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**Conference Paper**

## Risks for connectivity providers on the increase - any opportunities?

24th Biennial Conference of the International Telecommunications Society (ITS): "New bottles for new wine: digital transformation demands new policies and strategies", Seoul, Korea, 23-26 June, 2024

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# **Risks for connectivity providers on the increase - any opportunities?**

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Derk Oldenburg

Berlin, 9 June 2024

## Abstract

According to the January 2024 WEF Global Risks Report, concerns about the risks related to cyber insecurity, misinformation and adverse outcomes of AI are at the top of minds in the coming two years, followed by extreme weather events and societal polarization. In the coming decade, the effects of climate change are projected to have an even more serious impact. What these risk trends mean to network operators / digital connectivity providers and how they can achieve a better level of resilience, is the object of important and timely studies. A broad range of vulnerabilities have to be addressed in the coming years. But how about the other side of the coin? Are there opportunities for digital infrastructure providers in the rather bleak future the WEF report (and others) sketches? This policy article aims to stimulate a process of creative thinking, looking for opportunities related to five specific risk trends.

## Introduction

According to the World Economic Forum 2024 Global Risks Report<sup>1</sup>, the risks related to digital technology, like cyber insecurity, misinformation and adverse outcomes of AI, will increase sharply in the coming two years. Extreme weather events, societal polarization and armed conflict also belong to the top 5 risk trends. In the coming 10 years, the effects of climate change like extreme weather events and damage to Earth systems are considered to have an even more serious impact on global society. Who wants examples of the consequences only needs to watch the sky-rocketing insurance costs for housing in hurricane areas<sup>2</sup> or the costs for container shipping<sup>3</sup> having to avoid the Suez Canal. Not to speak of those whose entire livelihood is destroyed by natural disaster.

This paper looks at some of the consequences for network operators/digital connectivity providers. Every year, we see pictures of poles, cables and masts wiped out by the devastating force of extreme weather. On 30 May, temperature in New Delhi reached a record 52,3 degrees Celsius, pushing electricity consumption to a new high. Excessive rain caused large-scale flooding in China and very recently in Germany, sending a clear signal of the disruption that can be expected if the long-term projections materialize. The number of cyberattacks, motivated either by criminal, geopolitical or geo-economic objectives is rising steadily. And politically motivated sabotage by state- and non-state actors, or straightforward criminal activity is increasing as well. As the geo-strategic tensions increase, state or non-state actors can be expected to step up hybrid disruptive actions including actions leading to physical damage as well as misinformation and disinformation. In both cases, the networks of connectivity providers play an important role.

The material and economic damage of these events, the measures to repair and the necessary increase of resilience can be expressed in costs for connectivity providers and their customers, as well as costs for the economy as a whole. The ripple-effect goes further: the societies to which network operators deliver their services pay a high price too, both in terms of general communication – think information and electoral processes - and critical communication for the delivery of state services like public health, emergency services, security and defense. The impact of these activities on democratic societies, also called Foreign Information Manipulation and Interference (FIMI)<sup>4</sup> are high.

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<sup>1</sup> World Economic Forum (Marsh McLennan, Zurich Insurance), Global Risks Report 2024  
<https://www.weforum.org/publications/global-risks-report-2024/>

<sup>2</sup> Financial Times 13 February 2024: The uninsurable world, what climate change is costing homeowners

<sup>3</sup> [The mounting strains on global shipping \(ft.com\)](#)

<sup>4</sup> [1st EEAS Report on Foreign Information Manipulation and Interference Threats | EEAS \(europa.eu\)](#)

While much research work is being done – and should continue - on countering risk and the need to improve the resilience of networks<sup>5</sup>, less attention is devoted to opportunities for digital connectivity providers / network operators related to global risk trends.

Seizing these opportunities can benefit both governments and business, which is why serious efforts need to be undertaken to *develop a new type of public-private partnership*. A new type of PP cooperation is necessary to deal with the challenges ahead. Being the essential link between the increasingly digital world, governments and individual citizens, connectivity providers play an essential role in creating this new partnership.

This policy article intends to stimulate ideas about how to get that process going.

## 1. The risk landscape in the coming years

The WEF 2024 Global Risks Report (GRR) provides a comprehensive overview of global risks for the coming two years and for the coming decade. It is based on the annual Global Risks Perception Survey (GRPS) which “brings together the collective intelligence of nearly 1,500 global leaders across academia, business, government, the international community and civil society. The report also leverages insights from over 200 thematic experts, including international risk specialists that form the Global Risks Report Advisory Board, the Global Future Council on Complex Risks, and the Chief Risk Officers Community.”<sup>6</sup>

The GRR looks at risk trends through the lens of four ‘*structural forces*’ that through their interaction with risk trends are expected to shape the development of global risks and the way to manage these risks over the next decade: *Climate Change, Demographic change, Technological Development and Geostrategic Shifts*.

For the actual year 2024 the GRR mentions the following risks as the top-5 in the landscape, in order of perceived severity:

- extreme weather,
- AI-generated misinformation and disinformation,
- societal and/or political polarization,
- the cost of living and
- cyber insecurity.

For the year 2026, the respondents to the GPRS expect misinformation and disinformation to be the number one risk, followed by extreme weather, societal polarization, cyber security and interstate armed conflict.

