2 presents the top five risks for each of the 121 economies surveyed.

Over 12,000 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 a list of 35 risks.

"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 Angola, two risks ("Rapid and/or sustained inflation" and "Employment and livelihood crises") are tied for first place and there is, therefore, no risk listed in second place.

TABLE B.2

Top five risks identified by the Executive Opinion Survey (EOS)

Albania

1	Infectious diseases
2	Failure of cybersecurity measures
3	Rapid and/or sustained inflation
4	Geopolitical contestation of resources
5	Severe commodity supply crises

Algeria

1	Rapid and/or sustained inflation
2	Cost-of-living crisis
3	Digital inequality
4	Geopolitical contestation of resources
5	Interstate conflict

Angola

1	Rapid and/or sustained inflation
1	Employment and livelihood crises
3	Cost-of-living crisis
4	Collapse of services and public infrastructure
5	Severe commodity supply crises

Argentina

1	Rapid and/or sustained inflation
2	Debt crises
2	Proliferation of illicit economic activity
4	State collapse
5	Severe commodity supply crises

Armenia

1	Interstate conflict
2	Rapid and/or sustained inflation
3	Erosion of social cohesion
4	Severe commodity price shocks
5	Geoeconomic confrontation

Australia

1	Cost-of-living crisis
2	Debt crises
2	Rapid and/or sustained inflation
4	Geoeconomic confrontation
5	Failure of climate-change adaptation

Austria

1	Rapid and/or sustained inflation
2	Severe commodity price shocks
3	Breakdown of critical infrastructure
4	Geoeconomic confrontation
5	Geopolitical contestation of resources

Bahrain

1	Cost-of-living crisis
2	Debt crises
3	Severe commodity price shocks
4	Prolonged economic stagnation
4	Rapid and/or sustained inflation

Bangladesh

1	Rapid and/or sustained inflation
2	Debt crises
3	Severe commodity price shocks
4	Human-made environmental damage
5	Geopolitical contestation of resources

Barbados

1	Natural disasters and extreme weather events
2	Cost-of-living crisis
3	Rapid and/or sustained inflation
4	Severe commodity price shocks
5	Debt crises

Belgium

1	Cost-of-living crisis
2	Rapid and/or sustained inflation
3	Failure of climate-change adaptation
4	Debt crises
5	Geoeconomic confrontation

Benin

1	Cost-of-living crisis
2	Severe commodity price shocks
3	Employment and livelihood crises
4	Rapid and/or sustained inflation
5	Severe commodity supply crises

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

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

Bolivia (Plurinational State of)

1	Prolonged economic stagnation
1	Digital inequality
3	Employment and livelihood crises
4	State collapse
5	Human-made environmental damage
5	Debt crises
5	Erosion of social cohesion

Bosnia and Herzegovina

1	Severe commodity supply crises
1	State collapse
3	Severe commodity price shocks
4	Digital inequality
5	Cost-of-living crisis

Botswana

1	Cost-of-living crisis
2	State collapse
3	Severe commodity supply crises
4	Failure of cybersecurity measures
5	Debt crises

Brazil

1	Rapid and/or sustained inflation
2	Proliferation of illicit economic activity
3	Geoeconomic confrontation
4	Severe commodity price shocks
4	Employment and livelihood crises

Bulgaria

1	Rapid and/or sustained inflation
2	Proliferation of illicit economic activity
3	Cost-of-living crisis
4	Interstate conflict
5	State collapse

Cambodia

1	Geoeconomic confrontation
2	Cost-of-living crisis
2	Digital inequality
4	Geopolitical contestation of resources
5	Failure of climate-change adaptation

Cameroon

1	Cost-of-living crisis
2	Debt crises
3	Digital inequality
4	Employment and livelihood crises
5	Geopolitical contestation of resources

Canada

1	Cost-of-living crisis
2	Debt crises
3	Rapid and/or sustained inflation
4	Failure of climate-change adaptation
5	Asset bubble burst

Cape Verde

1	Debt crises
2	Cost-of-living crisis
3	Geoeconomic confrontation
4	Rapid and/or sustained inflation
5	Employment and livelihood crises

Chad

1	Employment and livelihood crises
2	Geopolitical contestation of resources
3	Terrestrial biodiversity loss and ecosystem collapse
4	Blue biodiversity loss and ecosystem collapse
5	Debt crises
5	Digital inequality
5	Digital power concentration

Chile

1	Rapid and/or sustained inflation
2	Erosion of social cohesion
3	Proliferation of illicit economic activity
4	Severe commodity supply crises
5	State collapse

China

1	Geoeconomic confrontation
2	Natural disasters and extreme weather events
3	Rapid and/or sustained inflation
4	Infectious diseases
5	Geopolitical contestation of resources
5	Asset bubble burst
5	Digital power concentration

Colombia

1	Rapid and/or sustained inflation
2	Digital inequality
3	Employment and livelihood crises
4	State collapse
5	Cost-of-living crisis

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

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

Congo (Democratic Republic of)

1	Digital inequality
2	State collapse
3	Debt crises
5	Interstate conflict
5	Cost-of-living crisis
5	Digital power concentration

Costa Rica

1	Cost-of-living crisis
2	Debt crises
3	Breakdown of critical infrastructure
4	Rapid and/or sustained inflation
5	Natural disasters and extreme weather events

Côte d'Ivoire

1	Cost-of-living crisis
2	Debt crises
3	Terrorist attacks
4	Rapid and/or sustained inflation
5	Failure of cybersecurity measures

Cyprus

1	Rapid and/or sustained inflation
2	Cost-of-living crisis
3	Failure of climate-change adaptation
3	Geoeconomic confrontation
5	Severe commodity supply crises

Czechia

1	Rapid and/or sustained inflation
2	Severe commodity supply crises
3	Severe commodity price shocks
4	Geopolitical contestation of resources
5	Interstate conflict

Denmark

1	Breakdown of critical infrastructure
2	Rapid and/or sustained inflation
3	Severe commodity price shocks
4	Geoeconomic confrontation
5	Asset bubble burst

Dominican Republic

1	Cost-of-living crisis
2	Debt crises
3	Rapid and/or sustained inflation
4	Natural disasters and extreme weather events
5	Severe commodity price shocks

Ecuador

1	Prolonged economic stagnation
2	Digital inequality
3	Natural disasters and extreme weather events
3	Employment and livelihood crises
5	State collapse

Egypt

1	Debt crises
2	Rapid and/or sustained inflation
3	Cost-of-living crisis
4	Prolonged economic stagnation
5	Severe commodity price shocks

El Salvador

1	Debt crises
2	State collapse
3	Cost-of-living crisis
4	Natural disasters and extreme weather events
5	Employment and livelihood crises

Estonia

1	Severe commodity price shocks
2	Geoeconomic confrontation
3	Interstate conflict
5	Severe commodity supply crises
5	Rapid and/or sustained inflation
5	Cost-of-living crisis

Finland

1	Geoeconomic confrontation
2	Prolonged economic stagnation
3	Severe commodity price shocks
4	Interstate conflict
4	Rapid and/or sustained inflation

France

1	Debt crises
2	Severe commodity price shocks
3	Rapid and/or sustained inflation
3	Cost-of-living crisis
3	Erosion of social cohesion

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

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

Georgia

1	Cost-of-living crisis
2	Interstate conflict
3	Geoeconomic confrontation
3	Digital power concentration
5	Rapid and/or sustained inflation

Germany

1	Rapid and/or sustained inflation
2	Severe commodity price shocks
3	Interstate conflict
4	Severe commodity supply crises
4	Geopolitical contestation of resources

