

The global risks barometer

The global risks barometer assesses the influencing factors, global impact and risk perceptions of the 37 risks in the five risk categories: economic, geopolitical, societal, environmental and technological at a global level. In Global Risks 2011, Sixth Edition, the influencing factors and global impact have been generated and refined through the 18 workshops with experts in each risk category. The risk perception characteristics, which include key interconnections, likelihood, severity, and variation in perception and confidence level are data extracted from the Global Risks Survey 2010.

The barometer is designed to trigger discussions on global risks at multiple levels: at an individual risk level to understand the factors that influence the risk and its consequences described as global impact, in relationship with the highly interconnected risks to understand the directionality and the feedback loop with other risks, and at a systemic level as it has been illustrated in the Global Risk Landscape.

The barometer is a living document for several reasons. First, the risks that have been captured at a global level do not necessarily play out at a local level in a similar manner hence there is a need for further discussion. Second, the risk characteristics evolve as the world moves on. Lastly, there are many interpretations on how the risks may be influenced and impacted; hence there is a broader need to continually improve the work. Readers are encouraged to provide constructive contribution to further elaborate this living document that will feed into future Global Risks reports.

The symbols in the “Drivers and indicators” denote the following



Drivers that increase risk



Drivers that could both increase or reduce risk



Drivers that reduce risk

The global risks barometer

Economic Risks



Drivers and indicators

- ▲ **Sharp increase and volatility in the prices of financial assets** including mortgages, asset-backed securities and debt instruments
- ▲ **Sharp increase and volatility in prices of real assets** (commercial and private real estate)
- ▲ Excessive **capital flows to emerging markets**, inducing asset price bubbles
- ▲ **New arbitrage opportunities**, causing currency carry trades from low-to high-interest rate countries
- ▼ Changes in **central bank policy frameworks** which allocate more weight to overall financial stability rather than just price stability
- ▼ Policy shifts encouraging **domestic consumption** and creating further **productive investment opportunities** in emerging economies
- ▼ Greater **transparency and stronger financial regulation** regarding surveillance, capital and liquidity ratios, risk retention and counterparty risk management in over-the-counter derivative markets

Global impact

Reversals of global economic growth as collapse in asset prices undermines consumer confidence and the allocative efficiency of the financial system (the current financial crisis reduced world output by roughly 2% and contracted advanced economies by roughly 4%).

Possible **collapse of banking systems** as investors lose trust in financial markets and governance institutions.

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The global risks barometer

Economic Risks



Drivers and indicators

- ▲ **Government policies** such as price ceilings on food prices, lead to reallocation of production and food shortages
- ▲ Fluctuating **economic growth** in emerging market economies
- ▲ Fluctuations as a function of the **global business cycle**
- ▲ **Currency devaluation** should a number of countries attempt to shift the relative strength of their currencies to spur exports
- ▲ **Climate change and extreme weather events** which increase production uncertainty
- ▲ **Retrenchment from globalization**, through e.g. protectionist barriers and “resource nationalism” from countries possessing rare metals
- ▼ Advances in new **information and communication technologies** that smooth price fluctuations by improving information flow between sellers, buyers and middlemen
- ▼ Advances in **agricultural technologies** that create more resilient crops
- ▼ Advances in **financial instruments** that allow consumers and producers of commodities to manage better risks associated with volatile production levels

Global impact

Lower growth as volatility causes uncertainty for investments by individuals and companies (such as farmers and mining companies)

Volatile and rising food prices lead to **hunger and malnutrition** among the poor where food accounts for a large proportion of household spending or earnings.

The global business cycle may be exacerbated by commodity price fluctuations.

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The global risks barometer

Economic Risks

		low	med	high
Extreme consumer price volatility	Perceived likelihood to occur in the next ten years			
	Perceived impact in Billion US \$			

Volatile prices for consumer goods and services distort demand, create uncertainty for governments and business, and increase costs for both producers and consumers.

Drivers and indicators	Global impact
<ul style="list-style-type: none"> Aggressive quantitative easing Volatile commodity prices Collapse in asset prices leading to widespread failures in the financial sector with attendant recessionary impact High unemployment rates in combination with large and protracted output gaps Effective monetary policies that reduce the chance of severe swings towards inflation or deflation 	<p>An inflationary spiral could impoverish savers and creditors and have adverse consequences for investment, growth and future prosperity.</p> <p>A deflationary spiral could foster precautionary spending patterns that may exacerbate recessionary trends.</p>

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The global risks barometer

Economic Risks



Drivers and indicators

- ▲ **Geopolitical tensions** and fear of terrorist activities especially in oil-producing and transit regions
- ▲ High growth rates in **emerging economies**
- ▲ **Underinvestment** in the exploration and refinement of fossil fuels
- ▲ **Regulatory uncertainty** over impending carbon pricing mechanisms and governance
- ▼ **Increase in alternative energy production** (e.g. solar and wind power) possibly leading to reduced dependency on fossil fuels

Global impact

Dampened economic growth as business planning is disrupted and price volatility feeds through into other goods.

Social unrest in countries where heating costs account for a high proportion of household budgets.

Substantially higher oil prices generate current account surpluses in producing countries and deficits in importing nations, exacerbating **global macroeconomic imbalances** and fuelling turbulence in financial markets.

Possibility of an oil **supply crunch**.

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Economic Risks



Drivers and indicators

- ▲ Rising **debt levels and fiscal deficits** in advanced economies
- ▲ **Rising market interest rates**
- ▲ **Increasing dependency ratios and demographic challenges** (for example due to ageing in advanced economies)
- ▼ **Clear exit strategies** on behalf of governments holding high and rising levels of debt
- ▼ **Persistently high rates of inflation**
- ▼ **Social security and healthcare systems reform** to a sustainable level while providing necessary level of social safety net

Global impact

High government debt-to-GDP ratios stifle economic growth and exert upward pressure on real interest rates.

In highly indebted economies, spreads on government bonds may rise significantly, exacerbating sovereign debt crises, particularly in some OECD countries.

Sovereign debt crises in Eurozone countries **threaten European economic integration**, with negative impacts on other blocs considering currency unions and the potential to precipitate wider retreats from globalization.

Fiscal austerity leads to **cutbacks in innovation and education** programmes with long-term opportunity costs.

Potential for social unrest and political instability resulting from the breakdown of social safety nets.