The projections for the next decade, i.e. for the year 2034, are that the effects of climate change will pose the most important risks, with the severest impact to global society: extreme weather events, critical change to earth systems, biodiversity loss, the collapse of (parts of) the ecosystem and serious shortages of natural resources. Misinformation and adverse outcomes of AI technologies come in 5<sup>th</sup> and 6<sup>th</sup> place.

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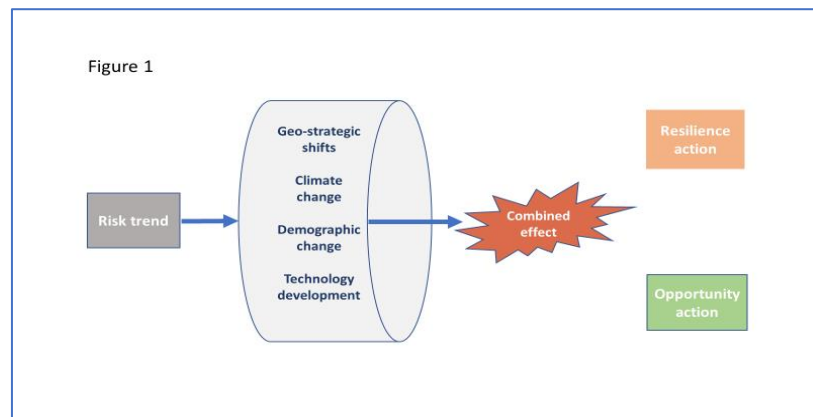
<sup>5</sup> See for example: Serentschy, Georg - *Digital Infrastructure Resilience and Security Policy Implications and Mitigation Measures, May 2024*

<sup>6</sup> WEF 2024 Global Risks Report, page 4

## 2. An interactive lens

The interactive dynamic of the above-mentioned four structural forces and a selection of five risk trends that are relevant to connectivity providers, form the substance of this paper. It aims to identify, through the lens of the combined effect of these forces and trends, where possible opportunities lie for connectivity providers (see figure 1). These risk trends are:

- *Extreme weather events*
- *Critical changes to earth systems*
- *Interstate conflict*
- *Misinformation and disinformation*
- *Societal polarization*



Before going into some detail, it is useful to take a look at how the GRR 2024 and comparable studies like the Global Trends Report of the US Office of the Director of National Intelligence<sup>7</sup> define the structural forces of demographic change, climate change, technology development and geo-strategic shifts.

## 3. Structural forces<sup>8</sup>

### Demographic change

Changes in the size, growth and structure of populations around the world are a certain trend. The demographic divide between the developed and the developing part of the world is widening. Within societies of the developed world like the US, Europe and some countries in Asia, the population is growing older, putting the traditional social contract between generations under strain. An ageing population also has an effect on productivity and average welfare. In other parts of the world, Latin America, South Asia, Africa and the Middle East, societies and economies might benefit from the availability of a larger working population. But demographic growth might also lead to more migration pressure, as a result of a lack of economic opportunity. Over the years, cities have become the focal point for complex demographic issues. In 2007, the urban population overtook the rural population, at 3.36 billion. Today, more than 4 billion people live in urban areas (figure 2). One of the consequences of this concentration is a substantial increase in societal vulnerability to disruptive activity, for example in the density of the infrastructure (electricity, water, communications, heating, logistics) and the fact that the system of food production has to be adapted, with less people living in traditional rural food production areas.

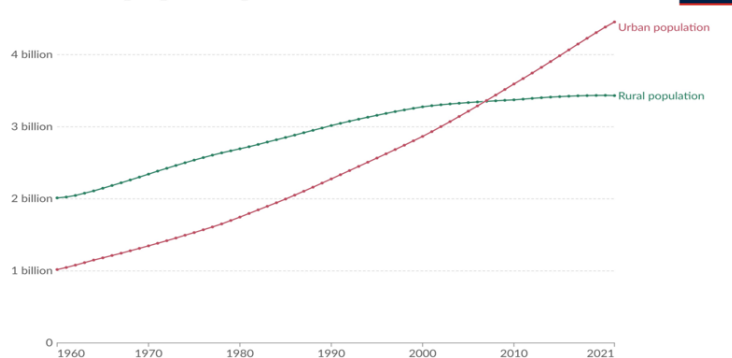
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<sup>7</sup> [Office of the Director of National Intelligence - Global Trends \(dni.gov\)](https://www.dni.gov/GlobalTrends)

<sup>8</sup> Sources for the selection of topics in this section: World Bank, WEF Global Risks Report 2024 and Global Trends 2040, US National Intelligence Council 2021, IPCC Climate Change Synthesis Report 2023

