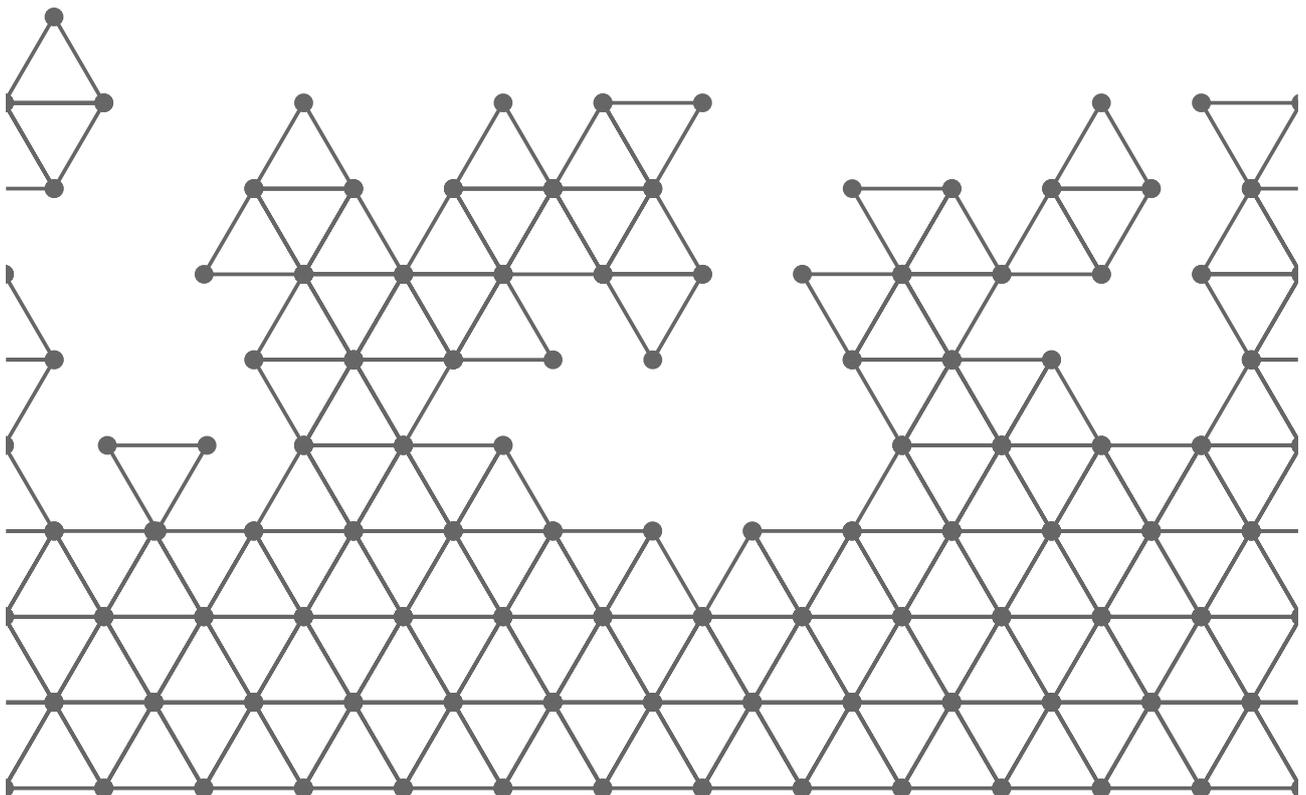


Global  
Challenges  
Foundation

*Global Challenges Quarterly Risk Report*

# Resetting the frame

August 2016



## RESETTING THE FRAME – RISK REPORT 2016

The views expressed in this report are those of the authors. Their statements are not necessarily endorsed by the affiliated organisations.

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**THE GLOBAL CHALLENGES FOUNDATION** works to incite deeper understanding of the global risks that threaten humanity and catalyse ideas to tackle them. Rooted in a scientific analysis of risk, the Foundation brings together the brightest minds from academia, politics, business and civil society to forge transformative approaches to secure a better future for all.

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# Dear reader,

**T**he Global Challenges Foundation, founded in Stockholm, Sweden, in 2012 by Laszlo Szombatfalvy, has a deep commitment to increasing our knowledge and understanding of global catastrophic risks. Our belief is that broad and in-depth knowledge of those risks is the main key to mitigate, reduce and – hopefully – eliminate most of them.

During the last two years, in cooperation with leading scientists, the Global Challenges Foundation has produced annual reports to categorise and analyse global catastrophic risks. These reports have been well received and appreciated by a large audience within and outside the academic scene.

We are now prepared to take these efforts a step further, and I am pleased to introduce the Global Challenges Foundation's Quarterly Risk Reports, which will offer opportunities for engagement and reflection between our annual publications. Our aim is to create a forum for conversation among a broad range of people who have an interest in studying and understanding global catastrophic risks. As indicated by the title for this



first issue – Resetting the frame –, we are inviting people from all over the globe to take a wider view on global risks. We welcome contributors from various fields and backgrounds to share their insights on the topic, and hereby reveal new perspectives.

I am very happy to introduce Julien Leyre as the editor-in-chief for our risk reports. With roots in Europe, now residing in Melbourne, Australia, and with a vast personal network in Asia, Julien is extremely well suited to host and support this exciting dialogue.

Please enjoy this important read!

**Mats Andersson**  
Vice-chairman,  
Global Challenges Foundation  
Former CEO, Swedish National  
Pension Fund, co-founder Portfolio  
Decarbonization Coalition

# Editorial foreword: Resetting the frame

**O**ur inter-connected world faces complex challenges that transcend national borders and institutional boundaries. In response, the Global Challenges Foundation proposes to host new conversations among leading actors from around the world, to prompt a shared understanding of the current challenges that we face, and explore better ways of managing them. Our Quarterly Risk Reports will serve as a starting point to inspire these conversations.

Complex problems are best understood through multiple lenses: different frames reveal different perspectives. This first Quarterly Report gathers diverse contributors from four continents, who bring a wealth of expertise across philosophy, law, science, policy, finance and community work. Their voices come here together for the first time, opening new ways of understanding the field.

This report proposes to reset the frame on global catastrophic risk, and support deeper understanding of the greatest challenges that we face. As with all good conversations,



our work does not offer definitive answers, but rather, hopes to clarify the terms of the problem, and spark new ideas. In the long term, our goal is to identify solid common ground to serve as a basis for action on a global scale.