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Economic Risks



Drivers and indicators	Global impact
<ul style="list-style-type: none"> ▲ Increase in the absolute size of current account imbalances ▲ Substantial changes in the conduct of monetary policy such as quantitative easing ▲ Competitive devaluations of currencies ▲ High number of potentially misaligned currency pegs maintained ▲ Continued reliance on the US dollar despite its loss in value due to no other alternative international settlement currency, particularly in the context of a disruption in the Euro ◆ Extent to which debtor countries are able to address fiscal challenges and surplus countries are able to balance consumption with savings ▼ Meaningful growth policies that change the incentives for the use of income in both deficit and surplus countries so as to reduce imbalances 	<p>The correction of global imbalances typically comes at the price of sharp income contractions and adverse foreign exchange developments in deficit countries.</p> <p>Currency volatility adversely affects trade and may lead to an increase in protectionist measures, retrenchment from globalization and additional global governance failures.</p> <p>Running sustained and large current account deficits requires capital inflows on the part of deficit countries. This implies an increase in public debt when accompanied by fiscal deficits, leading potentially to fiscal crises.</p>

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Economic Risks



Drivers and indicators

- ▲ **Constraints on fiscal budgets** and decisions to reduce infrastructure spending
- ▲ **Lack of security standards** and guidance provided by governments to address vulnerability of critical information infrastructure and power grids to attempted attacks
- ▲ Increasing capacity and inclination of **terrorist networks** to target infrastructure for political objectives
- ▲ **Population growth and urbanization** increasingly putting stress on existing infrastructure
- ▼ Increases in **access to credit** by the private sector to finance large infrastructure projects
- ▼ International cooperation on regionally facing **critical infrastructure**

Global impact

- Increased transaction costs and disruption to business** caused by inadequate or failing infrastructure.
- Unsustainable demand** for natural resources and associated **damage to the environment** caused by inefficient distribution of water, energy and sanitation services.
- Domino effects** from interdependencies of critical infrastructure, intensifying crisis situations.

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Economic Risks



Drivers and indicators	Global impact
<ul style="list-style-type: none"> ▲ Implementation of implicit and explicit trade barriers through tariffs, subsidies, national content requirements, etc. ▲ Increasing populist politics fed by slow growth and high levels of unemployment ▲ Increased hurdles to cross-border migration ▼ Tangible progress in international trade negotiations such as the Doha Round ▼ Successful negotiations in bilateral and regional trade agreements 	<p>Declines in global trade and the efficiency of global capital markets lead to decreases in innovation and economic growth.</p> <p>Welfare losses and higher levels of poverty globally.</p>

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Economic Risks



Drivers and indicators	Global impact
<ul style="list-style-type: none"> ▲ Social unrest ▲ Excessive savings and investment into unproductive assets ▲ Demographic pressures due to China's ageing population ◆ Chinese government's ability to maintain political stability in the wake of loss in growth momentum ▼ Chinese government's success in maintaining stable renminbi in the wake of loss in export momentum 	<p>Adverse effects on global capital and commodity markets could foster a reversal in globalization, as China is a large importer of commodities from other emerging market countries. Its reserves are invested abroad (predominantly in US government bonds) and it has a sizeable presence in other countries through direct investments in land and commodity producers and through development aid.</p> <p>Bursting of an investment-driven, large-scale infrastructure and construction projects bubble.</p> <p>Socio-economic unrest due to rising unemployment rates.</p>

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Geopolitical Risks



Drivers and indicators

- ▲ **Institutional weakness in fragile states**
- ▲ **Economic disparity** and low wages
- ▲ **Continuing or increasing levels of organized crime** and **illicit trade**
- ▲ **Regulatory and global governance failures**
- ▼ Citizen **education** and **information**, including **literacy**, which increase opportunities for legitimate activities and raise awareness on the impacts of corruption
- ▼ Increased **transparency** of global financial flows
- ▼ Stronger links between international civil society and legal institutions in advanced economies
- ▼ **National laws containing extraterritorial provisions** to hold companies liable for corruption, such as the US Foreign Corrupt Practices Act and United Kingdom Anti-Bribery Bill
- ▼ **Increasing private sector engagement** and commitment to reduce corruption

Global impact

- Increased transaction costs** for businesses, governments and individuals.
- Creating **barriers to growth** by reducing willingness to take business risks and deterring foreign investment.
- Reduced levels of citizen trust** in government.
- Erosion of institutions and civil service functions.**
- Increasing security concerns** for individuals threatened by coercion.

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Geopolitical Risks

		low	med	high
Fragile states	Perceived likelihood to occur in the next ten years			
	Perceived impact in Billion US \$			
<p>One or more systemically critical countries experience the significant erosion of trust and mutual obligations between states and citizens, leading to state collapse, internal violence, regional or global instability and, potentially, military conflict.</p>				
Drivers and indicators		Global impact		
<ul style="list-style-type: none"> ▲ Imbalances in internal centres of power (civilian, military, economic, religious, etc.) and competition between domestic actors for economic and political resources ▲ The proliferation of newly independent states with low economic and political resilience ▲ Weakening social, political and economic bonds as a result of internal or external conflict ▲ Increasing incidence of corruption, organized crime and illicit trade ▼ Effective investments in local institution-building, education and health care ▼ Strong global governance and cooperation regarding international intervention and support for fragile states 		<p>Increasing economic disparity, both within and between countries.</p> <p>Civil war and reduced human security.</p> <p>Migration and displacement of vulnerable populations.</p> <p>Disruptions to international trade and exchanges because of illicit trade and organized crime.</p> <p>Increasing likelihood of geopolitical conflict and terrorism.</p>		

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Geopolitical Risks



Drivers and indicators

- ▲ **Rising political populism at the national level**
- ▲ **Increased tension over territorial disputes**, particularly those linked to access to natural resources or strategic assets
- ▲ **Fragile states** which have the potential to fuel regional conflict
- ▲ **Rising tensions** in the Middle East and the Korean peninsula
- ▼ **Global governance successes** which decrease the likelihood of misunderstandings and miscalculations among states, and increase the potential for dispute resolution

Global impact

Loss of human lives through warfare.

Loss of property and economic resources, at both personal and national levels through warfare.

Reinforces global governance failures by creating new levels of **distrust** among nations.

Breaks **global trade patterns** and may lead to reduced growth at a global level due to protectionist reactions (though national economies may be stimulated through innovation).