Ghana

1	Debt crises
2	Cost-of-living crisis
3	Human-made environmental damage
4	Employment and livelihood crises
5	Failure of cybersecurity measures

Greece

1	Cost-of-living crisis
2	Severe commodity price shocks
2	Rapid and/or sustained inflation
4	Debt crises
5	Interstate conflict
5	Geoeconomic confrontation

Guatemala

1	Natural disasters and extreme weather events
2	Collapse of services and public infrastructure
3	Prolonged economic stagnation
4	State collapse
5	Digital inequality

Honduras

1	Rapid and/or sustained inflation
2	Natural disasters and extreme weather events
3	State collapse
4	Employment and livelihood crises
5	Cost-of-living crisis

Hong Kong SAR, China

1	Geoeconomic confrontation
2	Prolonged economic stagnation
3	Asset bubble burst
4	Cost-of-living crisis
5	Infectious diseases

Hungary

1	Rapid and/or sustained inflation
2	Infectious diseases
3	Geoeconomic confrontation
4	Cost-of-living crisis
5	Natural disasters and extreme weather events
5	Severe commodity price shocks

Hungary

1	Rapid and/or sustained inflation
2	Cost-of-living crisis
3	Asset bubble burst
4	Natural disasters and extreme weather events
4	Breakdown of critical infrastructure

India

1	Digital inequality
2	Geopolitical contestation of resources
3	Cost-of-living crisis
4	Debt crises
5	Natural disasters and extreme weather events

Indonesia

1	Debt crises
2	Interstate conflict
2	Rapid and/or sustained inflation
4	Digital inequality
5	Geopolitical contestation of resources

Ireland

1	Rapid and/or sustained inflation
2	Cost-of-living crisis
3	Geoeconomic confrontation
4	Severe commodity price shocks
5	Failure of climate-change adaptation

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

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

Israel

1	Cost-of-living crisis
2	Terrorist attacks
3	Interstate conflict
4	Geoeconomic confrontation
5	Asset bubble burst

Italy

1	Debt crises
2	Interstate conflict
2	Rapid and/or sustained inflation
4	Failure of climate-change adaptation
5	Asset bubble burst

Jamaica

1	Rapid and/or sustained inflation
2	Cost-of-living crisis
3	Natural disasters and extreme weather events
4	Proliferation of illicit economic activity
5	Severe commodity price shocks

Japan

1	Geoeconomic confrontation
2	Natural disasters and extreme weather events
3	Prolonged economic stagnation
4	Severe commodity price shocks
5	Geopolitical contestation of resources

Jordan

1	Debt crises
2	Severe commodity supply crises
2	Cost-of-living crisis
4	Severe commodity price shocks
5	Employment and livelihood crises

Kazakhstan

1	Geoeconomic confrontation
2	Rapid and/or sustained inflation
3	Geopolitical contestation of resources
4	Interstate conflict
5	Severe commodity price shocks

Kenya

1	Debt crises
2	Cost-of-living crisis
3	Employment and livelihood crises
4	Geopolitical contestation of resources
5	Failure of climate-change adaptation

Kosovo

1	Human-made environmental damage
1	Rapid and/or sustained inflation
1	Cost-of-living crisis
4	Geoeconomic confrontation
5	Failure of cybersecurity measures
5	Digital inequality

Kuwait

1	Rapid and/or sustained inflation
1	Cost-of-living crisis
3	Severe commodity price shocks
4	Human-made environmental damage
4	Interstate conflict

Kyrgyzstan

1	Interstate conflict
2	Debt crises
3	State collapse
4	Severe commodity supply crises
5	Infectious diseases

Lao PDR

1	Rapid and/or sustained inflation
2	Severe commodity price shocks
3	Infectious diseases
4	Cost-of-living crisis
5	Employment and livelihood crises

Latvia

1	Rapid and/or sustained inflation
2	Interstate conflict
3	Cost-of-living crisis
4	Employment and livelihood crises
5	Debt crises

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

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

Lesotho

1	Geopolitical contestation of resources
2	Collapse of services and public infrastructure
3	Digital inequality
4	Collapse of a systemically important industry
5	Proliferation of illicit economic activity

Liberia

1	Cost-of-living crisis
2	Rapid and/or sustained inflation
3	Prolonged economic stagnation
4	Employment and livelihood crises
5	Proliferation of illicit economic activity

Lithuania

1	Severe commodity price shocks
2	Interstate conflict
3	Rapid and/or sustained inflation
4	Geoeconomic confrontation
5	Severe commodity supply crises

Luxembourg

1	Rapid and/or sustained inflation
2	Cost-of-living crisis
3	Severe commodity price shocks
4	Severe commodity supply crises
5	Geoeconomic confrontation

Malawi

1	Debt crises
2	Cost-of-living crisis
3	Prolonged economic stagnation
4	Rapid and/or sustained inflation
5	Failure of climate-change adaptation

Malaysia

1	Cost-of-living crisis
2	Rapid and/or sustained inflation
3	Debt crises
4	Geoeconomic confrontation
5	Human-made environmental damage
5	Severe commodity supply crises
5	Severe commodity price shocks
5	Prolonged economic stagnation
5	Failure of cybersecurity measures

Mali

1	Geopolitical contestation of resources
2	Employment and livelihood crises
3	Geoeconomic confrontation
4	Terrorist attacks
5	Breakdown of critical infrastructure

Malta

1	Cost-of-living crisis
2	Human-made environmental damage
3	Rapid and/or sustained inflation
4	Severe commodity price shocks
5	Digital inequality

Mauritius

1	Cost-of-living crisis
2	Debt crises
3	Rapid and/or sustained inflation
4	Natural disasters and extreme weather events
5	Severe commodity price shocks

Mexico

1	Rapid and/or sustained inflation
2	Proliferation of illicit economic activity
2	Prolonged economic stagnation
4	State collapse
4	Erosion of social cohesion

Mongolia

1	Debt crises
2	Human-made environmental damage
3	Geoeconomic confrontation
4	Employment and livelihood crises
5	Interstate conflict

Montenegro

1	Cost-of-living crisis
2	Geoeconomic confrontation
3	Prolonged economic stagnation
4	Failure of climate-change adaptation
5	Human-made environmental damage
5	Severe commodity supply crises
5	Debt crises
5	Employment and livelihood crises

Morocco

1	Cost-of-living crisis
2	Rapid and/or sustained inflation
2	Severe commodity price shocks
4	Severe commodity supply crises
5	Debt crises

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

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

Namibia

1	Debt crises
2	Cost-of-living crisis
3	Employment and livelihood crises
5	Failure of climate-change adaptation
5	Prolonged economic stagnation
5	Digital inequality

Nepal

1	Geopolitical contestation of resources
2	Debt crises
3	Human-made environmental damage
4	Natural disasters and extreme weather events
5	Digital inequality

Netherlands

1	Failure of climate-change adaptation
2	Rapid and/or sustained inflation
3	Geoeconomic confrontation
3	Geopolitical contestation of resources
5	Cost-of-living crisis

New Zealand

1	Cost-of-living crisis
2	Rapid and/or sustained inflation
3	Natural disasters and extreme weather events
4	Asset bubble burst
5	Debt crises

Nigeria

1	Terrorist attacks
2	Debt crises
3	Cost-of-living crisis
4	Severe commodity supply crises
5	Rapid and/or sustained inflation
5	Employment and livelihood crises

North Macedonia

1	Cost-of-living crisis
2	Debt crises
3	Human-made environmental damage
4	Rapid and/or sustained inflation
5	Prolonged economic stagnation