Editorial work is not unlike the art of the translator, navigating the flows of two distinct languages. When composing this report, we strove to respect the voices of our authors, while ensuring that diverse audiences would find individual pieces accessible and appreciate the unique angle offered by each contributor on common issues. We hope that this report will constitute an original contribution to the field of global catastrophic risk, prompt a new way of thinking about the greatest challenges that we face and, most importantly, be stimulating to you.

A handwritten signature in dark ink that reads "Julien Leyre". The signature is fluid and cursive, with the first name being more prominent.

**Julien Leyre, editor-in-chief**  
Global Challenges Foundation,  
Melbourne, Australia

# Executive summary

Julien Leyre, Global Challenges Foundation, Melbourne, Australia.

**T**his report considers a type of situation that the present generation has never experienced directly: one that would cause the death of 10% of humanity, or severe damage on a similar scale. Traditional risk analysis considers the following equation: the total risk equals the magnitude of potential future damage multiplied by the probability that this damage will occur. The risks in this report deserve attention on the basis of their potential damage alone, even if the probability seems low.

**Global catastrophes** are not unprecedented. In the past, plagues have killed over 10% of the world's population. More recently, in the 20th century, the world has come close to nuclear war several times. Beyond pandemics and political violence, catastrophic damage may result from climate change, other large-scale environmental damage, emerging risks from technology, rare major natural disasters, or risks as yet unknown. (*Introducing global catastrophic risk, Sebastian Farquhar and Kevin Wong*)

**Robust risk modeling** entails developing an analytical scenario that unpacks the full chain of causes and consequences. In addition, to assess the probability and magnitude of each successive link, it needs to gather adequate data from scientific expertise and historical observations. In the case of nuclear war, with only one occurrence to observe, near-misses might also constitute valid data. Systematic analysis conducted in this manner offers a methodology applicable for all key risks, and reveals new potential aversion or mitigation tactics. (*New models of nuclear war risk, Seth Baum*)

**To measure impact adequately**, risk modeling must understand not only the chains of cause and consequence, but also the situation where risk might occur. The potential impact of a risk is not only correlated to the trigger event, but also to characteristics of the impacted object. As our planet has become increasingly interconnected, it has also become increasingly fragile. Seemingly minor hazards can ripple across our interdependent productive, social, and political systems, and produce catastrophic outcomes. (*Understanding global systemic risk, Magali Reghezza*)

**Our assessment of risk** is always embedded in a certain ethical framework, which informs our judgement as to whether priority should be given to immediate or future impacts, and whether uncertainty about the future should affect our current efforts to address risk. The very modest scale of efforts to handle global catastrophic risks today shows that our global society does not pay much attention to future generations. (*Why do global catastrophic risks deserve our attention, Robert Wiblin*)

**It is tempting** to believe that global catastrophic risks are beyond our control, and consequently, that we cannot and should not try to do anything about them. This belief is both dangerous and false. We can reduce the probability that a trigger event will occur at a certain magnitude, we can reduce the probability that a certain consequence will follow, and we can reduce our own fragility to risk, to decrease the potential damage or support faster recovery. This can be done by identifying and implementing positive initiatives and policies, improving trust and coordination, and increasing public awareness to gain traction and endorsement. These actions can be led or initiated by individuals and collectives, by businesses and civil society, and across all levels of government.

**Market mechanisms** have been used to address risk. A campaign led by the Future of Life Institute in the US resulted in the city of Cambridge divesting pension funds away from any company involved in making nuclear weapons. In Sweden, Mats Andersson, the new vice-chairman of the Global Challenges Foundation, divested away from carbon intensive businesses. His motive was not only ethical: it appears that businesses pursuing more environmentally sustainable practices also yield better long-term returns. (*Divestment: a financial tool for risk reduction, Ariel Conn*)

**Local initiatives** have the power to jointly reduce risk and increase resilience. The Brazilian city of Belo Horizonte developed a food security policy framework that improved the immediate well-being of its population, while building long term resilience from systemic disruption and pandemics, and reducing carbon emissions. This model is now scaling up to other cities in the Global South through city-to-city

partnerships. (*Resilience building and risk reduction: the Belo Horizonte food security model, Alexandra Wandel*)

**International trends**, as demonstrated by the recent vote in favour of Brexit, may indicate a shift towards increased regional fragmentation. In this context, maintaining regional collaboration for catastrophic risk management should be seen as a priority. By building a sense of mutual trust and joint interest, regional organisations such as the EU and ASEAN play a considerable role in increasing the capacity to effectively coordinate national reactions in emergency situations, whether pandemics or other catastrophic risks. (*Managing pandemics in a fragmented world: contributions of regional systems, Catherine Rhodes*)

**Global Catastrophic Risks** are not restricted by national boundaries – but at a global level, who owns them? The UN Security Council is the clear issue owner for nuclear war, and the recent Paris agreement will increase the role of the UN in managing climate

change. But in both cases, effective action is currently limited. Meanwhile, individuals have successfully resorted to the judiciary in order to take action to address the pressing risk of climate change. This opens a window of hope, and alternative avenues for individual action. (*Global catastrophic risk: whose problem is it anyway, Malini Mehra*)

**Our efforts to address risk** ultimately rest on a core ethical question: how far should we track the consequences of our actions? Depending on our position, whether we live in the developed North or the Global south, our answers to this question will have distinct implications, and the stories we tell will differ. In order to face the challenges ahead, financial, regulatory and institutional solutions will be required, but underlying these, there needs to be a cultural change. An integral form of this change will be telling stories of a unified world where risks and challenges are part of a shared destiny. (*Building a shared narrative, Ama Van Dantzig*)

*Part 1.*

# Understanding risk

# 1.1. Introducing global catastrophic risk

Kevin Wong and Sebastian Farquhar, Global Priorities Project, Oxford, UK

When the potential damage of a risk is of enormous scale, can we simply discount it on the basis of uncertainty or seemingly low probability? Beyond pandemics and political violence, our world may face catastrophic damage from climate change, major natural disasters, emerging technologies or risks as yet unknown.