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Geopolitical Risks



Drivers and indicators

- ▲ **Discrepancies in political views, incentives and decision-making systems** between advanced and emerging economies
- ▲ Reluctance of established powers to acknowledge and adjust to the **rising power of emerging economies**
- ▲ Increasing **interconnectedness and complexity of global risks**, which defy traditional governance responses
- ▲ **Disintermediation of traditional forms of leadership** and governance through technological and social shifts
- ▼ Sustained success in implementing **global agreements on climate change** based on UN mechanisms
- ▼ Development of a **well-informed and well-mobilized global public opinion** sharing norms and values of global citizenship

Global impact

- Increased impact and likelihood of other global risks and less-effective **global risk response**.
- Increasing likelihood of **geopolitical conflict** through reduced means of peaceful settlement.
- Reduced **global growth** and economic inefficiency due to increasing protectionism.
- Reduced **trust** among states by heightening divisions rather than commonalities.
- Regulatory arbitrage opportunities.

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Geopolitical Risks



Increases in the illegal trafficking of goods and people cause social, political, economic and environmental harm by increasing the burden on supply chains, exacerbating wealth inequalities and financing destabilizing activities.

Drivers and indicators

- ▲ **State fragility** which fosters illicit trade by facilitating the production and export of illicit goods and services
- ▲ **Rising economic disparity** which creates incentives for engaging in illicit trade as a source of employment and wealth creation
- ▲ **Global governance failures**, particularly in law enforcement, supply-chain security and customs regulations
- ▼ **Increased consumer education** and awareness of the aggregate impact of illicit trade
- ▼ Increasing **financial and goods transparency**, and tracking
- ▼ **Regulatory and global governance reforms** which reduce opportunities for regulatory arbitrage
- ▼ **Legalization** and decriminalization that shifts the dynamics of demand and supply of illicit goods

Global impact

Reduces public and private sector **revenues** and, in time, innovation, by distorting markets and reducing tax bases.

Stimulates **corruption, organized crime and state fragility**.

Threatens **biodiversity** through unregulated activities.

Criminalization/marginalization of segments of the population.

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Geopolitical Risks



Drivers and indicators

- ▲ **Weak institutions**, attributable to both state fragility and corruption
- ▲ **Rising economic disparity** which creates incentives for engaging in organized crime as a source of employment and wealth creation
- ▲ **Global governance failures**, particularly in law enforcement and intelligence gathering
- ▲ **Illicit trade activity**, which is a primary occupation of organized criminal activities as well as a main source of income
- ▼ **Legalization** and decriminalization of illicit goods that alter the flow of goods and financing to organized crime
- ▼ Increasing **financial and goods transparency** and tracking
- ▼ Global cooperation on **intelligence-sharing and law enforcement across jurisdictions** to identify and prosecute organized criminals

Global impact

Reduces public and private sector **revenues** by creating grey and black markets, creating unfair competition, and reducing tax bases.

Negative impacts reduce **social stability and security** by creating unsafe environments, which in turn deter **tourism** and investment

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Geopolitical Risks

		low	med	high
Space security	Perceived likelihood to occur in the next ten years			
	Perceived impact in Billion US \$			

The insufficient regulation of commercial and military activity in space jeopardizes potential economic, commercial and technological benefits derived from space exploration and leads to geopolitical tension and confrontation.

Drivers and indicators

- ▲ Increasing **levels of activity** in space make tensions or conflict in space more likely
- ▲ Rising risks of traditional **geopolitical conflict** increases the likelihood of conflict spilling over into space
- ▲ **Lack of global governance**, in particular related to space technologies and territorial rights
- ▲ Increasing levels of **space debris** that make space activities increasingly unsafe

Global impact

Possible direct impact on traditional **geopolitical conflict** on Earth due to the intricate nature of state interest on Earth and in space.

Reduced opportunities presented by space as a new avenue for **economic and human development** by creating extreme uncertainties for investors, public and private.

Human **injury and loss of life** from attacks from or accidents in space.

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The global risks barometer

Geopolitical Risks



Drivers and indicators

- ▲ **Political and religious radicalization**
- ▲ **Social fragmentation** in both advanced and emerging economies
- ▲ **Rising economic disparity**, which contributes to marginalization
- ▲ Increased **mobility of people and information**
- ▲ **Existence of fragile states** which serve as safe havens and training grounds for terrorist organizations
- ▲ Decreasing costs and barriers of access to low-end **weapons of mass destruction**
- ▲ **Geopolitical tension**, instability and conflict
- ▼ **Improved intelligence** and tracking of terrorist-related activities through the Internet
- ▼ **New and credible peace efforts in Israel/Middle East**
- ▼ **The West's pressure on terrorists' sanctuaries** in Afghanistan and the Horn of Africa

Global impact

Human **injury and loss of life**.

Fear and **psychological trauma** both in anticipation of terrorist acts and in the aftermath of attacks.

Reduced trust among people within and between societies by creating stigmas.

Economic opportunity costs through preventive measures, fear of attacks and the direct impact of incidences, particularly related to travel and tourism.

Diplomatic and military escalations, which can both result from and drive terrorist incidents.

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Geopolitical Risks



Drivers and indicators	Global impact
<ul style="list-style-type: none"> ▲ Iran's nuclear ambitions, particularly whether it will test a nuclear device or seek de facto nuclear status with the capability to develop a nuclear device on short notice ▲ Rising demand for nuclear technologies for civilian use, which lower the cost of technologies and increase the risk of misappropriated nuclear material ▲ Rising levels of organized crime, illicit trade and fragile states ▲ Geopolitical conflict and related arms races which increase the demand for nuclear weapons ▲ Technological advances and increasing access to information which lower the cost and difficulties of manufacturing biological and chemical agents ▼ Continued survival of the Non-Proliferation Treaty, bilateral agreements and negotiations designed to limit nuclear technologies 	<p>Geopolitical conflict driven by fears of rogue states acquiring WMD capabilities which existentially threaten other nations.</p> <p>Terrorist attacks with unprecedented consequences because of new capabilities.</p> <p>Increased need for spending on intelligence and surveillance.</p> <p>Global power shifts as more countries increase diplomatic bargaining power thanks to the acquisition of WMD capabilities.</p>

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Environmental Risks



Drivers and indicators

- ▲ Human activities that release particulate matters, such as the **use of fossil fuels**
- ▲ **Particulate-releasing natural catastrophes**, such as volcanic eruptions and forest fires
- ◆ Shifts in **weather patterns** which influence air pollution levels on a local and regional basis
- ▼ **Government policies and regulations** controlling pollution and incentivizing businesses and consumers towards greater use of non-polluting energy sources
- ▼ **Technological innovation** that contributes to spread of clean energy production and shifts to alternative energy

Global impact

Detrimental effects on **wildlife, vegetation and broader biodiversity** and environmental impacts (e.g. acid rain caused by smog and holes in the ozone layer holes, etc.).