Oman

1	Debt crises
2	Natural disasters and extreme weather events
3	Severe commodity price shocks
3	Cost-of-living crisis
5	Geopolitical contestation of resources
5	Proliferation of illicit economic activity

Pakistan

1	Digital power concentration
2	Failure of cybersecurity measures
3	Rapid and/or sustained inflation
4	Debt crises
5	State collapse

Panama

1	Employment and livelihood crises
2	Debt crises
3	Digital inequality
4	Cost-of-living crisis
5	Proliferation of illicit economic activity
5	Rapid and/or sustained inflation

Paraguay

1	Prolonged economic stagnation
2	Collapse of services and public infrastructure
2	Digital inequality
4	Natural disasters and extreme weather events
5	State collapse

Peru

1	State collapse
2	Digital inequality
3	Rapid and/or sustained inflation
4	Proliferation of illicit economic activity
5	Employment and livelihood crises

Philippines

1	Natural disasters and extreme weather events
2	Debt crises
3	Rapid and/or sustained inflation
4	Misinformation
5	Geopolitical contestation of resources

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

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

Poland

1	Rapid and/or sustained inflation
2	Breakdown of critical infrastructure
3	Geoeconomic confrontation
4	Employment and livelihood crises
5	Interstate conflict

Portugal

1	Rapid and/or sustained inflation
2	Cost-of-living crisis
3	Debt crises
4	Severe commodity price shocks
5	Prolonged economic stagnation

Qatar

1	Cost-of-living crisis
2	Natural disasters and extreme weather events
2	Geoeconomic confrontation
4	Geopolitical contestation of resources
4	Severe commodity price shocks
4	Rapid and/or sustained inflation
4	Failure of cybersecurity measures

Romania

1	Rapid and/or sustained inflation
2	Geoeconomic confrontation
3	Interstate conflict
4	Severe commodity price shocks
4	Cost-of-living crisis

Rwanda

1	Rapid and/or sustained inflation
1	Cost-of-living crisis
3	Severe commodity price shocks
4	Natural disasters and extreme weather events
5	Interstate conflict

Saudi Arabia

1	Cost-of-living crisis
2	Interstate conflict
3	Rapid and/or sustained inflation
4	Severe commodity price shocks
4	Breakdown of critical infrastructure
4	Failure of cybersecurity measures

Senegal

1	Cost-of-living crisis
2	Debt crises
2	Employment and livelihood crises
4	Rapid and/or sustained inflation
5	Severe commodity supply crises

Serbia

1	Geoeconomic confrontation
1	Severe commodity price shocks
3	Interstate conflict
4	Cost-of-living crisis
5	Asset bubble burst
5	Severe commodity supply crises

Sierra Leone

1	Cost-of-living crisis
2	Rapid and/or sustained inflation
3	Debt crises
4	Natural disasters and extreme weather events
4	State collapse
4	Employment and livelihood crises
4	Digital inequality

Singapore

1	Geoeconomic confrontation
2	Rapid and/or sustained inflation
3	Severe commodity supply crises
4	Severe commodity price shocks
5	Cost-of-living crisis

Slovakia

1	Rapid and/or sustained inflation
2	Severe commodity price shocks
3	Severe commodity supply crises
4	Asset bubble burst
4	Interstate conflict

Slovenia

1	Severe commodity price shocks
2	Geoeconomic confrontation
3	Rapid and/or sustained inflation
4	Severe commodity supply crises
5	Geopolitical contestation of resources

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

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

South Africa

1	State collapse
2	Debt crises
2	Collapse of services and public infrastructure
2	Cost-of-living crisis
5	Employment and livelihood crises

South Korea

1	Rapid and/or sustained inflation
2	Proliferation of illicit economic activity
3	Severe commodity supply crises
3	Severe commodity price shocks
5	Asset bubble burst
5	Debt crises

Spain

1	Rapid and/or sustained inflation
2	Debt crises
3	Cost-of-living crisis
4	Employment and livelihood crises
5	Geopolitical contestation of resources
5	Proliferation of illicit economic activity

Sri Lanka

1	Debt crises
2	Cost-of-living crisis
3	State collapse
3	Rapid and/or sustained inflation
5	Severe commodity supply crises

Sweden

1	Rapid and/or sustained inflation
2	Cost-of-living crisis
3	Debt crises
4	Failure of climate-change adaptation
5	Terrorist attacks
5	Geoeconomic confrontation
5	Collapse of a systemically important industry

Switzerland

1	Severe commodity price shocks
2	Severe commodity supply crises
3	Geoeconomic confrontation
3	Rapid and/or sustained inflation
5	Natural disasters and extreme weather events
5	Geopolitical contestation of resources
5	Breakdown of critical infrastructure through cyber attacks

Taiwan, China

1	Geoeconomic confrontation
2	Rapid and/or sustained inflation
3	Infectious diseases
4	Natural disasters and extreme weather events
4	Severe commodity price shocks

Thailand

1	Debt crises
2	Cost-of-living crisis
3	Human-made environmental damage
4	Digital inequality
5	Geoeconomic confrontation

Trinidad and Tobago

1	Cost-of-living crisis
2	Digital inequality
3	Severe commodity supply crises
3	Rapid and/or sustained inflation
5	Widespread youth disillusionment

Tunisia

1	Debt crises
2	State collapse
3	Severe commodity supply crises
4	Cost-of-living crisis
5	Rapid and/or sustained inflation

Türkiye

1	Rapid and/or sustained inflation
2	Employment and livelihood crises
3	Interstate conflict
4	Severe commodity supply crises
5	Debt crises
5	Severe commodity price shocks

Ukraine

1	Severe commodity supply crises
2	Interstate conflict
3	Large-scale involuntary migration
3	Failure of cybersecurity measures
5	Automation and displacement of jobs

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

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

United Arab Emirates

1	Cost-of-living crisis
2	Rapid and/or sustained inflation
3	Severe commodity price shocks
4	Geopolitical contestation of resources
5	Geoeconomic confrontation
5	Failure of cybersecurity measures

United Kingdom of Great Britain

1	Cost-of-living crisis
2	Debt crises
3	Rapid and/or sustained inflation
4	Failure of climate-change adaptation
5	Terrestrial biodiversity loss and ecosystem collapse
5	Interstate conflict
5	Asset bubble burst

United Republic of Tanzania

1	Rapid and/or sustained inflation
2	Debt crises
3	Employment and livelihood crises
4	Geopolitical contestation of resources
4	Cost-of-living crisis

United States of America

1	Debt crises
2	Rapid and/or sustained inflation
3	Geoeconomic confrontation
4	Cost-of-living crisis
5	Failure of climate-change adaptation

Uruguay

1	Severe commodity price shocks
2	Rapid and/or sustained inflation
3	Prolonged economic stagnation
3	Cost-of-living crisis
5	Automation and displacement of jobs

Venezuela (Bolivarian Republic of)

1	Severe commodity supply crises
2	Collapse of services and public infrastructure
3	State collapse
3	Rapid and/or sustained inflation
5	Geoeconomic confrontation
5	Prolonged economic stagnation
5	Digital inequality

Viet Nam

1	Rapid and/or sustained inflation
2	Infectious diseases
3	Geopolitical contestation of resources
4	Natural disasters and extreme weather events
5	Failure of cybersecurity measures

Yemen

1	Severe commodity supply crises
2	Collapse of services and public infrastructure
3	State collapse
4	Breakdown of critical infrastructure
5	Proliferation of illicit economic activity

Zambia

1	Debt crises
2	Cost-of-living crisis
3	Failure of climate-change adaptation
4	Geopolitical contestation of resources
5	Failure of climate-change mitigation

Zimbabwe

1	Rapid and/or sustained inflation
2	Cost-of-living crisis
3	Geoeconomic confrontation
4	Collapse of services and public infrastructure
5	Severe commodity supply crises

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

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Risk Management Committee: Meeting of 24 January 2023

Item 13c: The Global Risks Report 2023 – Summary

The report uses data from the Global Risks Perception Survey 2022-2023 to understand the risks the world is likely to face over the coming 10 years.