Figure 2

### Number of people living in urban and rural areas, World

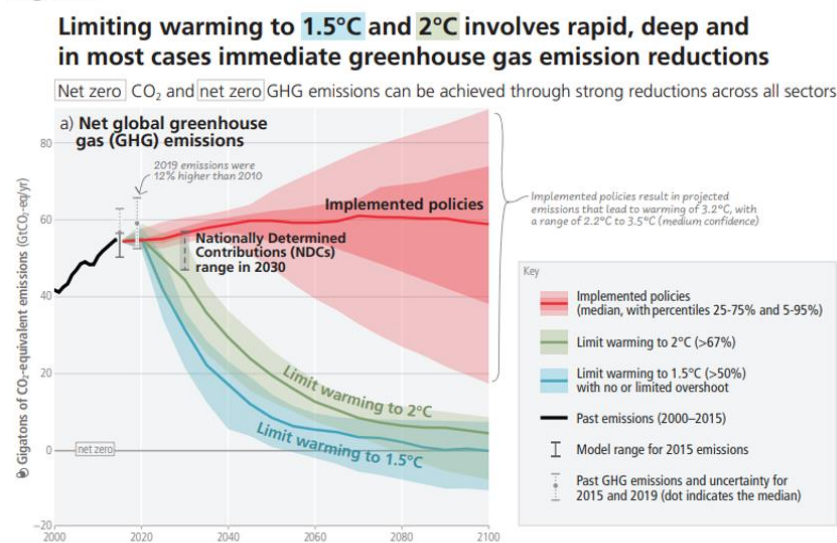


Data source: World Bank based on data from the UN Population Division  
 Note: Because the estimates of city and metropolitan areas are based on national definitions of what constitutes a city or metropolitan area, cross-country comparisons should be made with caution.

## Climate change

The consensus is growing that the 2015 Paris Agreement threshold of 1.5°C above pre-industrial temperatures is no longer a realistic target. The expectations are that this level of global warming will be reached by early to mid-2030s. Although projections of the plateau level vary, the peak of global warming is dependent on the speed and level of carbon-circulation and solutions like geo-engineering, for example carbon capture and storage and marine carbon removal<sup>9</sup>. The degradation of environmental systems could also accelerate global warming, for example as a result of the reduction of carbon sinks. There is no doubt that climate change is at the origin of extreme weather events like hurricanes, droughts, floods, landslides and wildfires. On the structural side, melting ice will lead to rising sea levels and continuous extremely high temperatures or excessive rain are likely to lead to crop failure and food shortages. Depending on political will and societal resolve, a part of the world will have possibilities to adapt, but other parts will struggle with these challenges for the simple reason that the conditions are not there.

Figure 3

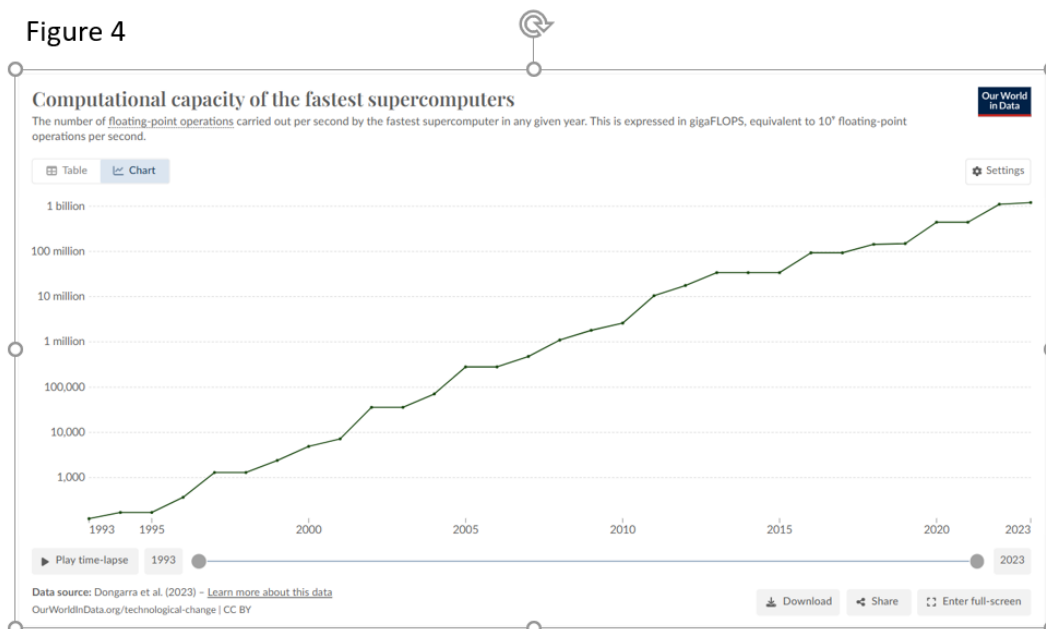


Data source: IPCC Climate Change Synthesis Report 2023

<sup>9</sup> See: [State of the oceans \(statista.com\)](https://www.statista.com/topics/1092/oceans/) and [https://en.wikipedia.org/wiki/Carbon\\_capture\\_and\\_storage](https://en.wikipedia.org/wiki/Carbon_capture_and_storage)

## Technology development

The last years have seen an impressive acceleration in the field of frontier technologies. Key technologies like AI and quantum computing are anticipated to continue their pace of development over the next 10 years. Their potential to improve mankind's ability to deal with global challenges is considered substantial, but there are also risks and downsides connected to their application. Take the staggering demand for electric power needed by data centers. There are growing voices for using SMRs (small-modular nuclear reactors) to bridge this power gap, as renewables alone cannot cover the demand, see for example HSBC research on „Powering AI“<sup>10</sup>. The increasing pace of high-tech development is fueled by a tech competition between states as well as corporate actors, some of which have acquired the size, financial power and economic relevance of a medium-sized country. In reaction to this, in particular in the field of AI, several jurisdictions have initiated regulation in an effort to strike a balance between benefits and risks. Concerns vary from social scoring and the disruptive effects of AI on types of work, to autonomous decision-making in the world of finance and the blurring of the lines between states and other actors, as a result of the accessibility of LLM's. Many studies indicate that AI will have a big impact on future types of work and employment. The use of brain-computer interfaces could blur the boundaries between technology and humanity. Given its strategic importance and the drive to monetize the enormous investments made, the AI surge might well outpace the efforts of regulatory containment. One useful illustration of the speed of technological development is the performance of the fastest supercomputers (see figure 4). In the year 2000, their capacity was 4,900 Gigaflops. In 2023, this had risen to 1,2 Bln Gigaflops. The development of semiconductors is in the center of the technological surge.