Air pollution increases **human health hazards** such as heart disease and respiratory diseases (e.g. asthma) resulting in **loss of life, higher healthcare costs** and **loss of productivity**.

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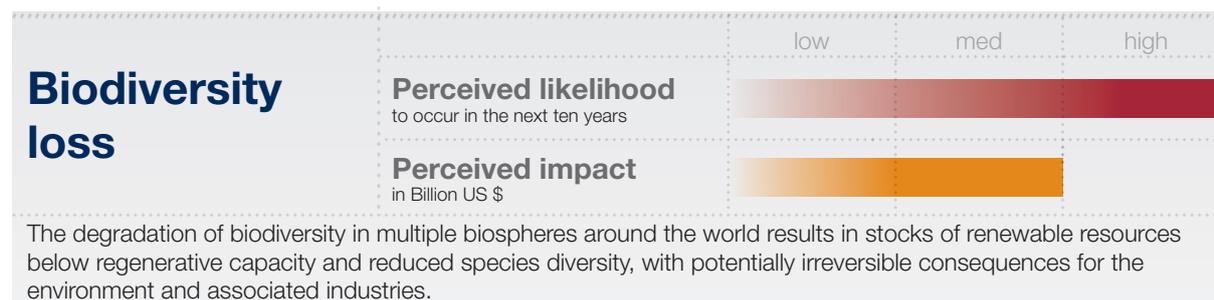
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The global risks barometer

Environmental Risks



Drivers and indicators	Global impact
<ul style="list-style-type: none"> ▲ Population growth and increases in resource-intensive consumption patterns ▲ Continuing deforestation, driven primarily by logging, mining and agricultural land use ▲ Decline in the number of pollinators, such as bees, that contribute to reproduction of many plants ▲ Growth in intensive agriculture and monoculture ◆ Infrastructure development and other investment decisions which can drive either acute destruction and ill-use, or actively improve long-term sustainability of resource use ▼ Conservation and preservation policies which are successfully implemented at local levels to manage the impact of human activity on ecosystems ▼ Legal and economic support to population segments who currently rely on unsustainable land-use practices for survival and income ▼ Increasing levels of awareness of the economic importance of biodiversity, in particular the economic and social value maintained by biodiverse systems and the trade-offs involved in ensuring their continued existence ▼ International agreements which help lower externalities affecting biodiversity and/or prevent unsustainable exploitation of renewable resources 	<p>Irreversible environmental damage, including extinction of flora and fauna and shifts in habitat.</p> <p>Increases in the rate of climate change.</p> <p>Negative impact on food and water security, as agricultural yields fall and ecosystems supporting water sources are damaged.</p> <p>Significant economic loss for those who depend on healthy and well functioning ecosystems to generate income (e.g. farmers).</p> <p>Destabilization of communities and traditional activities which lead to psychological trauma, economic damage, and migration.</p>

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Environmental Risks



Drivers and indicators	Global impact
<ul style="list-style-type: none"> ▲ Population growth and increases in resource-intensive consumption patterns ◆ Degree of ocean acidification, which affects the CO2 absorption level in the ocean, drives calcification of organisms and impacts global warming ◆ Extent to which mitigation measures are adopted and rigorously enforced by governments, including international agreements on reducing carbon and other greenhouse gas emissions ▼ Financial innovation in instruments to help spread risk and economic burden of climate change ▼ Technological advances in agriculture to adapt crops to droughts and extreme temperatures 	<p>Declining crop yields and risk of starvation, especially in Africa prolonged drought and high temperatures.</p> <p>Impacts on marine ecosystems of rising temperature and acidification include destruction of coral reefs threatening marine biodiversity.</p> <p>Economic losses from climate shifts were estimated by the British government at 5-20% of the annual global gross domestic product.</p> <p>Increase in the spread of infectious diseases, particularly because warmer temperatures allow disease-carrying insects, animals and microbes to survive in areas where they were once contained by cold weather.</p> <p>Possible unintended consequences from interventions meant to reduce climate change, such as geo-engineering.</p>

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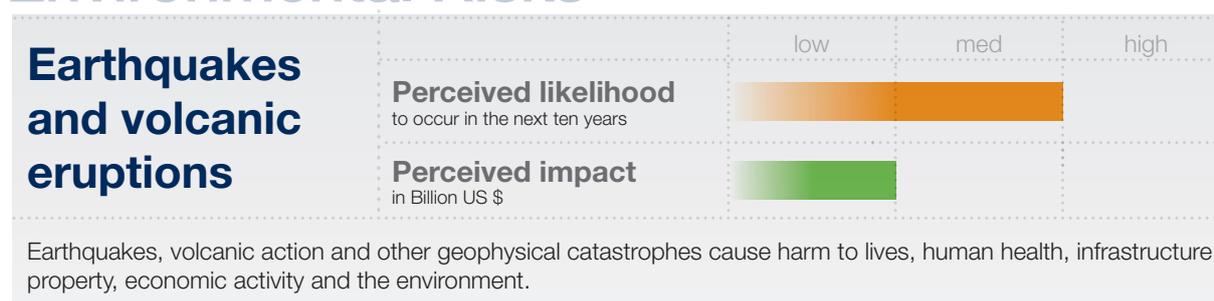
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Environmental Risks



Drivers and indicators

[Earthquakes and volcanic eruptions themselves are caused by natural geophysical phenomena; these influencing factors address the scale of the impacts]

- ▲ **Increasing population growth and density** in disaster-prone areas
- ◆ **Rigour of and compliance with building codes**, affecting how buildings and critical infrastructure are able to withstand varying frequencies and durations of earthquakes; encompasses factors such as cost of bringing older buildings up to standard, and quality of materials and workmanship
- ▼ **Effective crisis management capabilities in affected areas**, such as resident awareness, rapid response mechanisms, mitigation plans and execution efficiency, (including to secondary effects such as aftershocks, fire, landslides and tsunami)
- ▼ Advances in technologies that enable more sensitive detection and **early warning systems**.

Global impact

Significant economic loss.

Loss of life through immediate trauma and subsequent diseases where infrastructure is chronically affected.

Displacement of people as a consequence of the destruction of residences and businesses.

Interruption to the global logistics and transport networks with indirect impacts including economic damage, reduced production, interruption of flows of food, critical materials and other resources.

Increased **costs** related to stricter building codes.