From COVID-19 to war in Europe - the 2020s have ushered in a "fresh series of crises in food and energy - problems that decades of progress had sought to solve".

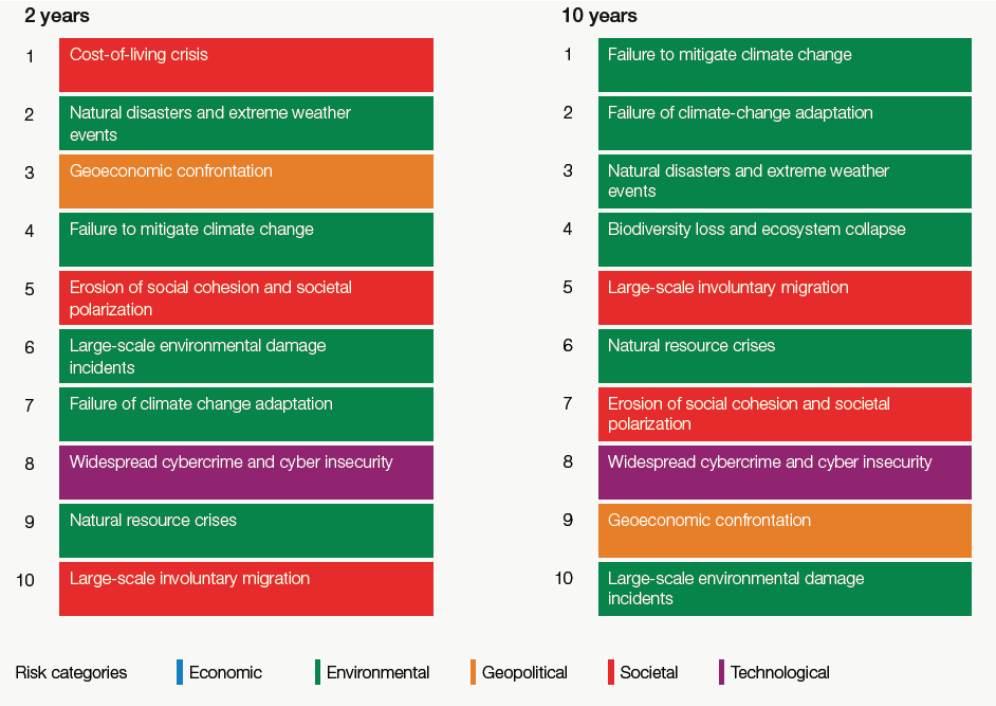
This year's report presents a set of risks risks “that feel both wholly new and eerily familiar”. In particular, the return of risks like inflation, cost-of-living and geopolitical confrontations are historically nothing new, but for the current generation of policy-makers and business leaders they're unfamiliar.

What are the biggest risks the world is facing?

The survey identifies the **cost-of-living crisis** as the most severe threat facing us over the next two years. Next is **natural disasters and extreme weather events** while **geoeconomic confrontation** also features in the top three most severe risks in our most immediate future.

Contrast this to a 10-year view and the long-term risk of failure to tackle climate change emerges as the biggest set of risks. From **failure to mitigate climate change to biodiversity loss and ecosystem collapse**, the top four most severe risks over the next 10 years are all environmental. Interestingly, the cost-of-living crisis drops out of the top 10 entirely, while geoeconomic confrontation drops to 9.

Global risks ranked by severity over the short and long term.



Major risks highlighted in the Report

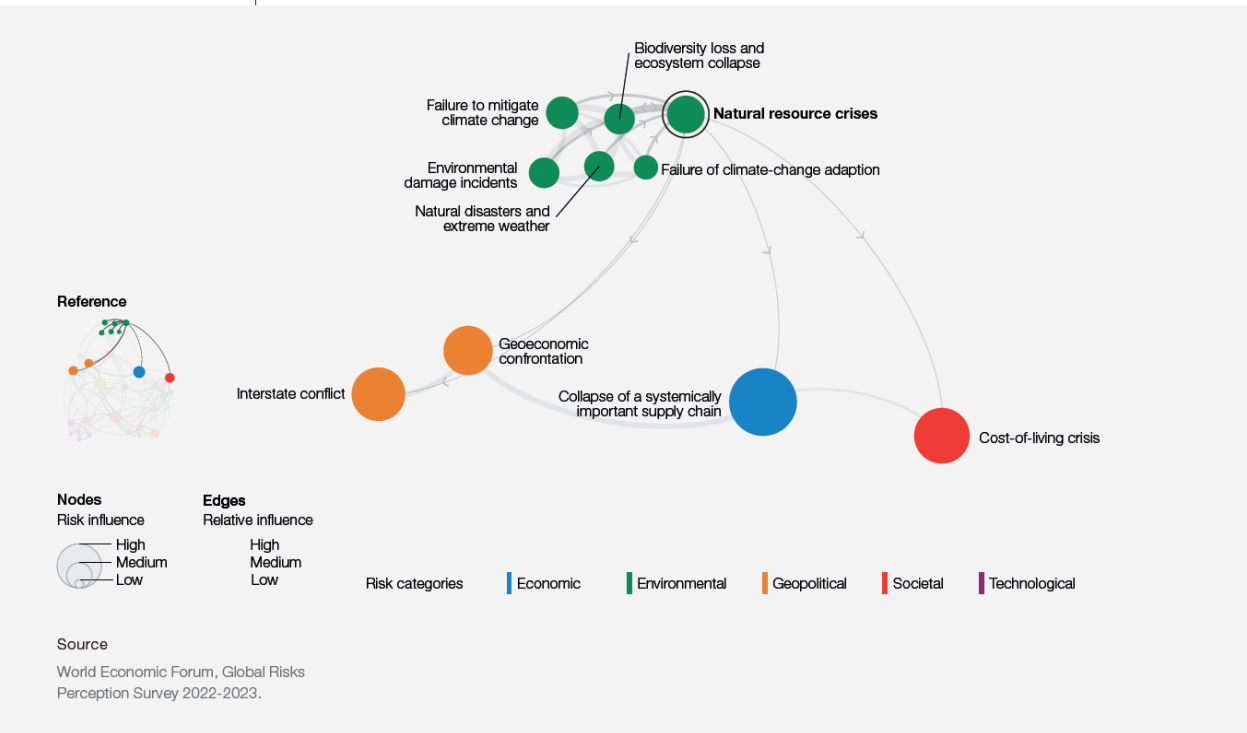
- Cost of living dominates global risks in the next two years while climate action failure dominates the next decade.
- As an economic era ends, the next will bring more risks of stagnation, divergence and distress.
- Geopolitical fragmentation will drive geoeconomic warfare and heighten the risk of multi-domain conflicts.
- Technology will exacerbate inequalities while risks from cybersecurity will remain a constant concern.
- Climate mitigation and climate adaptation efforts are set up for a risky trade-off, while nature collapses.
- Food, fuel and cost crises exacerbate societal vulnerabilities while declining investments inhuman development erode future resilience.
- As volatility in multiple domains grows in parallel, the risk of polycrises accelerates.

The Risk of "Polycrises"

"The world today is at a critical inflection point. The sheer number of ongoing crises calls for bold collective action."