## Geostrategic shifts

Here we can make a distinction between two types of geostrategic shift: geo-economic and geo-political. As hybrid forms of foreign policy have developed, these elements are increasingly interconnected. In the field of security and defense, economic and political policy have always been intertwined. The massive economic mobilization in the USA was a decisive factor in the outcome of the Second World War. Today, we observe the effects of the Russian shift to a war economy.

<sup>10</sup> <https://www.research.hsbc.com/C/1/1/320/NpCgsvs>

On the geo-economic side, we have seen the impact of important increases in national and private debt. Many governments in Europe struggle with the burden resulting from measures to mitigate the effects of the pandemic and the effects of the energy price shock resulting from the Russian invasion of Ukraine. Their need or wish to economize stands in the way of investing in things like climate-change mitigation, infrastructure improvement, R&D and education. Increased private sector debt has considerable impact too. The financial situation of real estate companies in China has shown to have substantial economic implications<sup>11</sup>. Economic power is closely related to the size of the economy, the currency situation, productivity growth, competitiveness and the trade balance. It has become a factor of geo-political influence. Trade itself – apart from trade measures - has become a more important instrument in geo-economic competition, sparking debates about doubling or quadrupling import tariffs for some products. Furthermore, the fact that the main players on the global digital market are at home in just a few jurisdictions means that their activities have become an important factor in shifts in the global order. While they continue to grow economically, their influence on political and social issues is increasing in many countries as well.

On the geo-political side, the competition between value- and rule systems, and ideological and geo-economic differences have changed the situation of the world order in the last decade. Multiple poles of power are increasingly focused on asserting or consolidating their position. The lines between states and private actors like militia and terrorist groups are blurring, and so are the lines between the methods and instruments that they use. Can we still clearly distinguish between criminal and politically motivated activity? If we used to think in terms of hot versus cold conflict, there might well be something in between that might be characterized as ‘simmering’ by the hybrid instruments parties are deploying<sup>12</sup>. A telling example of impactful non-state activity are the actions by the Houthis, who have nothing to lose. Acting as proxies they severely disrupt global supply chains, causing high costs and time losses, while remaining almost invulnerable to countermeasures.

The GRR 2024 report signals, that an evolving set of middle powers could develop capabilities in the economic and technological domain that upends the existing balance – which is already under considerable stress. Access to the decisive elements of technology development, take the technology stack of semiconductors and the production factors for AI – compute, capital, data, IP and talent - is at the front of the present international competition for technology leadership<sup>13</sup>. In the sphere of security and defense, a range of technology developments play a role. Iran and other countries are striving to become members of the ‘nuclear club’, while North Korea is considered to be already. In addition, The nature of ‘dual use’ and the conduct of defense operations are changing. The critical communication services of Starlink in the deployment of drones by the Ukrainian armed forces<sup>14</sup> are an excellent example. The jamming and spoofing of GPS and GNSS signals, which reaches new levels in ‘the war of drones’, is creating serious problems for civilian use of these signals<sup>15</sup>. The war in Ukraine and the prospect of reduced US involvement in European defense has propelled stepping up defense capabilities and the promotion of its defense industry to the top of the EU’s political agenda.

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<sup>11</sup> [What is the Evergrande debt crisis and why does it matter for the global economy? | World Economic Forum \(weforum.org\)](https://www.weforum.org/)

<sup>12</sup> [How migration became a weapon in a ‘hybrid war’ \(ft.com\)](https://www.ft.com/)

<sup>13</sup> [UAE seeks ‘marriage’ with US over artificial intelligence deals \(ft.com\)](https://www.ft.com/)

<sup>14</sup> [Russia Is Increasingly Blocking Ukraine’s Starlink Service - The New York Times \(nytimes.com\)](https://www.nytimes.com/)

<sup>15</sup> See Serentschy, Georg - Digital Infrastructure Resilience and Security Policy Implications and Mitigation Measures, May 2024



## 4. Interaction with risk trends

### 4.1 Extreme weather

In the WEF GRR 2024, extreme weather events are those causing the loss of human life, damage to ecosystems and the destruction of property or financial loss. They can be climate-change related and include land-based events like wildfires, water-based events like floods, and atmospheric and temperature-related events like heat-waves.

*Demographic change:* In the coming years, extreme weather events are expected to become more common. They will exacerbate problems in big agglomerates in countries like Bangla Desh, Haiti and the Philippines, where many people live in simple, make-shift housing. The growth of these and comparable cities will increase countries extreme weather vulnerability. The effects of hurricanes, floods, landslides, droughts and droughts will likely increase migration pressures as well.

*Technology development* can increase climate change – take the still existing dependency on fossil fuels to cope with the increasing electricity demand of digitization<sup>16</sup> and the commitments made to achieve zero-emission production leading companies like Microsoft to consider the employment of SMR's. But the same data centers that form the backbone of our AI capabilities also have the capacity to contribute to dealing with extreme weather like flooding and hurricanes. This illustrates, that technological development can be both a catalyst as well as a mitigative force on extreme weather.