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Environmental Risks



Drivers and indicators

- ▲ **Increasing population growth and density** in flooding-prone areas
- ▲ **Climate change** through extreme rainfall, rising sea levels, melting ice-sheets, glacial lake outburst floods, etc.
- ▲ **Deforestation** and destruction of ecosystems that provide natural barriers and absorption of water
- ▲ **Urbanization** and development that increase the concentration of people and economic assets in high-risk areas such as floodplains and coastal zones
- ▼ **Infrastructure investment** to build and maintain levees, drainage and flood control
- ▼ **Governance systems** that support preparedness, rapid response, evacuation plans and regional/international cooperation in the event of a disaster
- ▼ Advances in technologies that enable more sensitive detection and **early warning systems**
- ▼ Systematic and long-term plans to **remove people and property from danger zones**

Global impact

Coastal flooding inundates wetlands and other low-lying lands, erodes beaches and increases the salinity of rivers, bays and groundwater tables.

Economic loss in the form of affected agriculture, damage to residential areas and critical infrastructure, as well as disruption to regional and global supply chains.

International **displacement, migration and resettlement.**

Erosion of fertile surface soil, affecting biodiversity and food production.

Water contamination as floodwater picks up household and industrial waste, pesticides, heavy metals and other toxic chemicals.

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Environmental Risks



Drivers and indicators

- ▲ **Increasing population growth and density** in flooding-prone areas
- ▲ **Climate change** and **shifts in weather patterns** through rising ocean temperatures which increase the energy potential of hurricanes and tropical storms
- ◆ **Rigour of and compliance with building codes**, affecting how buildings and critical infrastructure are able to withstand varying frequencies and durations of storms and cyclones; encompasses factors such as cost of bringing older buildings up to standard, and quality of materials and workmanship
- ▼ **Emergency preparedness** such as resident awareness, early warning and rapid response mechanisms (including to secondary effects such as fires, flooding and landslides)

Global impact

- Economic loss** in the form of affected agriculture, damage to residential areas and critical infrastructure.
- Loss of life** through immediate trauma and subsequent diseases where infrastructure is chronically affected
- Displacement of people** as a consequence of the destruction of residences and businesses
- Interruption to the global logistics and transport networks** with indirect impacts including economic damage, reduced production, interruption of flows of food, critical materials and other resources.
- Increased **costs** related to stricter building codes.
- Crop damage**, impacting food security.

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Environmental Risks

		low	med	high
Ocean governance	Perceived likelihood to occur in the next ten years			
	Perceived impact in Billion US \$			
<p>Inadequate global regulation, authority and coordination create conflict over the appropriate use of the sea for transport and marine resources, threatening economic development and regional stability.</p>				

Drivers and indicators

- ▲ **Subsidy schemes** incentivizing overexploitation
- ▲ **Population growth** and increases in **resource-intensive** consumption patterns
- ▲ **Declining yields from land resources** which increase pressure to exploit marine resources
- ◆ Extent to which **international coordination on ocean governance** can address territorial disputes and the marine resources are exploited (“tragedy of the commons”)
- ◆ **Advances in technologies** which enable more effective exploitation of marine resources, but which come with the threat of unintended consequences (such as oil spills during deepwater drilling)
- ▼ **Increasing levels of awareness** of the economic importance of ocean resources and governance, in particular the economic and social value maintained by stable marine ecosystems and the trade-offs involved in ensuring their continued existence
- ▼ **Governance on seaborne waste** such as the Great Pacific Garbage Patch, where pelagic plastics, chemical sludge and other debris have been trapped by the currents of the North Pacific Gyre

Global impact

Overexploitation of marine resources leads to **environmental degradation and biodiversity loss**, threatening the estimated US\$ 375 billion per year in goods and services which depend on marine biodiversity.

Increased competition for marine resources leads to **geopolitical tensions and conflict** between nations.

Potential **wide-spread environmental degradation, loss of habitat and wide-scale pollution** affecting marine, birds and human life.

The symbols in the “Drivers and indicators” denote the following

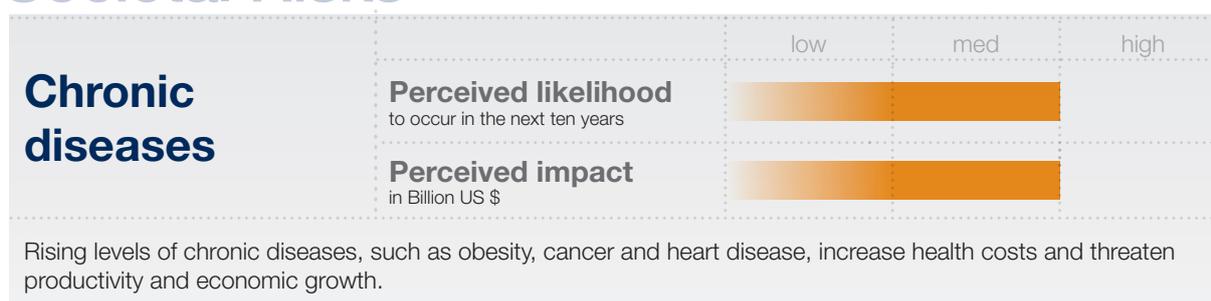
▲ Drivers that increase risk

◆ Drivers that could both increase or reduce risk

▼ Drivers that reduce risk

The global risks barometer

Societal Risks



Drivers and indicators

- ▲ **Increase in risk factors** such as high cholesterol, high blood pressure, obesity, smoking and alcohol combined with environmental factors and sedentary lifestyle
- ▲ **Increasing economic disparity** where this results in larger proportions of the population having inadequate access to healthcare
- ▼ **Policies which successfully raise awareness and incentivize healthy behavioural choices** in terms of diet and exercise
- ▼ **Effective prevention, screening and wellness programmes**
- ▼ **Advances in diagnostics, drug development** and therapeutics
- ▼ New scientific data on and improved understanding of causal links, genetic factors and precise treatment mechanisms

Global impact

- Increased death rates** due to these diseases.
- Decrease in **labour force productivity and savings**.
- Decrease in quality of life.
- Increased **burden on human resources** to provide healthcare.
- Increased **financial burden** both for states and individuals to cover healthcare costs.
- Increased prevalence of mental illness and depression** for both working age and elderly cohorts.