**O**ur world faces many risks. Particularly serious are global catastrophic risks, those with the potential to end the lives of a tenth or more of the world's population, or inflict comparable damage on our planet. Even though the probability that these risks will happen is comparatively small, the damage could be so devastating that they deserve preparation and consideration.

Though rare, global catastrophic risks are not unprecedented. Over the course of history, the world has seen several disasters of catastrophic scale. In the mid 6th-century, the 'Great Plague of Justinian' killed more than 10% of the world's population. The extraordinary scale of such an event can hardly be overstated. World War II, though calamitous, killed a comparatively small 3% of the global population. Measured in deaths alone, several of the risks that we are currently facing could reach an even greater scale.

**The Global Priorities Project** is a collaboration between Oxford's Future for Humanity Institute and the Centre for Effective Altruism. In April of this year, we authored the *Global Catastrophic Risk Report* on behalf of the Global Challenges Foundation. The report focused on identifying areas of high risk, understanding interactions between risks, and suggesting how we might respond to prevent or mitigate those risks.

The threats that can hit us in the near term are nuclear warfare, biological weapons of mass destruction and natural pandemics. Consequently, these risks deserve immediate attention. Risks that may

materialise in the longer term, such as catastrophic climate change resulting in extreme levels of warming, as well as emerging technologies like artificial intelligence and geoengineering, all need to be managed and mitigated in advance, and consequently deserve attention today. In addition, we should devote some resources to mitigating risks from rare natural events with catastrophic potential – such as asteroid impacts and large volcanic eruptions – as well as risks from as-yet-unknown processes.

A number of steps can be taken to mitigate these dangers. Some potential initiatives address a specific threat, such as improved mechanisms to reduce carbon emissions, a continued focus on nuclear stockpile reduction, and enhancing collaboration between researchers and governments on emerging technologies. Other opportunities are cross-cutting, like integrating the interests of future generations into decision-making frameworks, for example by appointing dedicated ombudspersons or public advocates to national governments.

**Global catastrophic risks** present interdisciplinary problems, so solutions must draw on expertise from several domains in order to provide adequate understanding and options to reduce and mitigate risks. Research into ethical models to weigh up our responsibilities to future generations must be coupled with technical scientific knowledge. Implementing change then requires political and institutional know-how. If we consider catastrophic climate change, a proposed response must first be grounded in an understanding

## FIGURE 1.1. CURRENT GLOBAL CATASTROPHIC RISKS

### Catastrophic climate change

Extreme forms of climate change, with much more warming than expected, might radically reshape our planet, causing wide-scale ecosystem disruption and large increases in extreme weather phenomena, potentially significantly reducing agricultural output.

### Emerging risks

New technologies, like artificial intelligence, engineered pathogens, or geoengineering might be deliberately or accidentally misapplied and lead to catastrophic outcomes

### Nuclear war

Nuclear exchanges between major nuclear powers could potentially kill millions, render large land areas uninhabitable, and create a 'nuclear winter' temporarily reducing global food production capabilities.

### Natural catastrophes

Natural events like asteroid impacts or especially large volcanic eruptions, which have plausibly caused mass extinctions in the past, could cause 'particulate winters' that temporarily disrupt global food production capabilities.

### Natural pandemics

A naturally occurring disease, especially an animal disease that becomes transmissible between humans, could spread widely and kill large numbers of those infected, much like the Spanish flu or Black Death.

### Unknown risks

Just as scientists 100 years ago would not have been able to reliably anticipate the risks of nuclear war, climate change, or engineered pandemics, similarly we should remember that there may be risks that we do not yet know about or do not yet regard as risks, including risks of systemic collapse.

of the relative priority we should place on the well-being of future generations and preserving the environment. Researchers must help both understand the risks and create technical solutions to address their causes. Finally, implementing a climate strategy requires sophisticated political negotiation to overcome major collective action problems.

Institutions are likely to systematically neglect global catastrophic risks, largely as a result of market and political failures, including the influence of special interests, the lack of incentive to provide global and intergenerational public goods, and the absence of precedent for these kinds of disasters. This makes their study all the more pressing.

## SEBASTIAN FARQUHAR

Sebastian Farquhar leads the Global Priorities Project (GPP) at the Centre for Effective Altruism in Oxford. GPP is a think tank which develops new approaches for policy progress in high potential areas based on cause prioritisation tools. Before establishing GPP, Sebastian worked as a management consultant at McKinsey & Co, and was part of the founding team of 80,000 Hours, a project which advises promising young people on the best ways to do good in their careers.

## KEVIN WONG

Kevin Wong is a Davis Scholar at Princeton University, an alumnus of the Pearson United World College of the Pacific, and a collaborator to the Global Priorities Project. He co-founded and directs the Prison Electives Project, a program that develops and delivers humanities courses for New Jersey's state prisons, and currently works under the supervision of moral philosopher Peter Singer.

# 1.2. New models of nuclear war risk

Seth Baum, Global Catastrophic Risk Institute, New York, USA

How can we assess risks with limited historical precedents, such as nuclear war? With financial support from the Global Challenges Foundation, Seth Baum developed a model that relies on systematic analysis of cause and consequence, taking into consideration near-misses and other incidents. This method helps identify effective mitigation policy, and can be applied to the study of other global catastrophic risks.

**Julien Leyre:** Seth, nuclear war risk has been a key point of focus for your research at the Global Catastrophic Risk Institute. Why is it important to do this kind of research?

**Seth Baum:** There are two reasons. First, nuclear war is an important risk in its own right. It was the first human-made global catastrophic risk, and has been a major one ever since. A staggering 15,350 weapons still remain, of which 14,300 are held by the US and Russia. Right now, 4,000 of these weapons are in active deployment, meaning that they are available for use at any time. A nuclear war could be just moments away. Yet despite the topic's importance, there has been little risk analysis of nuclear war.

The second reason is that studying the risk of nuclear war helps us understand and address some challenges shared by the study of other global catastrophic risks. For example, no massive nuclear war has ever occurred, but there was one small nuclear exchange in World War II and, several times since then, nuclear war almost occurred. How do you use such limited historical data to estimate the probability of a future nuclear war? This challenge is shared by other global catastrophic risks.

**Julien Leyre:** What does the study of nuclear war risk look like? What's the first step when you conduct risk assessment on this scale?