*Climate change:* In its chapter on a 3°C world, the WEF GRR 2024 report highlights that a combination of existing climate trends, differing perceptions on the urgency of human action – or the effect of inaction – and technologies like geo-engineering (e.g. carbon capture and storage, CCS) can push earth systems beyond the point of no return. That point is difficult to spot. There are many different regional tipping points, the combined effect of which might lead the world to pass the point of no return unnoticed. For example, missing the tipping point could lead to the complete collapse of the Antarctic and Greenland ice sheets. The resulting sea-level rise will have enormous consequences for coastal areas (extreme weather, flooding) or lead to severe socio-environmental crises (impacting economic growth, food, water and health security).

Figure 5; source WEF Global Risks Report 2024



<sup>16</sup> [AI is a green curse as well as a blessing \(ft.com\)](https://www.ft.com/content/2023/09/14/ai-is-a-green-curse-as-well-as-a-blessing)

*Geo-strategic shifts:* The geo-economic competition and the quest for growth go hand-in-hand with energy use and electricity generation. The effect of further GHG emissions on global warming and resulting extreme weather has been amply proven. On the geo-political side, the competition between systems of governance, principles and values, tends to lead to further global compartmentation. If the different blocks follow their own climate agenda, this would undermine efforts to contain climate change and enhance the frequency of extreme weather events.

#### What this means for network operators/connectivity providers

The combined effect of the structural forces and extreme weather events requires further study. But based on the underlying studies, the expectations are that disruptive effect of these events will increase. While demographic change and missing tipping points are expected to make things worse, technology development has the potential to contribute to *managing* these effects, against which connectivity providers need to develop adequate resilience measures, depending on the geographical situation and the incidence level. Connectivity providers can contribute to measures to increase resilience and seize opportunities as well.

#### Opportunities

*Early-warning systems.* In many places in the developed world, early warning systems for citizens have been established. As the incidence and impact of extreme weather events increase, connectivity providers could take the initiative to improve and expand these systems to cover more individuals in more cases. Examples of Covid 19 warning and tracking apps and systems warning people e.g. by dangerous gas emissions show that these services can be made operational in a relatively short time. The benefits for governmental authorities would be a quicker reaction and lower cost, for example in terms of damage claims. The benefits for citizens lies in more adequate and more timely information and increased safety. Connectivity providers would broaden their public interest profile, gain in reputation and raise the level of trust in their services.

*Early-detection systems.* Early warning and disaster preparedness require an effective system of early detection. Connectivity providers could look into opportunities to helping the development of these systems by facilitating the collection and availability of data. Techniques like quantum sensing look promising and interesting progress has for example been made in the case of hurricanes<sup>17</sup>. The network of international contacts and that exists in the telecommunications / connectivity industry, for example in the framework of the OECD, could be leveraged to explore where opportunities exist to support early detection of extreme weather events.

*Facilitating crisis management and preparedness.* Private sector actors can expect to be confronted with higher demand to support state and non-state organizations in the management of extreme weather events. Instead of waiting for the case to happen, connectivity providers could – at company or collective industry level – take the initiative to enhance societal resilience. Take the example of wildfire-management in Canada, where, connectivity providers could look for ways to support stronger horizontal collaboration

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<sup>17</sup> [An AI dataset carves new paths to tornado detection | MIT News | Massachusetts Institute of Technology](#)

between agencies, enhance resource sharing, the development of innovative decision support tools, and an increased focus on prevention and mitigation<sup>18</sup>. Pro-active engagement helps to create PP partnership frames that are better in line with companies' strategy and capabilities, and support, like in previous cases, the reputation and trust level.

## 4.2 Critical Changes to Earth Systems

The WEF GRR 2024 report defines critical change to earth systems as long-term, potentially irreversible and self-perpetuating changes to critical planetary systems, as a result of breaching a critical threshold or 'tipping point'. A critical threshold could be at a regional or global level and have abrupt and severe impacts on planet health or human welfare. This includes i.a. sea level rise from collapsing ice sheets, carbon release from thawing permafrost and disruption of ocean or atmospheric currents. Human action or inaction could exacerbate their effects, for example technologies like geo-engineering (e.g. carbon capture and storage, CCS). The tipping point is difficult to spot. There are many different regional tipping points, and their combined effect might lead the world to pass the point of no return earlier or later. Missing these could have enormous consequences for example for coastal areas (extreme weather, flooding) or lead to severe socio-environmental crises (impacting economic growth, food, water and health security).

*Demographic change:* An important link between demographic change and critical change to earth systems is the issue of involuntary migration. Crossing critical thresholds by missing tipping points will have serious consequences for ecosystems, biodiversity and the availability of natural resources. In turn, these changes will enhance the way societies develop and people move around the globe. The production of food for a growing global population will also be affected by critical changes to earth systems.

*Technology development.* Technology can make an important contribution to our ability to deal with the silent risk of the tipping points. In turn, the changes in earth systems increasingly provide the sense of urgency to address the problems that these changes create.