It is the interconnected nature of these crises and risks that this year's Global Risks Report calls out as a particular danger. "Concurrent shocks, deeply interconnected risks and eroding resilience are giving rise to the risk of "polycrises" - where disparate crises interact such that the overall impact far exceeds the sum of each part," its authors write.

FIGURE 3.1 | Natural resource polycrisis



The Future

This year's report explores four potential futures for 2030 around resource rivalry and the “polycrises” that could emerge as a result of competition for natural resources - competition driven by interrelated environmental, geopolitical and socioeconomic risks.

“The short-term risk landscape is dominated by energy, food, debt and disasters. Those that are already the most vulnerable are suffering – and in the face of multiple crises, those who qualify as vulnerable are rapidly expanding, in rich and poor countries alike. Climate and human development must be at the core of concerns of global leaders, even as they battle current crises. Cooperation is the only way forward,” said Saadia Zahidi, Managing Director, World Economic Forum

STATISTICS SHOW CONTINUED RISE IN YOUTH ARRESTS FOR TERRORISM OFFENCES

8 December 2022

Counter Terrorism Policing are urging people to be vigilant in their online lives, as latest arrest statistics show continued increase in teens arrested for terrorism-related offences

The Home Office's quarterly release of statistics relating to the police's use of powers under the Terrorism Act 2000 revealed that there were 190 counter terrorism arrests in the year to September.

Children under 18 made up 16% (31) of the total number of arrests, a 3% increase on the previous calendar year.

Senior National Coordinator, Tim Jacques

Senior National Coordinator for Counter Terrorism Policing Tim Jacques said:

"We are concerned about the powerful adverse influence that online content is having on individuals who end up in our counter terrorism casework.

"The reality is that dangerous and extremist content shared online, is making it easier for individuals to self-radicalise, which in turn is driving the ever-evolving threat.

"This risk is increasingly manifesting itself in the younger age groups, where it can take potentially deeper hold.

"The nature of some of this material means people may well find themselves the subject of one of our investigations if they engage with such horrific online content regardless of their intentions".

The UK's Counter Terrorism Internet Referral Unit (CTIRU) works around the clock to tackle the proliferation of terrorist content and material online.

If you see or hear something that doesn't feel right report it at gov.uk/ACTIf you see or hear something that doesn't feel right report it at gov.uk/ACT

Launched in 2010, the unit works with internet service providers and tech companies to have extremist content removed. Since then, the unit has launched thousands of investigations and its structure has been replicated by numerous international law enforcement partners across the globe.

Many of the CTIRUs assessments start with a public referral, and can lead to successful convictions for terrorism offences.

If you see or hear something that doesn't feel right report it at gov.uk/ACT

Tim Jacques continued:

"We often remind the public to be vigilant when they are out and about in their communities, but it's crucial that people stay alert in online spaces too.

"As the time we spend on our devices increased, so must our vigilance – if you see footage, videos, images or posts that don't feel right, then report them so we can take action.

"If you're worried about someone you know, whether they're a younger person in your family, or anyone else being influenced in a concerning way, then I would urge you to seek support. There is always someone who can listen and help stop someone taking a dangerous path."

If you see something that doesn't feel right, report it online via gov.uk/ACT. You can also download the iREPORTit app on Apple IOS and Android that allows you to quickly and easily report extremist content online. In an emergency always call 999

Find advice and support to help a friend or family member you're concerned about at actearly.uk.

Martyn’s Law Factsheet

Home Office news team, 19 December 2022 - Fact sheet

On Monday 19 November, the Government announced details for the Protect Duty, now to be known as ‘Martyn’s Law’ in tribute of Martyn Hett, who was killed alongside 21 others in the Manchester Arena terrorist attack in 2017.

Why do we need Martyn’s Law?

There have been 14 terror attacks in the UK since 2017. These tragic attacks have caused deaths and casualties amongst people going about their everyday lives.

The terrorist threat we currently face is multifaceted, diverse, and continually evolving. As such, it remains difficult to predict which locations could be targeted by terrorists with attempts being harder to spot and harder to stop.

We need to improve security and ensure robust, proportionate, and consistent measures at public places to make sure we can better prepare and improve public security, in light of possible future attacks.

We are aware through engagement with industry that, without legal compulsion, counter terrorism security efforts often fall behind legally required activities. The prioritisation, consideration and application of security processes and measures is currently inconsistent.

What will Martyn’s Law do?

Martyn’s Law will keep people safe, enhancing our national security and reducing the risk to the public from terrorism by the protection of public venues.

It will place a requirement on those responsible for certain locations to consider the threat from terrorism and implement appropriate and proportionate mitigation measures.

The legislation will ensure parties are prepared, ready to respond and know what to do in the event of an attack. Better protection will be delivered through enhanced security systems, staff training, and clearer processes.

Who will be in scope?

Premises will fall within the scope of the Duty where “qualifying activities” take place. This will include locations for purposes such as entertainment and leisure, retail, food and drink, museums and galleries, sports grounds, public areas of local and central

Government buildings (e.g., town halls), visitor attractions, temporary events, Places of Worship, health, and education.

It is proposed that the Duty will apply to eligible locations which are either: a building (including collections of buildings used for the same purposes, e.g., a campus); or location/event (including a temporary event) that has a defined boundary, allowing capacity to be known. Eligible locations whose maximum occupancy meets the above specified thresholds will be then drawn into the relevant tier.

Therefore, premises will be drawn into the scope of the Duty if they meet the following three tests:

- That the premises is an eligible one – i.e., building or event with a defined boundary.
- That a qualifying activity takes place at the location; and
- That the maximum occupancy of the premises meets a specified threshold – either 100+ or 800+

How will it work?

The Bill will impose a duty on the owners and operators of certain locations to increase their preparedness for and protection from a terrorist attack by requiring them to take proportionate steps, depending on the size and nature of the activities that take place there.

Proportionality is a fundamental consideration for this legislation. It will therefore establish a tiered model, linked to the activity that takes place at a location and its capacity:

- **A standard tier** will drive good preparedness outcomes. Duty holders will be required to undertake simple yet effective activities to improve protective security and preparedness. This will apply to qualifying locations with a maximum capacity of over 100. This could include larger retail stores, bars, or restaurants.
- **An enhanced tier** will see additional requirements placed on high-capacity locations in recognition of the potential catastrophic consequences of a successful attack. This will apply to locations with a capacity of over 800 people at any time. This could include live music venues, theatres, and department stores.

Who will it apply to?

Premises will fall within the scope of Martyn's Law where "qualifying activities" take place. This will include locations for purposes such as entertainment and leisure, retail, food and drink, museums and galleries, sports grounds, public areas of local and central Government buildings (e.g., town halls), visitor attractions, temporary events, Places of Worship, health and education.

Eligible locations whose maximum occupancy meets the above specified thresholds will be then drawn into the relevant tier.

There will be some limited exclusions and exemptions from the Duty. This includes locations where transport security regulations already apply; and those that are vacant over a reasonable period or are permanently closed. Those with a large floor space and low occupancy in practice (e.g., warehouses and storage facilities) as well as offices and private residential locations, will not be in scope.

What will the standard tier be asked to do?

Standard Duty holders will need to undertake easy and simple activities to meet their obligations. This will include completion of free training, awareness raising and cascading of information to staff and completion of a preparedness plan.

The aim is to ensure staff are better prepared to respond quickly to evolving situations, aware of what processes they should follow, able to make rapid decisions and carry out actions that will save lives. This could be as simple as locking doors to delay attackers progress and access whilst guiding staff and customers to alternative exits. It could also enable lifesaving treatment to be administered by staff whilst awaiting the arrival of emergency services.