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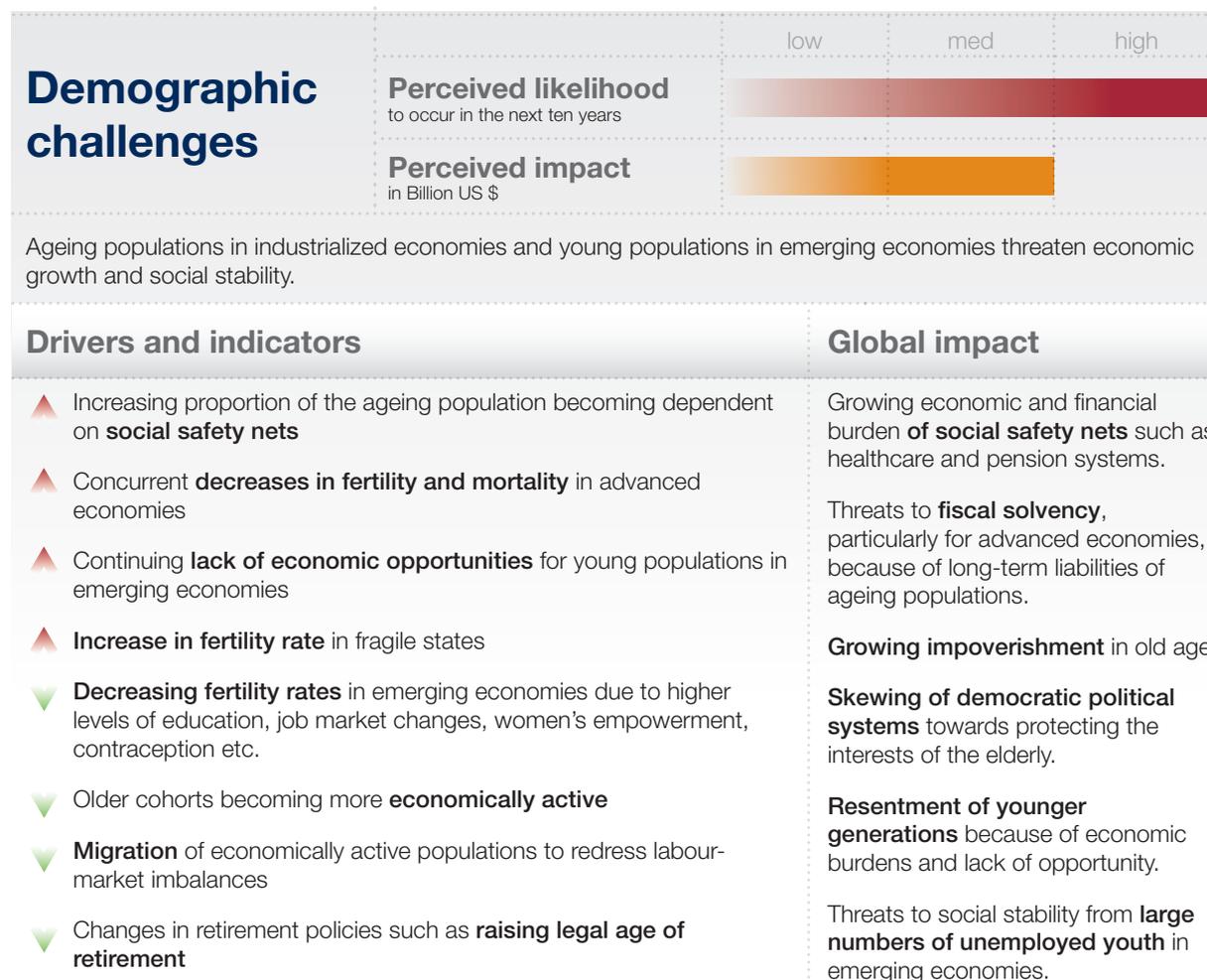
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Societal Risks



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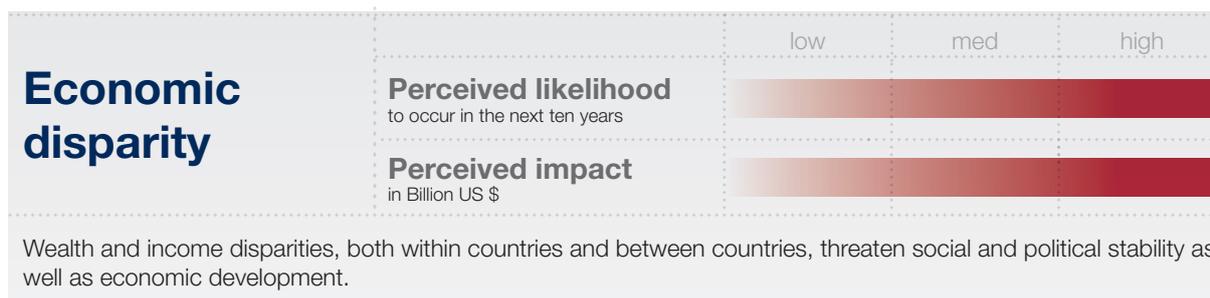
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The global risks barometer

Societal Risks



Drivers and indicators

- ▲ Executive pay and incentive structures which **distort national income structures**
- ▲ Decline of labour institutions and collective bargaining
- ▼ **Access to education** at the levels necessary for participation in the modern labour market
- ▼ Access to **employment opportunities**, particularly for the younger and the elderly generations
- ▼ **Social safety nets** and transfer policies with the effect of efficiently redistributing wealth where appropriate

Global impact

Social fragmentation, including higher rates of social unrest, crime and marginalization.

Mistrust in the system of governance at both the national and international level, leading to democratic disengagement and rise of direct action.

Shorter life expectancies and higher rates of **chronic disease and depression**, as the intergenerational transmission of wealth creates growing disparities in health.

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The global risks barometer

Societal Risks



Drivers and indicators

- ▲ **Low levels or quality of infrastructure** involved in distributing food and related commodities, with the potential to restrict supply
- ▲ **Population growth and increasing caloric consumption per person**, resulting in rising demand
- ▲ **Rising food prices**, particularly in the context of rising **economic disparity**
- ▲ Trends reducing arable land available for sustainable food production, e.g. competition from **biofuels**
- ▲ **Rising water scarcity**
- ▲ **Increases in climate change-related natural disasters**, including flooding, droughts, storms and cyclones
- ▲ **Protectionist policies and market distortions** such as export controls, price floors and subsidies
- ▼ **Technological advances** which improve crop yields and/or resilience to extreme temperatures, lower water availability and weather events

Global impact

- Destruction of local ecosystems** because of monoculture, forest clearing and soil exhaustion.
- Social and political unrest.**
- Loss of **locally suitable knowledge and skills** because of shifts to industrial food production.
- Malnutrition**, which may result in permanent physical impairment and lost productivity.
- Migration** pressures.
- Commodity price volatility** as shortages ripple through global markets.