*Geo-strategic shifts.* The global geo-political and geo-economic competition is a factor in climate change, and hence in changes in the earth systems. But changes in earth systems also have an enormous influence on the geo-strategic landscape. The melting of polar ice creates a new trade route between west and east, and with that the possibility of new geo-economic configurations. Existing trade routes, like the Panama and Suez canal, are under threat of a reduction of rainfall and Houthi aggression in the Gulf of Aden and the Red Sea. The die-back of the Amazon rainforest will have serious implications in terms of the reduction of carbon sinks, but it will likely also have implications for the Brazilian economy, possibly impacting its position in a multi-polar world.

### What this means for network operators/connectivity providers

Digital connectivity providers / network operators are familiar with the risks of extreme weather and the costs of outages. Increased societal dependency on the functioning of their systems and services – in particular also by the state – will be another argument for governments to push for higher resilience. The costs will go up. The flip side of the increased pressure is enhanced negotiation power on the side of the network operators. The world needs to take the combined effect of the above structural forces and the risk of critical changes to earth systems extremely serious. Dealing with these critical changes requires a massive effort of global monitoring, to which connectivity providers can contribute.

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<sup>18</sup> See: Wildfire management in Canada: Review, challenges and opportunities Cordy Tymstra a,\*, Brian J. Stocks b, Xinli Cai a, Mike D. Flannigan - Elsevier journal Progress in Disaster Science, 31 October 2019

### Opportunities

Exploring how connectivity providers could play a role in monitoring the climatic indicators for critical changes to earth systems could be worthwhile. As the infrastructure of telecommunication / connectivity providers is covering an increasing area, elements like masts in mobile networks might be used to create a fine-meshed network of sensors that would complement existing monitoring/measuring equipment. Given the enormous societal costs of missing tipping points, connectivity providers should be allowed to charge a fee for these services.

Another opportunity could be the capability of digital connectivity providers / network operators to facilitate scientific efforts to connect the dots of climate modelling to improve the visibility of tipping points and the interconnectedness of changing earth systems. And as several countries' readiness to adapt to these changes is low, operators could consider how they could contribute to improving that readiness.

A third opportunity would be to introduce products and services that would empower their customers to enhance the ability of their households to reduce their individual climate footprint, for example through smart grid solutions or tele-health<sup>19</sup>.

### **4.3 Interstate conflict**

The WEF GRR 2024 report uses the notion of 'interstate armed conflict'. It covers "Bilateral or multilateral use of force between states, manifesting as proxy war or open, hot war" In this article the term 'Interstate conflict' covers both armed conflict as well as conflicts in which hybrid measures or instruments are deployed, by states, non-states or by proxies These cover a broad range from (hired) criminal activity including violence to more subtle measures such as the facilitation of illegal migrant crossings<sup>20</sup> They also cover virtual information actions that distort information, leading to misinformation and disinformation and a perception of reality that is conditioned to support the objective of the actor.

*Demographic change:* Demographic changes will lead to further differences in the size and structure of populations in the Global North, East and South. The resulting pressures, like migration, could create new interstate conflicts, triggering reactions with important economic consequences. In case of an armed conflict, an ageing population reduces a country's capability to defend itself. And a country which has lost a sizeable part of its younger population in a war, will have a reduced workforce, leading to lower economic output. On the other side of the coin, countries with a relatively young population has the potential of higher productivity. With the growth of urban populations, societies become more vulnerable, also to hybrid aggression in the form of the disruption of critical infrastructure and services.

*Technology development:* High-end technology, in particular in the field of digital technology, has played a decisive role in the different shapes of interstate conflict for and the defense industry for years. The availability of digital technology to the broader public – e.g. mobile internet access - has increased at a high pace in the past decades. This allows virtually every individual actor to instrumentalize technology to serve interstate competition and conflict. The lines between civil and military goods have blurred and it has become very difficult to define a dual-use good. The possibilities of societal disruption have grown substantially with the introduction of commercial AI tools. Technological leadership in fields like AI and quantum computing has become a strategic top

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<sup>19</sup> See for example TELUS Health: [Health and wellbeing solutions | TELUS Health](#)

<sup>20</sup> [Finland accuses Russia of aiding illegal migrant crossings \(bbc.com\)](#)

priority for a growing group of countries, for economic as well as foreign political and security reasons.

*Climate change:* Extensive research has illustrated clear causality between a hot conflict like the war in Ukraine and climate- and environmental effects<sup>21</sup>. The effects of climate change also create new geographical realities that could spark new interstate conflict. In many cases, the causes lie in access to natural resources, in particular water and fossil fuels. A telling example is the situation in Sudan<sup>22</sup> but this is only one of many.

*Geo-strategic shifts:* Interstate conflict can be regarded as the result, as well as a cause for geo-strategic shifts. The Russian-initiated war in Ukraine has led to NATO enlargement and to closer ties between Russia and China. The conflict has also led to a debate about the Transatlantic relationship, enlargement of the EU and the effect of the war on the situation in the South China Sea. Overall, the tensions have increased, which is partly manifested by enhanced trade restrictions, an increasingly security-oriented technological leadership contest and heavy intelligence and hybrid disruption activity.

#### What this means for network operators/connectivity providers

Digital connectivity providers / network operators are aware of the need to harness their operations and enhance the resilience of their networks against disruption by state and non-state actors in the framework of interstate conflict, from sabotage to straightforward theft<sup>23</sup>. They are also aware of the effect of increased vulnerabilities resulting from e.g. the concentration of people in cities and extreme weather events or natural disasters like volcanic eruptions. Creating redundancy is one of the answers, but the key question – as in other examples – is how to cover the costs.