What will enhanced tier be asked to do?

A risk assessment and security plan, considered to a ‘reasonably practicable’ standard, will be required. This will allow Duty holders to assess the balance of risk reduction against the time, money and effort required to achieve a successful level of security preparedness - a recognised standard in other regulatory regimes (including Fire and Health and Safety).

What about locations run by volunteers?

Government intended for places of worship to receive bespoke treatment under the duty, in reflection of the existing range of mitigation activities delivered and funded by Government to reduce their vulnerability to terrorism and hate crime. All places of worship will be placed within the standard tier of the Duty regardless of their capacity, barring a small cohort across all faiths that charge tourists for entry and/or hire out the site for large commercial events.

Charities, community groups and social enterprises own and operate a broad range of locations (museums, national trust sites, sizeable public venues e.g., the royal opera house and national theatre). Some organisations also hire out premises to others for various purposes. As most locations owned or operated by charitable organisations, community groups and social enterprises will likely fall below the 800+ capacity threshold, Government considers the requirements to be proportionate

Will this affect accessibility?

Duty requirements will vary but would for many include changes to security systems and processes, and how staff are trained. As such, many changes the Duty will drive are likely to be 'behind the scenes' that the public would not notice. In some instances, physical security features might however be obvious to the public but they should never compromise accessibility.

How will Martyn's Law be enforced?

An inspection capability will be established to seek to educate, advise, and ensure compliance with the Duty. Where necessary, the inspectorate will use a range of sanctions to ensure that breaches are effectively dealt with.

How will you ensure this doesn't create undue burden on businesses?

Consultation and ongoing liaison with the business community is integral to our approach. Government has carefully considered the impact on premises and locations that may be captured. This includes ensuring requirements placed on Duty holders are proportionate whilst achieving better public security, and without placing undue burden on parties responsible for public places. However, it is reasonable that many locations should take appropriate and proportionate measures to protect their staff and the public.

Is there support for this legislation?

The Manchester Arena Inquiry Volume One Report strongly recommended the introduction of a duty to improve the safety and security of public venues.

The London Bridge and Borough Market inquests also recommended the introduction of legislation which would govern the duties of public authorities regarding protective security.

Seven in ten respondents to the Protect Duty consultation agreed that those responsible for publicly accessible locations (PALs) should take appropriate and proportionate measures to protect the public from attacks. This 18-week consultation This 18-week consultation closed on 2nd July 2021 and received a total of 2,755 responses from a wide range of participants across the UK.

Figen Murray and the Martyn's Law campaign team have tirelessly campaigned for the introduction of new legislation. Their efforts have helped Government raise awareness of this important issue. Collaboration continues as we engage both the public and industry partners to debate how we can work together to improve public security.

Proposals to date have been well received by the security community and Government's commitment to this reform has been broadly welcomed in Parliament,

as Members of both Houses recognise how important it is to improve safety and security for our citizens, so they can go about their lives without fear.

Will Martyn's Law apply to all of the UK?

Yes. The legislation will apply across England, Wales, Scotland and Northern Ireland, as national security is a reserved matter for the UK Government.

When will this important legislation be introduced?

The Government will introduce the Protect Duty as soon as parliamentary time allows.

When will the Protect Duty become law?

It is not possible to give a date. There will be a lead in time allowing for those captured by the Duty to prepare for commencement, and as soon as the parliamentary timetable is known this will be set out.

What are you doing to ensure public places have appropriate security before Martyn's Law is implemented?

Martyn's Law is one part of our extensive efforts across Government including those of the police and security services, to combat the threat of terrorism. There remains an extensive programme of guidance in place which has been developed by security experts, Counter Terrorism Policing, and other partners to provide stakeholders and others responsible for public places, with high quality advice. Many businesses and organisations already do excellent work to improve their security and preparedness – however the absence of legislative requirements has at times led to inconsistencies and lack of clarity on accountability. Government wants to redress this position through this reform.

How will my business be supported on Martyn's Law?

Dedicated guidance and support will be provided for Martyn's Law, to ensure that those in scope have the required information on what to do and how best to do it. As part of this approach, we will expand the support available to those responsible for delivering security in public places.

A new online platform has been developed by the National Counter Terrorism Security Office (NaCTSO), Home Office and Pool Reinsurance to support all those seeking to enhance their protective security. ProtectUK is a central, consolidated hub for trusted guidance, advice, learning and engagement with experts in security and Counter Terrorism. It will serve as the 'go to' resource for free, 24/7 access the latest information on protective security and will be regularly updated with new engaging content and increased functionality.

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EXCLUSIVE

Scots treated for hypothermia in hospital during cold snap

7th January

Figures obtained by The Herald show that almost 300 people were taken to hospital suffering from hypothermia during January and early-mid March.

Exclusive by Caroline Wilson
Senior Reporter

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41 Comments

Hundreds of Scots were admitted to hospital suffering from hypothermia during January and early-mid March, figures show, as households faced spiraling energy bills.

Infirm or ill, lots of them living in poorly-insulated homes

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It can be a medical emergency and elderly people are most at risk.

Responding to the figures, Citizens Advice Scotland said it had been warning for some time that "health would inevitably suffer" if people were forced to cut back on heating in severe weather.

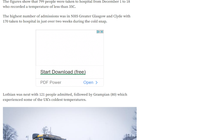
Some 1.3m Scots households are their energy bills rise last April after Ofgem lifted the dual fuel bills price cap by the biggest increase yet. From April 1, there is four customers in default tariffs paying by direct debit saw an increase of £693 from £1,277 to £1,970.

All households were given a £400 discount by the UK Government, administered by their energy suppliers, to help them with the cost of the rise in wholesale prices, Russia and Ukraine and Halfword to do more to help the most vulnerable households.

READ MORE: *SNP warned thousands may be worse off under new winter heating scheme*

Hypothermia can be caused by prolonged exposure to very cold temperatures when the body begins to lose heat faster than it's produced.

Lengthy exposures will eventually use up your body's stored energy, which leads to lower body temperature.



Normal body temperature is around 37C (98.6F).

The figures show that 799 people were taken to hospital from December 1 to 28 who recorded a temperature of less than 35C.

The highest number of admissions was in NHS Greater Glasgow and Clyde with 179 taken to hospital in just over two weeks during the cold snap.

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Lothian was next with 111 people admitted, followed by Grampian (80) which experienced some of the UK's coldest temperatures.

December 17 was the coldest day in the UK since December 2010 with a highest recorded temperature in Braemar, Aberdeenshire, of -9.3C (15.5F) - the lowest recorded maximum temperature for 12 years.

READ MORE: *Outrage as UK treasury raises in £6.4bn with energy tax as fuel poverty soars*

In Lanarkshire 76 people were taken to hospital with a low temperature with 74 admitted from Ayrshire and Arran.

The lowest number of admissions was in Orkney and Shetland where there were less than five and the Western Isles (5).

While no figures were available to compare this year's cases with 2021, an emergency medicine source said it was "not unusual" to see cases of hypothermia in hospital, particularly if it is the primary diagnosis.

Of the 799 patients, 23 had a diagnosis of heat/cold exposure recorded on their record.

A recent survey by Age UK Scotland found 62% of older people had cut back on heating to make ends meet.

Dr Susan Hendrie, Consultant in Medicine of the Elderly for NHS Lothian and a member in agreement **health** of the University of Edinburgh said this is of concern.

She said, "Older people are at higher risk of hypothermia because as we age our bodies' ability to regulate its temperature is reduced, where we get old our bodies should decrease blood flow to the skin (to reduce heat loss) and increase internal heat production (by shivering). These mechanisms are less effective as we age.