**Seth Baum:** The starting point is to recognize that

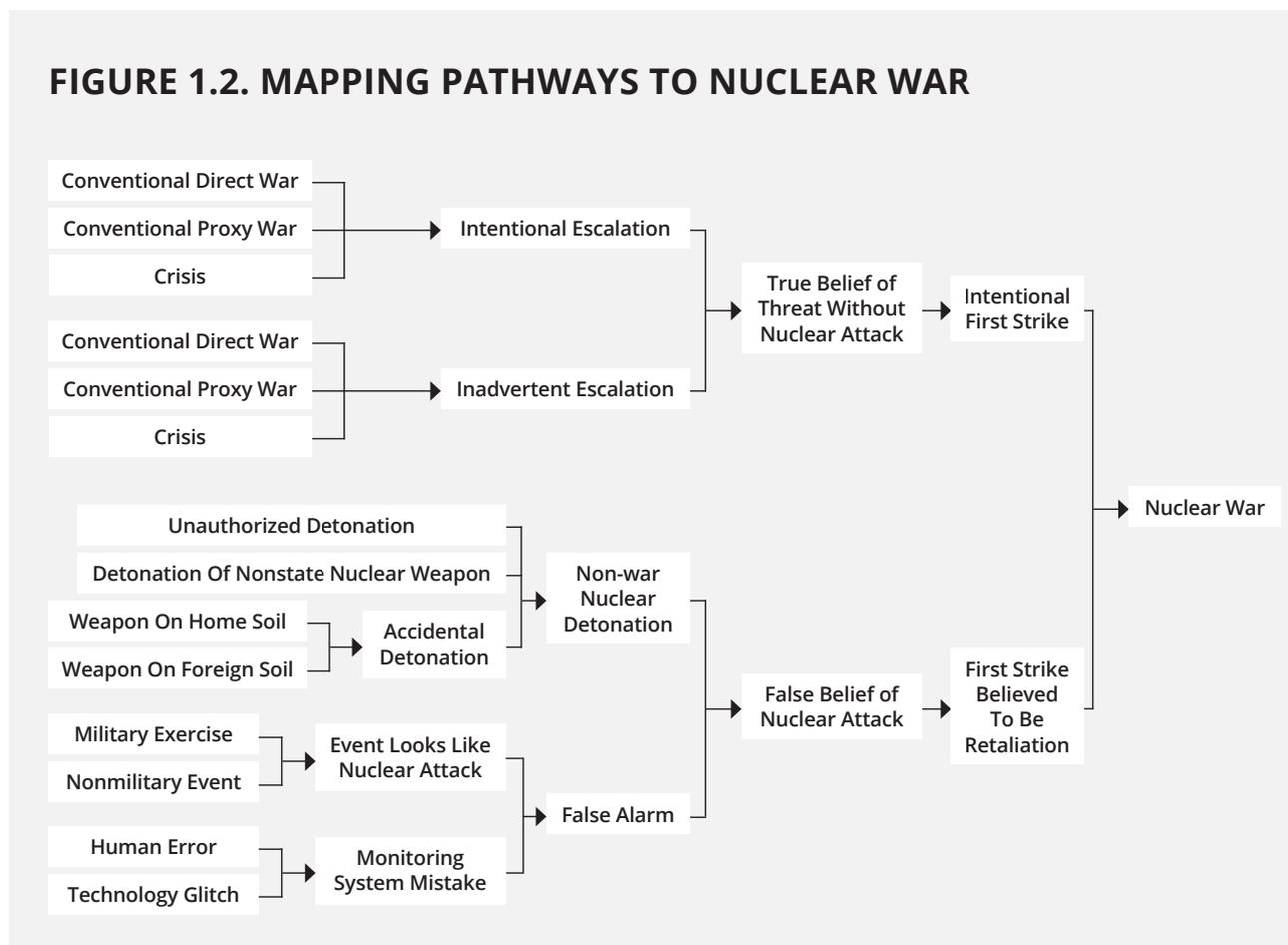
the risk of nuclear war has three different components: the probability of a nuclear war occurring, the specifics of what happens during the war, and impacts after the war. These three parts are interrelated, but each needs a distinct type of analysis. Our research thus far has focused on the first and third, but all three are important.

To assess the probability of occurrence, we model the various pathways through which nuclear war could occur. For example, it could be that conventional war escalates, as in World War II, or that a crisis erupts into a nuclear war, as almost happened during the Cuban missile crisis. For each of those pathways, we model the sequence of steps – the chain of successive events that take us from a calm condition to nuclear war.

As for impacts, we model the various ways that the detonation of nuclear weapons can affect different aspects of society and the environment. This involves a lot of systems analysis since there are so many things that nuclear detonations can impact. The most obvious are direct effects like buildings collapsing or burning and people near the detonation getting hurt and killed. But there are also many indirect effects like nuclear winter and systemic effects across the global economy, and these are really important.

**Julien Leyre:** As you mentioned, nuclear bombs have only been used once, at the end of the Second World War. With so little historical data, how can you develop robust risk assessment?

FIGURE 1.2. MAPPING PATHWAYS TO NUCLEAR WAR



**Seth Baum:** It's not easy! Traditional risk analysis is based mainly on historical data, but this does not work for nuclear war. The traditional approach would say there has been one nuclear war in about seventy years of nuclear weapons being around, therefore there is a one-in-seventy chance of nuclear war happening in any given year. But the conditions in 1945 were very different from the conditions in 2016, so it's not a fair comparison.

While there has only been one nuclear war, there have been many near-misses: incidents that went partway to nuclear war. They range from the Korean War in 1950-1951, when the U.S. considered using nuclear weapons against Chinese forces, to recent moments in the Ukrainian Civil War, in which Russia has made several nuclear threats. We combine data on near-misses with our models of the pathways to help quantify the probability. However, even this doesn't allow us to calculate probabilities as precisely as we would for other risks. Therefore, an important part of nuclear war risk analysis is acknowledging inherent uncertainty and thinking intelligently about what to do in spite of everything we don't know.

**Julien Leyre:** When all this analysis has been done, how can you apply it? How does this risk modeling work help determine the right action to reduce risk?

**Seth Baum:** That's a good question. Ultimately, the important part is not the risk itself, but what people can do to reduce the risk. Studying nuclear war risk is an interesting intellectual exercise, but the real reason to do it is that major policy questions depend on it.