#### Opportunities

Increased societal dependency on the functioning of the systems and services of connectivity providers / network operators – in particular also by the state – will be another argument for higher resilience levels. The costs will go up. Operators should, in particular here, take the initiative to create higher resilience in close cooperation with governments. The flip side of the increased pressure on the latter is enhanced negotiation power on the side of the network operators. It is worthwhile to explore how to build redundancy in the form of new business models, where the connectivity provider / network operator increases the coverage for reasons of safety and security, and, in doing so, creates the possibility to deliver better quality for a higher price. This could go hand in hand with the extension of the network footprint, facilitated by stimuli from the side of the government and regulator.

## **4.4 Misinformation and disinformation**

In the WEF 2024 GRR, misinformation and disinformation is defined as “persistent false information (deliberate or otherwise) widely spread through media networks, shifting public opinion in a significant way towards

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<sup>21</sup> See for example: [Environmental impact of the Russian invasion of Ukraine - Wikipedia](#)

<sup>22</sup> [In Sudan, conflict and environmental decline go hand in hand \(unep.org\)](#)

<sup>23</sup> The urgency has been amply illustrated in e.g. Serentschy, Georg - *Digital Infrastructure Resilience and Security Policy Implications and Mitigation Measures, May 2024*

distrust in facts and authority. (It) includes, but is not limited to: false, imposter, manipulated and fabricated content.” This article includes Foreign Information Manipulation and Interference (FIMI) as part of this trend.<sup>24</sup>

*Demographic change:* Younger generations increasingly inform themselves through social media and digital communities. This makes them an interesting target for misinformation, efforts which reports show are facilitated by platforms like TikTok and Twitter (X)<sup>25</sup>. While older generations might be less capable to deal with the flood of information available today, they are still likely to be affected by misinformation and disinformation through conventional media. In the case of Ukraine, the massive migration of people seeking refuge in western Europe has been the subject of widespread misinformation campaigns<sup>26</sup> i.a. through social media and fake websites posturing as genuine news outlets. Concentration of people in cities makes it easier, to target larger groups through localized channels.

*Technology development:* The availability of AI tools has multiplied the possibilities to create and distribute fake information, for state actors as well as non-state actors. They have been applied in electoral processes to target the consumption of information, the ability to vote, candidates and political parties, the election infrastructure and trust in democracy as a whole, for example in recent elections in Spain and Poland<sup>27</sup>. But, as the EEAS 2024 FIMI report signals, the use of AI tools might have more benefits for the defenders against misinformation than the deployers.

*Climate change:* Misinformation on the effects of fossil fuels on climate change has been around for a long time, as illustrated by a study of Harvard researchers in Science<sup>28</sup>. As the political climate is shifting to the right, and the priorities in the US and the EU turn away from the green transition to economic security, we might well see more and more sophisticated misinformation on the effects of climate change.

*Geo-strategic shifts:* The broadened scope and the intensification of global systemic competition has led to increased use of hybrid *conflict-ware* instruments. Where physical effects of this are in general tangible, the effects on information and the way it is perceived are more difficult to deal with. Further increased tensions might well lead to an intensification of FIMI activity as well.

#### What this means for network operators/connectivity providers

Measures to create resilience against damage as a result of disruption by extreme weather events, critical change to earth systems and interstate conflict take place in - at least partly – the physical sphere. Taking measures against misinformation/disinformation and FIMI is much more complicated for network operators / connectivity providers. To find ways to play their role in handling these challenges, they must team up with governments and regulatory authorities. If the assessments, based on the Global Risk Perception Survey, in the WEF 2024 GRR are correct, dealing with the phenomenon of misinformation and disinformation is a top priority for the coming years. The respondents of the survey put it on place 1 in the coming two years, and place 5 for the coming decade.

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<sup>24</sup> EEAS Report on FIMI Threats January 2024: “Foreign Information Manipulation and Interference (FIMI) describes a mostly non-illegal pattern of behaviour that threatens or has the potential to negatively impact values, procedures and political processes. Such activity is manipulative in character, conducted in an intentional and coordinated manner, by state or non-state actors, including their proxies inside and outside of their own territory” [EEAS-2nd-Report on FIMI Threats-January-2024\\_0.pdf \(europa.eu\)](#)

<sup>25</sup> [Misinformation Amplification Analysis and Tracking Dashboard — Integrity Institute](#)

<sup>26</sup> [Article: Disinformation on Migration: How Lies, Ha.. | migrationpolicy.org](#)

<sup>27</sup> See: EEAS Report on FIMI Threats 2024 pages 28, 29

<sup>28</sup> [Assessing ExxonMobil's global warming projections | Science](#)

## Opportunities

For many forms of misinformation and disinformation, the networks of connectivity providers are the channel through which they are delivered. Increased pressure on society could well lead to pressure from lawmakers 'to do more'. In taking the initiative for a new type of public-private partnership, the industry has an opportunity to shape the discussion and create realistic expectations of what can, and what cannot be done. AI tools to detect fraudulent activity exist, for example with regard to payment transfers<sup>29</sup>. The possibilities to deploy similar tools are worthwhile to explore.

A second opportunity might lie in the promotion of trustworthy media, i.e. media respecting journalistic principles, ethics and standards. Network operators might find it useful to explore whether there are forms of cooperation which contribute to enhanced trust in themselves as well as the media concerned.