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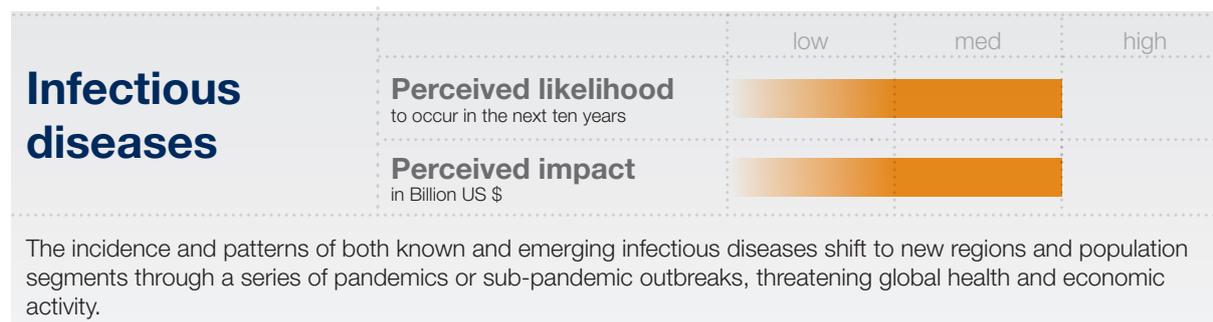
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The global risks barometer

Societal Risks



Drivers and indicators	Global impact
<ul style="list-style-type: none"> ▲ Surge of medication/ vaccination-resistant strains ▲ Emergence of H1N1 and new strains of the virus ▲ Increasing transmissibility of new viral strains (viral evolutionary rule) ▲ Contamination of food and water sources because of humanitarian crises or poor sanitation ◆ Level of enforcement of intellectual property rights affecting the development and distribution of new and generic drugs at affordable prices ▼ Effective international preparedness, monitoring and coordination for pandemics, including vaccine availability, supply-chain preparedness, emergency communication, transportation and treatment infrastructure ▼ Effective international monitoring and coordination for managing known infectious diseases, including policy and legal support at international and national levels ▼ Coverage of basic immunizations to entire populations ▼ Improved sanitation facilities and hygiene behaviours, particularly in rural areas and urban slums 	<p>Significant loss of life.</p> <p>Critical disruption in commercial and trade activities as well as critical services that may result in widespread economic and social loss.</p> <p>Severe burden on health systems.</p> <p>Public panic, which may amplify the overall impact of infectious diseases.</p> <p>Ongoing loss of productivity because of long-term infectious disease burdens the labour force.</p> <p>Emergence of drug-resistant bacteria and other pathogens.</p>

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The global risks barometer

Societal Risks



Drivers and indicators

- ▲ **Internal, regional and international conflicts**
- ▲ Increasing **demand from ageing societies** to bring in migrant workers for elderly care
- ▲ Increasing parochialism in receiving countries, especially given current and expected economic conditions
- ◆ Effectiveness of **limits on migration** imposed by industrialized countries seeking to accept only the most skilled migrants
- ▼ Skilled migrants **returning to their countries of origin** as improving economic conditions offer greater opportunities
- ▼ **Pre-emptive social measures** to deal with economic issues and ensure equitable sharing of resources and infrastructure
- ▼ **International frameworks, agreements and effective governance** which take into account the economic hardships of poor countries on one hand and ageing populations on the other

Global impact

Contribution to or strain on social services and safety nets such as healthcare, pensions, housing and education.

Social tension especially involving lower paid workers in the receiving country's labour force.

Emerging economies suffering from **brain drain**.

Suffering of people and destruction of resources in forced **migrations**.

Reduced productivity and economic activity because of restrictions on the global movement of talent.

Where migration is inhibited, **loss of remittances from diaspora**.

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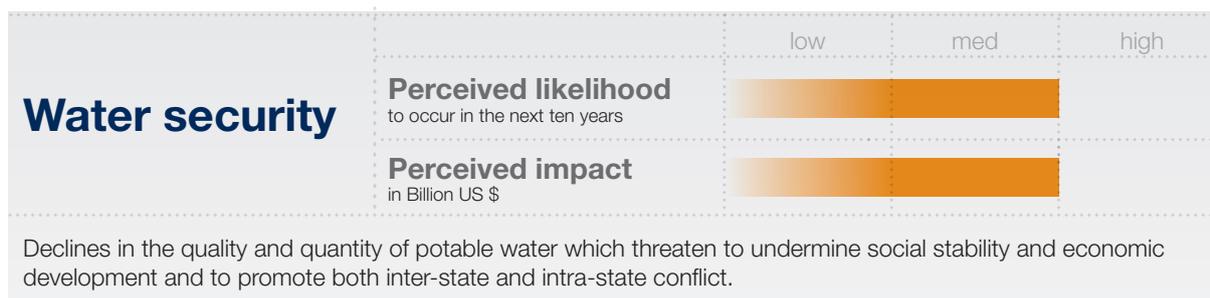
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The global risks barometer

Societal Risks



Drivers and indicators

- ▲ **Population growth**, especially in areas where water is scarce
- ▲ Short-term, piecemeal and **unsustainable water management policies** and practices
- ▲ **Increased competition for water** among resource-intensive systems such as food and energy production
- ▲ **Low levels or quality of infrastructure** for water distribution and management
- ▲ **Subsidies and other market distortions** which encourage excessive water use
- ▲ **Water quality degradation through acidification, eutrophication** (addition of artificial and/or non-artificial substances, such as nitrates and phosphates in fertilizers or sewage, to a fresh water system) or **oil spills**
- ◆ **Changing climate conditions** which shift rainfall patterns
- ◆ Extent to which **industrial, agricultural and household users are empowered to implement** suitable water management solutions
- ▼ **Increasing awareness and engagement** by business and government on the importance of demand-side management of water use
- ▼ Improved **understanding of the social and economic costs** of unsustainable water use
- ▼ **Progressive, market-led pricing regimes for water** which include the full cost of water (including externalities) and lower demand
- ▼ Success in managing **transboundary water sources**, including upstream and downstream water management by multiple stakeholders

Global impact

- Reduced agricultural yields**, reduced food security and economic challenges for agricultural communities.
- Physical and economic conflict** over access to scarce water.
- Spread of infectious diseases** because of contaminated water.
- Loss of **biodiversity** through water shortages in fragile ecosystems.
- Migration** pressures.
- Reduced human security** for populations forced to travel long distances for water.
- Social and political unrest.**