Perhaps the simplest question is, how high should we place nuclear war on the agenda? Attention is a scarce resource, especially for policy-makers, who could be working on so many different issues at any given time. One conclusion that I see from our risk analysis is that nuclear war should be higher on the agenda than nuclear terrorism. The probability of nuclear terrorism may be somewhat larger, but the severity of a nuclear war can be much, much larger.

Another important question is, which policies are most effective at reducing the risk of nuclear war? A good risk model can go a long way towards figuring this out. Indeed, this is a core benefit of a good risk

## FIGURE 1.3. NUCLEAR NEAR-MISSES

**During the Cuban missile crisis**, in October 1962, the United States targeted a Soviet submarine that carried nuclear weapons. Two of the three Soviet officers wanted to launch nuclear weapons in response, but the procedures required agreement between all three serving officers. The third officer, Vasili Arkhipov, refused, potentially averting nuclear war.

**In September 1983**, a Soviet early warning satellite detected five land-based missiles from the United States directed at the Soviet Union. The officer on duty, Stanislav Petrov, had only minutes to decide whether or not this was a false alarm. Procedure would have required him to alert his superiors but, on gut instinct, he reported the incident as a false alarm. Later investigations revealed the satellite had mistaken reflections of the sun on the top of clouds for nuclear rockets.

**On January 25, 1995**, Russian radar detected a scientific weather rocket over the northern coast of Norway. Operators suspected it was a nuclear missile. President Yeltsin reportedly faced the decision to launch nuclear weapons in retaliation. He decided not to, guessing – correctly – that the rocket was not an actual attack.

model. Risk reduction isn't the only factor for evaluating policies – for example, some policies are more expensive, or require more political capital – but risk reduction is undoubtedly important.

Limitations in our current risk models mean that we can only apply it to certain policies. Improving the models so that we can apply it further is a big research priority. Meanwhile, they can still help in other ways. For example, the models show that nuclear war and nuclear terrorism are not completely separate issues. One scenario has a nuclear terrorist attack triggering a nuclear war between countries. So reducing the risk of nuclear terrorism also reduces the risk of nuclear war. Seeing these sorts of policy insights across the full range of nuclear war scenarios and impacts is another benefit of this type of risk analysis.

**Julien Leyre:** What would it take to integrate your model into a more generalised risk mitigation framework? Could we, for instance, quantify nuclear war risk and other global catastrophic risks? What would it take to get there?

**Seth Baum:** It would take a lot of research! Some global catastrophic risks are relatively well quantified, especially asteroid collisions and volcanic eruptions. But even those have important missing pieces, especially regarding how impacts cascade across the global economy. Modeling for that is actually quite similar to modeling nuclear war impacts.

These synergies are a reason to study various risks together.

The other big piece of a general global catastrophic risk mitigation framework is interaction between the different risks. For example, our nuclear war impacts model includes links to several other global catastrophic risks. Nuclear war can increase pandemics risk by destroying public health infrastructure. It can increase climate change risk by impeding renewable energy, though it can (rather morbidly) also decrease climate change risk by killing off a lot of people so they don't emit greenhouse gasses anymore. It can also cause the failure of a risky environmental technology called geoengineering. In principle, our nuclear war impacts model should include full models of these other risks. We're not there yet, but it's an exciting research direction.

### SETH BAUM

Seth Baum, Ph.D., is Executive Director of the Global Catastrophic Risk Institute, a nonprofit think tank that Baum co-founded in 2011. GCRI analyses the risk of catastrophes that could cause major permanent harm to human civilisation, such as global warming, nuclear war, and future artificial intelligence technologies.

# 1.3. Understanding Global Systemic Risk

Magali Reghezza, Ecole Normale Supérieure, Paris, France

What new kinds of risks arise from globalisation? In our interconnected age, productive, technological and socio-political systems around the world have become interdependent. As a result, seemingly minor events can quickly ripple into large consequences, and impacts are increasingly difficult to anticipate, both locally and globally. This new situation calls for new models of risk governance.

Since the end of the 1990s, a new type of risk has emerged, which we may describe as global systemic risk. This type of risk has two main characteristics. On the one hand, patterns of cause and consequence are increasingly hard to discern. On the other hand, potential impacts can no longer be calculated locally, nationally or regionally, but must be considered on a global scale.

**Global systemic risk** is characterised by complex causal chains, with potential triggers occurring at distant points in time and space. The chain may start with a large sudden shock (terror attacks, natural catastrophes, technological breakdowns), or take the form of slowly building pressure (environmental, political or social degradation); it ends with massive losses and disruption worldwide. More importantly, even small initial hazards can ripple into larger and larger waves of systemic disruption. In 2006, a local submarine earthquake off the coast of Taiwan destroyed six optical cables, and ended up causing major Internet access failure across East Asia. In 2010, a volcanic eruption in Iceland resulted in the temporary paralysis of global air traffic. Consequences of such seemingly contained local events might reach even larger scales, with catastrophic consequences.

This increasing disconnect between the magnitude of cause and consequence is largely due to the extreme complexity of our current productive, technological and socio-political systems. Globalisation

has intensified and diversified exchanges around the world. More broadly, it has increased interdependence between territories, and created conditions where disturbance can spread very far, very fast. This happens across critical information and transport networks, productive and market systems, financial and commercial organizations, and eventually ends up affecting political systems and geopolitical equilibrium.

We might expect that a large interconnected global system would be less exposed to risk than smaller fragmented ones. However, such a system is vulnerable precisely because of its complexity. Each interdependent relationship can cause a ripple effect, and each internal fluctuation lead to critical change through the system in the form of a chain reaction. The 2008 Global Financial Crisis is an example of such a process. The initial subprime crisis was a local phenomenon, connected to the US real estate market and national banking practices, but its consequences became global. Financial, social, political and even environmental impacts have been and continue to be experienced across the world on a global, local and individual scale, many years after the initial crisis.

Systemic interdependence leads to relative opacity when it comes to understanding risk. Predicting the probability, cost and magnitude of risk is becoming increasingly difficult. In addition, it is harder to anticipate where impact will be felt most acutely. In a globalised world, distinguishing local and global

effect is increasingly difficult. Instead, the new norm is ‘glocalised’ risk, merging local and global processes. What happens at the local level both depends and impacts on what happens at the global level, and vice-versa.