## **4.5 Societal Polarization**

The WEF 2024 GRR defines societal polarization as: "Ideological and cultural divisions within and across communities leading to declining social stability, gridlocks in decision-making, economic disruption, and increased political polarization".

*Demographic change:* As the rift between generations increases, a cohort of people possessing essential skills (software, machine tools) is phasing out, leading to the need of industrial change or training successors. Visible in many developed parts of the world is the rising demand in healthcare personnel as a result of the ageing population. The strategies to deal with that challenge – for example immigration of skilled personnel – have led to increased societal tension. In Europe, younger generations show signs of being concerned about income, the standard of living and pensions. This has an impact on their engagement, for example in the political process. A recent German study indicates that generation Z suffers from considerable mental stress, as a result of the pandemic, climate change and wars. But their values seem aligned with those of the early baby boomers <sup>30</sup>. Migration flows, voluntary or involuntary, legal or illegal, will continue to put societies in the developed world under pressure.

*Technology development:* AI is already having an impact on work. A recent study by Accenture indicates that in many countries, around 40 % of the working hours will be impacted by generative AI.<sup>31</sup> This will bring about drastic change in industries like banking, IT and insurance, but less in manufacturing. New skills are needed to integrate AI in work processes. A part of the workforce will need to be re-skilled or up-skilled. But for some, who already experience a lack of economic opportunity, the effects of the 4th industrial revolution will make their situation worse. This might spark new types of activity, and new business models. Aided by the same AI and the internet, a part of this energy might lead to illicit activity.

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<sup>29</sup> [Harnessing AI in the fight against payments fraud | Swift](#)

<sup>30</sup> [Sixth trend study "Youth in Germany" published | Hertie School \(hertie-school.org\)](#): "The study also finds similarities between generations when it comes to the labour market. Despite the often-proclaimed differences in values between older baby boomers and the younger Generation Z, the survey finds that disagreements are less pronounced than publicly discussed. Both generations see family, health and freedom as the most important areas of life; equally, honesty, reliability and helpfulness rank among the top three virtues for both generations."

<sup>31</sup> [Work, Workforce, Workers Age of Generative AI Report | Accenture](#)



*Climate change:* The climate change debate has led to aggressive protest in several developed countries, pitching generations against each-other. In Europe, the economic consequences of the policies and legislation in the framework of the Green Deal<sup>32</sup> have led to large-scale protests by farmers, which had a considerable impact on national and European elections. As the effects of climate change will become more visible and impactful, the heat of the debat will likely rise.

*Geo-strategic shifts:* In Europe, there seems little doubt, that increasing tension in the geo-strategic situation has the potential to lead to further societal polarization. Examples are the visible differences in about what constitutes an adequate approach to Russia or China. As other powers in the world might grow in influence, it is not excluded that the debate will become more intense, not in the least fueled by misinformation and FIMI.

#### What this means for network operators/connectivity providers

The interaction between the structural forces and societal polarization could well lead to increased pressure in several parts of the world. Taking the EU as an example, one can observe growing concern about how to deal with this pressure, which is one of the factors behind a swing to the right in the political landscape, identity politics and different forms of protest. A broadly shared concern amongst policy-makers is Europe's competitiveness and industrial future. Another is the growing need for the availability of qualified personnel.

#### Opportunities

Network operators / connectivity providers active in Europe might want to use the opportunity of a new 5-year policy agenda in the EU to achieve a competition policy- and regulatory environment conducive to M&A activity and economies of scale. Growth and competitiveness are at the top of that agenda and infrastructure investment is essential if the digital transition in the EU is to succeed. There is no doubt about the importance of the sector for the industrial development as a whole.

Secondly, network operators / connectivity providers could explore what role they could play in the process of plugging the skills gaps that result from demographic and technological development.

## **5. Conclusion**

Dark clouds on the horizon. But some silver lining too. The need to take measures to enhance the resilience of their networks is on the agenda on network operators / connectivity providers, whether they like it or not. Governments as well are feeling the pressure of the forces and the risks mentioned in this article and will at some point feel the need to act. Some things of what should, or could be done might turn out to be a reinforceent of an existing business model. Or even an entirely new one.

But in many cases, there is no obvious immediate gain and the key question is how to cover the costs of anticipating and dealing with the risks described above. The price of enhancing resilience is substantial. But so is the price of not doing so. The added value of many of the suggestions in this article lies in the space of the shared interest of the stakeholders. If the parties are interested in exploring possibilities, they need to team up and experiment with a new type of cooperation.

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<sup>32</sup> [The European Green Deal - European Commission \(europa.eu\)](https://european-council.europa.eu/media/en/press-articles/2020/07/23/permalink/146224_en)



A form of public-private partnership that is capable of dealing with emergencies and increasing resilience, but – first and foremost - highly anticipatory in nature.

It needs two to tango, but one has to be daring enough to extend an invitation to dance. This is the opportunity for the telecommunications industry if it wants to *shape* this important part of its future. Shaping solutions – including the cost issue – is more attractive than action forced by events or government intervention. Business has shown to be good at exploiting the opportunities that come with new challenges. Let's hope that the telecommunications industry can confirm that reputation.

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## Glossary

This article uses the following definitions, free after those in the World Economic Forum 2024 Global Risks Report.

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

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

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

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

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

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