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"As well as their factors, aspects of behaviour can make older people more at risk of hypothermia.

"Temperatures as low as 16 degrees will put someone at risk of hypothermia.

"Concerns about bills may affect the use of heating, and perhaps also but foot and mouth but drinks.

"People may be keeping one room warm, but other rooms in the house may be cold.

She added: "If an older person falls, they can lie for a long time (if they don't have a way to call for help, a community alarm or a phone is nearby, and lying on the floor) and this prolonged exposure to cold and dampness in the cold can be associated with coming to hospital with hypothermia."

Citizens Advice Scotland policy manager Stephanie Millar said: "We are very concerned about the impact of these high energy bills and have been warning for some time that some people will be unable to keep their heating on and their health will inevitably suffer in severe cold weather.

"The extra money made available by the UK government is welcome but the fact is that it isn't nearly enough, particularly when you consider that of the 1.3m Scottish households – those with pre-payment meters – are having problems accessing it."

Simon Community Scotland, which supports homeless people and Glasgow City Council had ensured that accommodation was available to everyone during the cold snap, "including those with no recourse to public funds."

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Symptoms of hypothermia include shivering, pale, cold and dry skin, slurred speech, slow breathing/heartbeat or confusion.

Advice while waiting for emergency assistance includes wrapping the person in a blanket, sleeping bag or dry towel, making sure their head is covered and keeping the person awake by talking to them until help arrives.

You should not use a hot bath, hot water bottle or heat lamp to warm them up, rub their arms, legs, feet or hands or give them an alcohol.

Hospital treatment may involve the patients being given warm fluids straight into a vein but measures can may be needed for severe hypothermia.

There were an estimated 4,300 deaths due to cold homes in the winter of 2019-20, according to analysis by the charity National Energy Action.

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Glasgow Kelvin College

Risk Management Committee

Minute

Meeting held on Tuesday 8 November 2022 at 2pm online using Microsoft Teams

Item	Action Agreed	Member	Target Date
1.	**Sederunt**		
	L Clark, Director of Corporate Services (Chair); J Evans, Vice Principal; A Carr, Head of Finance; E Campbell, Funding Manager; M Smillie, Head of Student Information Services; G McGuire, Senior Curriculum Manager HCCLD; I Gordon, Head of Facilities and Environmental Sustainability; G Lawson, Health and Safety Manager; J Clarke, Senior Curriculum Manager; ; M McKerlie, Head of Services to Support Learners; E Mitchell, Human Resources Manager (for D Shiels); M Thomson, Cross College Support and Administration Manager and; R MacKenzie, Regulations and Compliance Manager.		
2.	**Apologies**		
	D Smeall, Principal; D Shiels, Director of Human Resources; A Daly, Finance Manager; J Gallagher, Quality Enhancement Development Manager; J Quinn, Director of ICT Digital Services; L Lang, Engagement Manager, Communications and Planning; and P Brown, Director of Planning, Performance and Curriculum.		
3.	**Terms of Reference**		
	Members noted the content of the Terms of Reference for information purposes.		
4.	**Draft Minute of Previous Meeting held on 23 August 2022**		
	Item 12d Campus Reinvestment Project The following change should be recorded:		

Item	Action Agreed	Member	Target Date
	Members thanked I Gordon and ***P Haslett for their efforts and praised them*** *for skilfully managing such a significant project within a programme of multiple competing operations.* The minutes of the meeting held on 23 August 2022 were accepted as a true and accurate record of the business conducted at the previous meeting.		
5.	**Matters Arising from the Minutes of the Previous Meeting**		
	Item 6c Health and Safety - Fire Risk Assessment February 2022		
	I Gordon confirmed that, additional substantial amounts of wastepaper and material had been removed from all campuses. However, there are a number of boxes remaining that are unmarked and there is a lack of clarity as to who they belong to and if they should be removed. It was noted that R Ashton is liaising with Faculty Directors.		
6.	**Health and Safety**		
a)	**Health and Safety Committee Minute**		
	16 March 2022		
	Members noted the content of the Health and Safety minute for information purposes.		
b)	**Legal Current Issues Review (LCIR)**		
i)	19 August 2022		
ii)	15 September 2022 (part i)		
iii)	15 September (part ii)		
	Members noted the content of the August and September editions of LCIR for information purposes.		
7.	**Finance**		
	Members noted, for information purposes, the content of the latest edition of the National Fraud Initiative, “NFI Matters – Developing Strategies to Detect and Prevent Fraud”.		

Item	Action Agreed	Member	Target Date
8.	**GDPR/Cyber Security**		
	An Information Security Procedure had been drafted. The draft would be further refined before being presented to SMT and the Committee.	**LC/JQ**	
9.	**Insurance**		
a)	**Cyber Renewal 2022-23**		
	L Clark advised members that insurance matters covered at the previous meeting held on 23 August 2023 were being progressed.		
10.	**Estates**		
a)	**The Code of Good Governance**		
i)	Guidance Note: Conducting Externally Facilitated Effectiveness Reviews – September 2022		
ii)	Code of Good Governance for Scotland's Colleges: September 2022		
	Members noted the content of the Code of Good Governance and Guidance Note issued by Colleges Scotland for information purposes.		
b)	**Security/Guarding**		
	I Gordon informed members that the possibility of reducing on-campus security provision was being considered. The College was currently corresponding with Mitie. Financial savings would be considered against any potential risks posed by reduction in provision.	**IG**	
c)	**Review of Springburn Campus Panel/Rust Spots**		
	I Gordon updated members on the cracks and rust spots that had appeared on some of the panel cladding of the main Springburn building. A structural engineering company had conducted a full assessment and a full report would be produced. A report for Audit and Risk and Finance and Resource committees would be submitted at a future meetings.	**LC/IG**	

Item	Action Agreed	Member	Target Date
11.	**Human Resources**		
	E Mitchell reported that consultation with College Unions regarding proposals contained within the College Operating Plan were ongoing. Dates for various Human Resources Policies were being reviewed.		
12.	**Risk Management**		
	Risk Management Update		
	L Clark provided members with an update on Risk Management activities. During discussion, the following points were noted: - Funding continued to be the main risk faced by the College - a situation faced by the whole further education sector. Managing this risk would continue to be a key priority for the College in the months and years ahead. However, a proper resolution would require fundamental change at a National level from Scottish Government and the Scottish Funding Council. - An Operating Plan had been developed and was being discussed with staff, unions and other stakeholders. - If the assumptions within the Operating Plan were realised, the predictions were that 89 FTE would depart from the College over the next 2 Academic Years and the College itself would be 21% smaller. - The proposed closure/sale of our West End Campus could have potential consequences – both negative and positive. These would be considered as part of the feasibility study and a paper would be presented to the Board of Management in December 2022. - Cyber threats/attacks continued to be a concern. - The threat and impact of winter power cuts were being explored. - Students from disadvantaged communities faced increased challenges due to the ongoing economic crisis. - Strike action over pay across several sectors continued to be a threat to service delivery. - Hairline cracks and rust spots on cladding panels of the Springburn Campus building were being investigated with a report to be presented in the new year.		