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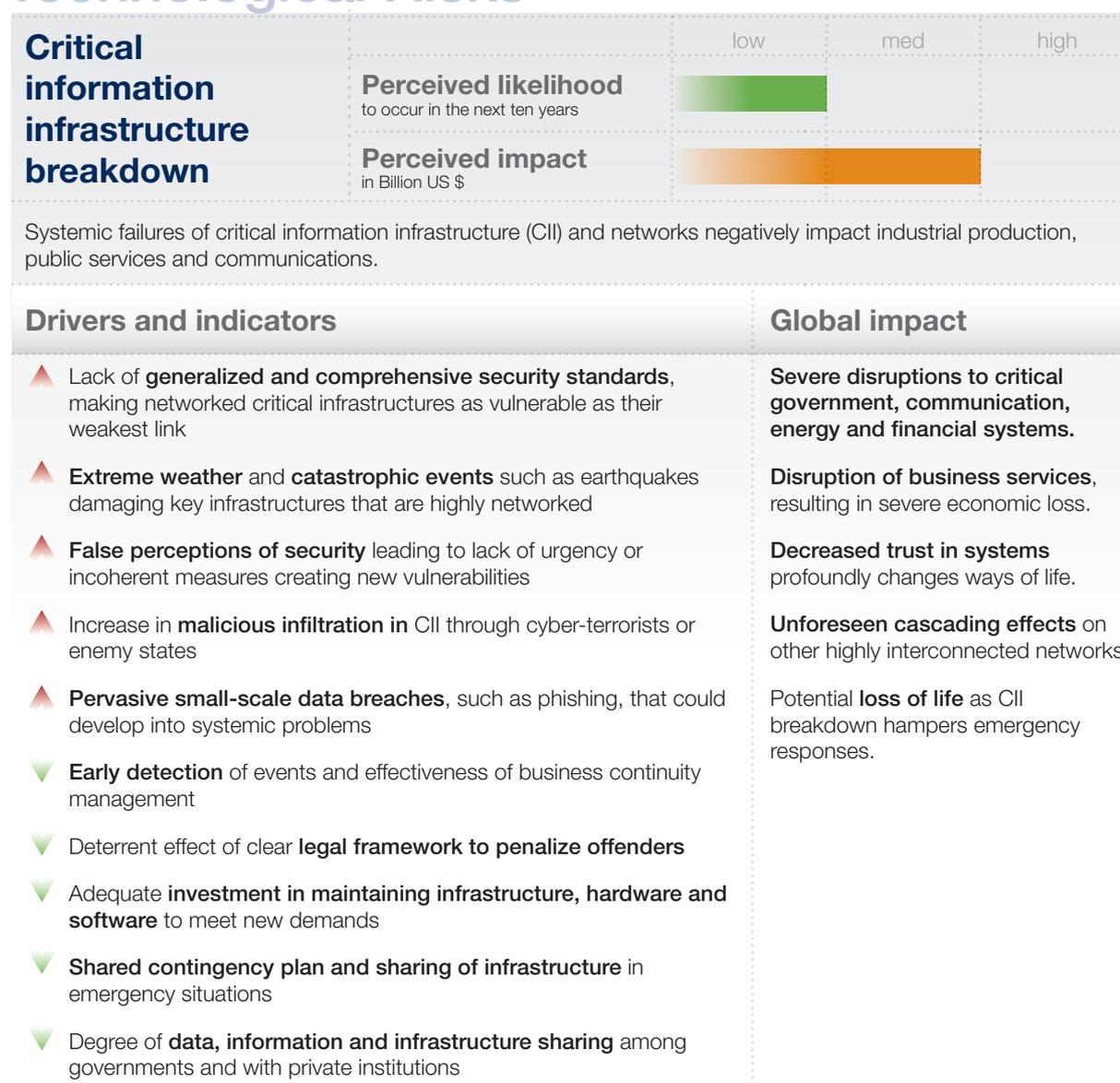
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The global risks barometer

Technological Risks



The symbols in the “Drivers and indicators” denote the following

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The global risks barometer

Technological Risks



Drivers and indicators

- ▲ Lack of **transparency on meta collection** of data and algorithms
- ▲ **Difficulty of tracing** altered data and infiltrator activity and **the lack of agreement** on how to intervene when erroneous data is created or misallocated
- ▲ **Incompatibility of new and old systems**, carrying risks of destabilizing the network
- ▲ **Increased reliance on cloud services** for data storage and analytics
- ◆ Extent to which **policy and regulatory frameworks** can keep up, given the lag between innovation cycles and government decision-making cycles
- ▼ Deterrent effect of clear **legal framework to penalize offenders**
- ▼ **Information sharing** among governments and private firms regarding loss events
- ▼ Improved **education and personal awareness** on ethical and moral responsibilities of online activities, including a **false sense of security** from encryption
- ▼ Development of best practices for data security

Global impact

- Disruption of global e-commerce and network communication** as security concerns make users retreat from online services.
- Paralysis of business and governance** as trust decreases in data collection, storage, distribution systems and organizations processing mass data.
- Increased degree of **tolerance to breaches of privacy**.
- Negative blow to the open source society affecting data and process sharing which hampers **innovation and trust**.
- Unexpected second- and third-order** effects through the interconnectedness of systems and data which are generally poorly understood.

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The global risks barometer

Technological Risks

Threats from new technologies		low	med	high
		Perceived likelihood to occur in the next ten years		
	Perceived impact in Billion US \$			

Negative consequences for human, animal or plant life created when know-how, technologies, materials, or equipment are diverted to or developed specifically for malevolent purposes or when harmful substances are accidentally released

Drivers and indicators	Global impact
<ul style="list-style-type: none"> Increasing development of “dual use” items, such as nuclear technologies Lack of progress in designing internationally agreed governance systems related to the spread and use of new technologies Legal obligation of the producers to label the negative effects of product use Public awareness of potential unintended consequences Advanced research into the potential long-term impact of new technologies on the environment and human health 	<p>Strong public concerns and mistrust over new technologies (e.g. synthetic biology) which could hold back highly beneficial research and development.</p> <p>Long-term negative impacts on health and healthcare systems.</p> <p>Proliferation of unconventional weapons based on new technologies.</p> <p>Plethora of court cases on product liability as well as insurance claims.</p>

The symbols in the “Drivers and indicators” denote the following

Drivers that increase risk

Drivers that could both increase or reduce risk

Drivers that reduce risk