Food security may be the best example. Historically, famine and food shortages have been connected to local events (war, natural disaster, epidemics). But food production systems are now globalised. As a result, a localised drought in the US will not result in local food shortages, but affect the cost of cereals on global markets. This reduced availability due to climate variation feeds speculative bubbles on food products. Higher global food prices may have

negative impacts on food availabilities in developing countries, particularly when local conditions are already tense, due to droughts or conflict. Local food insecurity in the poorest areas fuels conflict and migration, which become factors of political and geopolitical destabilisation at the local, national and regional scale. Eventually, these tensions might ripple into global disruption.

Traditional models of risk mitigation, centered on the State and framed within national boundaries, are ill-adapted to these new forms of risk. To face them, we must invent new forms of governance that can support coordinated action on a global and a local scale.

## MAGALI REGHEZZA

Magali Reghezza, Ph.D, is a specialist of natural and environmental risk. She is director of studies at the Ecole Normale Supérieure Department of Geography in Paris, and a member of the National Centre for Scientific Research (CNRS) laboratory of physical geography in Meudon. Her research focuses on urban vulnerability, resilience and adaptation, with particular interest in systemic environmental risks in the Paris metropolitan area.

# 1.4. Why do global catastrophic risks deserve our attention?

Robert Wiblin, 80,000 Hours, Oxford, UK

On what basis do we justify that our leaders' and policy makers' attention should go to a specific issue? Our current decision-making systems discount future generations, and the results of risk mitigation efforts are often untrackable. On this basis, considering their enormous potential impact on humanity's future, we can assume that global catastrophic risks deserve more attention than they currently receive.

**G**lobal catastrophic risks are hazards with relatively low probability of occurrence but very high potential impact. Some of these risks come from natural events (e.g. comets and super-volcanoes), while others are caused by humanity itself (e.g. climate change and the development of new weapons of mass destruction). Addressing them will clearly yield positive outcomes in the long-term – catastrophic risks can cause huge damage and put society's whole future in doubt.

Some of these risks could even lead as far as human extinction. If you take a long-term perspective and consider the impacts on future generations, over millions of years in the future, anything that causes human extinction could prevent hundreds of billions or even trillions of people from living. Even on the lower end of the impact scale, a global nuclear war could kill hundreds of millions or even billions of people directly. It could also radically reduce the possibility of long-term achievement from human civilisation, putting us on a permanently worse trajectory. As a result, we evaluate this cause as highly important, even if the probability of occurrence is small.

The fact that only 0.1% of spending from key foundations and philanthropic bodies goes towards tackling these risks strongly suggests that the area

is uncrowded relative to what's at stake. There may be various reasons for catastrophic risks receiving less attention than issues such as education policy or global poverty. These risks especially threaten future generations, and there's good reason to expect that we undervalue their interests relative to our own. A focus on the present is encoded in almost all government and business decision-making. This comes in the form of a 'discount rate' on benefits and costs in the future of at least 3% a year. This alone means that a projected impact on someone living in 2116 is weighed just 5% as much as an identical impact on someone today.

**Anecdotally, it seems** that government decision-makers pay little attention to low probability risks that haven't already occurred, because there is little pressure from voters to do so. Much more attention is given to the risk of terrorists using anthrax than using smallpox, even though the latter could do thousands of times as much damage. The natural explanation is that as anthrax has been used as a weapon, people have responded by making governments responsible for preventing it from happening again.

**Work on global catastrophic risks** has two main aspects: studying the risks, and then reducing the

probability and magnitude of the risks. Three main types of skills can put one in a good position to tackle these problems:

- expertise in developing and advocating for government policies, especially in security (e.g. deep knowledge of existing policy and interests groups involved in government food stockpiles)
- analytical thinking skills (e.g. many philosophers and mathematicians work on identifying and quantifying catastrophic risks)
- subject-specific expertise (e.g. a PhD in how pandemics begin and spread).

**Overall**, 80,000 Hours regards global catastrophic risks as one of the most pressing problems in the world today, and we would recommend that people with suitable skills use their career to tackle them, so that the next generations aren't wiped out by their impact.

## FIGURE 1.4. EFFECTIVE ALTRUISM

Many of us want to do good, but it is often unclear where our efforts would be most effectively directed. Effective altruism is a movement that aims to answer the question: how can we do the most good? 80,000 Hours is one of the founding organisations in the effective altruism movement. Its goal is to figure out how people can use their career to make the biggest possible contribution to society. One key way to increase impact is to choose the right problem to work on. 80,000 Hours assesses how pressing problems are relative to one another based on three criteria: how much harm the problem is causing or could cause; how difficult it is to solve; and whether it is already getting the appropriate level of attention. On all criteria, work on global catastrophic risks scores very highly.

### ROBERT WIBLIN

Robert Wiblin studied both genetics and economics at the Australian National University. He worked as a research economist in various Australian Government agencies, then moved to the UK to work at the Centre for Effective Altruism, first as Research Director then as Executive Director, before returning to research with 80,000 Hours.

*Part 2.*

# Acting on risk

# 2.1. Divestment: a financial tool for risk reduction

Ariel Conn, Future of Life Institute, Denver, USA

Can we harness market mechanisms to reduce risk?

When companies favor short-term gains at the expense of long-term safety, divestment offers concerned citizens a tool of action. Beyond their direct effects, divestment campaigns can impact corporate behaviour through media pressure. Aside from ethical considerations, divestment can also make good business sense. Companies that take sustainability seriously tend to do better in the long-term, as reflected in the success of recent divestment initiatives by Swedish pension funds.

**T**he greatest risks facing the world today are almost entirely manmade. In fact, when it comes to two of the greatest threats – climate change and nuclear weapons – some companies are actively and even intentionally exacerbating the problem, simply because it improves their short-term bottom line and share-holder value. This near-sighted approach is dangerous for humankind. But it also allows more ethically-inclined individuals and institutions to take meaningful action in defense of our future: they can divest.

**Divestment for social good** gained popularity in the 1980s, as people and companies divested from South Africa to fight apartheid. Tobacco companies suffered a similar fate. More recently divestment campaigns have cropped up against child labor, fossil fuels, and nuclear weapons. While there is little evidence that divestment hurts a company's share price, there is broad agreement that stigmatization can draw greater media attention to a company's role in a problem, damaging their public image.