Item	Action Agreed	Member	Target Date
	- The first three strands of the Campus Re-investment Project were ongoing, with Student Zones and Curriculum Developments nearing completion, and good progress being made on the College Environment strand. Funding of the final strand of staff spaces had not yet been identified to progress this part of the project. It was anticipated that this would be delayed until 2023/24. Members noted the contents of the Risk Management update for information purposes.		
a)	**Henderson Loggie: Charity Trustee Training**		
	L Clark reported that she had attended Charity Trustee Training provided through Henderson Loggie. Members noted the content of the presentation from the training session for information purposes.		
b)	**College Operating Plan Annual Year 2022/23 – 2026/27**		
	J Evans confirmed that the College Operating Plan had been made available to all staff. The Plan represented a series of options for the College. Dialogue with staff, unions and other stakeholders was ongoing.		
c)	**Strategic Risk Register**		
	Members noted the content of the Strategic Risk Register for information purposes. During review and discussion, the following points were noted: - *SFC Review* - risk to remain unchanged; - *GKC Identity* - had been identified by the Board as a key risk; a brand refresh was being progressed; the risk level would be maintained for the time-being but would reduce after measures were introduced; - *People* – loss of staff was seen as an increasing risk to the College (due to impact of loss of skills/knowledge base/experience) - increased pressure on remaining workforce might also result in issues of motivation/low morale impacting on delivery; mitigating measures would focus on staff wellbeing and fostering of open and transparent dialogue; risk level to remain unchanged; - *Litigation and Compliance* - risk to remain unchanged; - *Curriculum Relevance* - risk to remain unchanged;		

Item	Action Agreed	Member	Target Date
	- *Sustainable Funding* – members agreed that the risk here had increased – this was due to a number of factors including the continued reduction of FWDF funding and the outcome of the SFC mid-year budget review; as mitigation, an Operating Plan had been developed and was being discussed with staff, students and other stakeholders; - *Student Experience* - the College had been encouraged by Freshers week and the potential positive impact on student retention; Mental Health counsellors had been appointed and students were positive about the campus re-investment project; risk to remain unchanged; - *Environment* - risk to remain unchanged; - *Digital Transformation* - risk to remain unchanged; - *Student Recruitment and Retention* - student finances were under increased pressure leading, in some cases, to students seeking employment; student services had been restructured and Freshers Week feedback had been positive; risk to remain unchanged; - *Cyber Risk* – risk to remain unchanged; - *Covid-19* - a hybrid model of working had been established and ventilation/CO2 meters had been installed; risk to remain unchanged; - *Strike Action* – there was a threat of strike action by teaching and support staff over pay; however, members agree that, for the time being, the risk level would remain unchanged.		
d)	**RMC Annual Report**		
	Members noted the content of the Risk Management Committee Annual Report for information purposes.		
e)	**RMC Annual Self-Evaluation Questionnaire**		
	The Self-Evaluation Questionnaire would be sent out to Committee members as a Microsoft Form. Committee members would be asked to rate the statements regarding the effectiveness of the Committee on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). Committee members would also be invited to expand on any issues raised, or any points missed by the questionnaire. The results of the questionnaire would be issued to the Risk Management Committee.		

Item	Action Agreed	Member	Target Date
f)	**Team Draft Risk Registers: Summary Team Risk Movement November 2022**		
	Members noted the summary of movement within Team Risk Registers from August 2022 to November 2022 for information purposes.		
13.	**Items for Information**		
a)	**The UK's National Resilience Strategy: What can we expect?**		
	Members noted a report detailing the launch of the UK Government's National Resilience Strategy. The initiative sought to raise the profile of 'risk' at a national level. The strategy hoped to build a better national response to threats by developing people, skills and equipment that could be used across a range of scenarios. Members noted the content of the Strategy for information purposes.		
b)	**HEFESTIS Newsletters from 19 August 2022 to 21 October 2022**		
	Members noted the content of the HEFESTIS Newsletters for information purposes.		
ci)	**HEFESTIS Advisory Notice: Funding Conditional Upon Cyber Essentials Certification**		
	Following the consolidation of the Cyber Essentials (CE) scheme to a single Assessing Body, there had been material changes to the interpretation of the standards and what Assessors are now requiring of Applicants. With the update to assessment questions and guidance which had come into force in January 2022, there were now considerable challenges facing larger organisations wishing to remain compliant with the scheme and maintain levels of CE and CE+ certification. During consultation with HEFESTIS and UCISA members, concern had been raised about conditional funding, including research grants being denied because of non-Cyber Essentials certification due to procurement and regional (including devolved) legislative requirements. Members agreed that it would welcome comments from the Director of ICT Digital Services on the matter at the next meeting of the committee.	**JQ**	

Item	Action Agreed	Member	Target Date
cii)	**HEFESTIS Cyber Essentials Areas for Clarification**		
	Since the consolidation of the Cyber Essentials (CE) scheme to a single Assessing Body, there had been material changes to both the scope and the interpretation of standards which Assessors were now requiring of Applicants. With the update to assessment questions and guidance which came into force in January 2022, there were now considerable challenges facing larger organisations wishing to achieve or maintain CE and CE+ certification. These changes represented impediments to many Public Sector organisations endeavouring to re-certify under the Cyber Essentials scheme. Changes included the scope of certification, the impact of remote working on compliance, conditional funding, Assessor judgement, mitigation controls and post pandemic realities. Members agreed that it would welcome comments from the Director of ICT Digital Services on the matter at the next meeting of the committee.	**JQ**	
d)	**Joint Cybersecurity Advisory (CSA): Iranian Islamic Revolutionary Guard-Corps – Affiliated Cyber Actors Exploiting Vulnerabilities for Data Extortion and Disk Encryption for Ransom Operations**		
	Members noted the content of a report produced by the joint Cybersecurity Agency for information purposes.		
e)	**Scottish Sports Futures: Trauma and Poverty – Post Covid-19 Challenges affecting young people in Scotland**		
	Members considered a research report from Scottish Sports Futures on Trauma and Poverty affecting young people in Scotland for information purposes.		
f)	**Treat cyber crime as a strategic threat, UK businesses told**		
	Members considered an article published by Computer Weekly on the strategic threat posed by cyber-crime for information purposes.		
g)	**Winter blackouts 'extremely unlikely' but UK 'must plan for every scenario'**		
	Members considered a news article discussing potential winter energy blackouts for information purposes.		

Item	Action Agreed	Member	Target Date
h)	**Torches not candles and note emergency numbers: How to prepare for a blackout**		
	Members considered a news article discussing preparedness for winter energy blackouts for information purposes.		
14.	**AOCB**		
	Members considered a tabled item regarding the risks of a new wave of far-right lone wolf terrorists competing on a computer game-style leader board. The article, published by the Evening Standard, was noted for information purposes.		
	It was agreed that consideration be given to providing another staff training session with scenarios and responses involving power outages.	**MT**	
15.	**Impact on Students**		
	Members agreed there may be a negative impact on students as the College moves forward into an arena of reduced funding and increased cost pressures. Notwithstanding, the College would put mitigating measures in place. Nevertheless, it was possible that general illness and the associated issues of providing cover, low staff morale and possible teaching strike action over pay demands could cause disruption to learners.		
16.	**Equality Management – Equality issues to be considered as a consequence of the consideration of the above agenda**		
	There were no new Equality Management issues considered as a consequence of the above agenda		
17.	**Risk Management – Risk issues to be considered as a consequence of the consideration of the above agenda**		
	The Strategic/Risk Register would continue to be considered in line with the review schedule ensuring risk is managed appropriately and in accordance with the Risk Management Framework.		

Item	Action Agreed	Member	Target Date
18.	**Data Protection – Data Protection issues to be considered as a consequence of the consideration of the above agenda**		
	There were no new data protection issues considered as a consequence of the above agenda.		
19.	**Closure**		
	The meeting closed at 3pm.		
20.	**Date of the next meeting**		
	Tuesday, 24 January 2023 at 2pm via Microsoft Teams.		