In response to a divestment campaign against them, Lockheed Martin announced in 2013 that they would

cease all involvement in the creation of cluster munitions. Investors are hoping for a similar response to campaigns dedicated to sustainability and decreasing the risks of nuclear weapons.

This year, the Future of Life Institute (FLI) launched its own US-based nuclear weapons divestment campaign, based off of the successful European campaign, Don't Bank on the Bomb. FLI worked with the City of Cambridge in Massachusetts to help the city divest their \$1 billion pension fund from companies that create nuclear weapons or parts for nuclear weapons. As part of their effort to bring public attention to the idea of nuclear divestment, they also worked with MinutePhysics to create a humorous video about the dangers of nuclear weapons, and they've built version 1.0 of a nuclear divestment web app.

In a *Huffington Post* article, Susi Snyder, who led the Don't Bank on the Bomb campaign, said, "Public exclusions by investors have a stigmatizing effect on companies associated with illegitimate activities. [...] While it is unlikely that divestment by a single financial institution or government would be enough for a company to cancel its nuclear weapons associated

contracts, divestment by even a few institutions, or countries, for the same reason can affect a company's strategic direction."

Mats Andersson, new vice-chairman of the Global Challenges Foundation, also has a strong history of divestment for social good. As CEO of Swedish pension fund AP4, Andersson pursued sustainable and socially conscious investments, while nearly doubling the size of the company's funds. He's argued that carbon divestment doesn't just make sense from an environmental perspective, but it also makes good business sense. Companies that take long-term issues like sustainability seriously are more likely to take their business seriously. Such companies will likely prove better investments over time.

As Andersson said in the Chief Investment Officer, "Climate change investing is not about charity or good public relations, it's about dealing with risks. If you do that properly you will enhance your returns in the long term."

The world is financially driven, and divestment offers socially-conscious shareholders a means of influencing a company's actions for the good of humankind. Only a few large organisations or institutions need to divest from companies with questionable priorities, and the resulting media attention can have a snowball effect, influencing more and more organisations to follow suit. Divestment is a great tool for individuals and organisations to fight for social good.

## ARIEL CONN

Ariel Conn oversees digital media and communications at the Future of Life Institute (FLI). She's studied English, physics and geophysics, and her background is a mix of advertising, marketing, and scientific research. FLI's mission is to catalyze and support research and initiatives for safeguarding life and developing optimistic visions of the future, including positive ways for humanity to steer its own course considering new technologies and challenges.

## 2.2. Resilience building and risk reduction: the Belo Horizonte food security model

Alexandra Wandel, World Future Council, Hamburg, Germany

How can local action reduce global risk? Food security remains a challenge in many parts of the world. Food shortages affect hundreds of millions, impacting the welfare of populations, and creating a potential source of risk, for both developing and developed nations. In response, the city of Belo Horizonte implemented a policy framework for food security that improves local resilience and stability while reducing climate change emissions. This model is now scaling up to other cities in the Global South.

According to UN estimation, over 800 million people in the world are undernourished. Hunger kills more people each year than AIDS, malaria and tuberculosis combined. Faced with the interconnected challenges of climate change and rapid population growth, secure access to food remains a daily struggle for millions of people around the world.

Malnutrition is a direct factor in global catastrophic risk. Food shortages not only lead to increased mortality and morbidity. They can also weaken the health of populations and make them more vulnerable to pandemics. In addition, local food shortages can impact population flows and increase political instability, leading to increased risk of political violence.

More importantly, food shortages are systemically connected with climate change. The negative effects of global warming affect the most vulnerable population groups, including small-scale farmers in the Global South, disrupting local environmental

conditions and affecting local food availability. In turn, when handled carelessly, this may lead to temporary local agricultural practices that harm local environmental conditions further, as well as carbon-intensive food imports. Thus, food security, agriculture, climate change, public health and political stability are intrinsically intertwined, and food shortages will undoubtedly affect our future.

Despite the vast nature of these challenges, exemplary policy solutions already exist. Cities, states and regions across the globe have already begun to implement innovative policy solutions that seek not only to meet current human sustenance needs but also secure those of future generations through our transition to a sustainable planet. In the face of inevitable and mounting challenges lies the opportunity to transform our food and agricultural systems to mitigate climate change, become more climate-resilient, use natural resources sustainably and contribute to poverty reduction.

**In 2009**, the first Future Policy Award honoured one of the most fundamental human rights – the right to food. The inspiring winner was the comprehensive policy framework for food and nutrition security developed and implemented by the Brazilian city of Belo Horizonte.

The system is based on the legal right to food for all citizens. The law applies to every stage of the food chain, including research and development of farming technology – with increasing focus on organic and urban farming – support for farmers’ markets, waste reduction efforts, decentralised distribution, feeding and health education programmes, and operation of popular restaurants. A special Secretariat for Food and Nutrition Security (SMASAN) coordinates the different programmes and manages partnerships with relevant departments such as health, education, parks and spaces, waste management, etc, as part of a holistic approach. A strong emphasis is placed on healthy nutrition and the inclusion of family farmers into a localised and sustainable food system.

A central result of the policy framework is the near elimination of hunger in Belo Horizonte. There have been significant decreases in child mortality, reduction in childhood and adult malnutrition, increase in local and organic food production and consumption, more stable income for farmers, and greater access and availability of food for all.

In addition, the policy has had multiple positive side effects such as increased resilience to the effects of climate change and a reduction of greenhouse gas emissions from food transportation – as well as lower exposure to variation in food prices internationally – as there is now a closer interaction between small rural producers and urban consumers.

Due to its effectiveness, this policy has strongly influenced Brazil’s national ‘Zero-Hunger’ strategy and has been recognised by UNESCO and the UN Food and Agriculture Organisation as a model for cities in the Global South.

A feasibility study conducted by the German Federal Agency for International Cooperation (GIZ) concluded that the model was highly transferable.

## FIGURE 2.1. THE FUTURE POLICY AWARDS

The Future Policy Award celebrates policies that create better living conditions for current and future generations. The aim of the award is to raise global awareness for these exemplary policies and speed up policy action towards just, sustainable and peaceful societies. The Future Policy Award is the first award that celebrates policies rather than people on an international level.

Each year, the World Future Council identifies one topic on which policy progress is particularly urgent. Past awards were held in partnership with the UN Convention on Biodiversity, the Food and Agriculture Organisation of the UN, the UN Forum on Forests, the UN Office of Disarmament Affairs, UN Women, UNICEF and the Inter-Parliamentary Union.

## ALEXANDRA WANDEL

Alexandra Wandel is Director and Vice-Chair of the Management Board of the World Future Council. The World Future Council works in close collaboration with civil society, governments, businesses and international organisations to research future-just legislation and advise and support decision-makers in their concrete implementation.

## 2.3. Managing pandemics in a fragmented world: contributions of regional systems

Catherine Rhodes, Centre for the Study of Existential Risk, Cambridge, UK

What role can regional initiatives play in risk reduction? The recent Brexit vote might indicate a global trend towards national fragmentation. In this context, it is important to remember the role of regional organisations in reducing and managing large-scale risks such as pandemics. Institutions like the EU or ASEAN not only develop integrated systems to test and circulate medicines, they also build a sense of mutual trust and shared interests that help coordinate national reactions in times of crisis.

**I**nternational coordination and national action are both vital to pandemic preparedness and response efforts. But regional coordination systems – such as regional offices of the World Health Organisation or regional organisations like the European Union (EU) or the Association of South East Asian Nations (ASEAN) – can also have great value. They can reduce costs to individual states by centralising medicine authorisation procedures, they can help identify and fill gaps in national capacities, and they can develop strategies more responsive to the particular context, structures and vulnerabilities of their members. More generally, regional efforts can build relationships and trust between states, providing the basis for good communication and coordination during crisis events.

The European Union's systems have developed substantially over the past fifteen years in response to various outbreak events, including SARS, H5N1 influenza, and H1N1 influenza. The recent British vote to leave the EU – generally referred to as Brexit – raises

questions regarding continued participation of the UK in European pandemic management systems. The EU systems are reasonably comprehensive and include disease prevention and control, vaccine and medicines authorisation and emergency systems for outbreaks. It seems unlikely, therefore, that the UK would choose to withdraw from these systems. However, it would probably be expected to pay to maintain its participation, and could find its influence diminished in areas such as the design of prevention and response strategies. Brexit may also result in a reduction of the UK's contributions to global health research efforts and networks, particularly those funded by the EU and/or involving collaboration with partners in other member states. This would represent a loss to other states as well as the UK, which is currently a leader in medical and scientific research. This is something we should strive to avoid.

**Not all regions** have established strong pandemic preparedness and response systems. But apart from

the EU, there has been a notable expansion of efforts in the South East Asia and Western Pacific regions over the past decade. This includes work by ASEAN improving communication and information sharing between states and across government departments, laboratory networking, and standard setting for outbreak investigation and response. There is also a joint initiative of the two regions focused on capacity building, the Asia Pacific Strategy for Emerging Diseases. In regions with lower capacities and greater vulnerabilities to outbreaks, political fragmentation is likely to have a more severe impact on individual states than political fragmentation in Europe, where – on both an individual and regional basis – institutions and systems are well established.

There are, however, more significant forms of political fragmentation that are damaging to global pandemic responses. The way states behaved during the 2009 H1N1 influenza pandemic is illustrative of these. During the outbreak, states seemed to revert to a narrow conception of national interest. Rather than

seeking a distribution of resources (such as vaccines and anti-virals) optimal to containing the outbreak – e.g. by targeting countries most affected or vulnerable – they sought primarily to secure resources for their own populations, with advance orders from a small group of developed countries taking up almost all vaccine manufacturing capacity.

In the end, the 2009 H1N1 pandemic was not as severe as anticipated, but such behaviour in the future could easily result in failure to contain an outbreak in its early stages, causing higher damage globally. An intermediary level of coordination, based on trust and tested systems could be a significant contributor to better global outcomes. The significant contribution that regional coordination efforts can make to management of pandemics and other global catastrophic risks should motivate us to try to address the dynamics of political fragmentation, and build relationships that will enable states to collaborate effectively during crises.

## CATHERINE RHODES

Catherine Rhodes is academic project manager at the Centre for the Study of Existential Risk in Cambridge, UK. In the context of extreme technological risks, Catherine is particularly interested in understanding the intersection and combination of risk stemming from technology and risk stemming from governance (or lack of it). She has particular expertise in international governance of biotechnology, including biosecurity and broader risk management issues.

## 2.4. Global catastrophic risk: whose problem is it anyway?

Malini Mehra, GLOBE International, London, UK

Who is ultimately responsible for global catastrophic risk? For nuclear war, the UN Security Council is the clear owner, and the recent Paris agreement shows progress in global coordination on climate change. But in both cases, under existing structures, a considerable level of risk remains. Meanwhile, hope may come from elsewhere: where legislative powers have failed, individuals are now resorting to the courts as alternative channels to address the challenge of climate change.

One of the central dilemmas in addressing the thorny subject of global catastrophic risk is, who bears responsibility for dealing with it? In management speak, who is the issue owner? More colloquially, whose problem is it to handle?

For conventional hard security risks such as nuclear war – a top-level ‘continuing risk’ according to this year’s Global Challenges Foundation Annual Report – the answer is clear. National governments have a duty to protect their own citizens, and regional military pacts such as NATO, ANZUS, or the InterAmerican Treaty of Reciprocal Assistance (Rio Treaty), have been set up with the explicit goal to ensure security for their members. But over and above them, the United Nations Security Council is the international body vested with the authority to address issues of peace and security, and therefore the global issue owner.

**The Security Council** comprises fifteen Members, five permanent and ten non-permanent, elected by the UN General Assembly for 2-year terms each. The five permanent members are China, France, the Russian Federation, the United Kingdom and the United States. The ten non-permanent members, in alphabetical order, are Angola, Egypt, Japan, Malaysia,

New Zealand, Senegal, Spain, Ukraine, Uruguay and Venezuela. In June 2015, Sweden was elected by the General Assembly to succeed Spain on the Security Council for a two-year term, starting on January 1, 2017. This could augur well for global catastrophic risks being placed on the Security Council’s agenda. Under revitalisation reforms introduced in 2014, newly-elected members now have six months to prepare for their terms before assuming council responsibilities.

The Security Council derives its authority from the United Nations charter and deals with threats from both UN member states and non-State actors, such as terrorist groups. Threats from the former are governed by multilateral agreements such as the Treaty on the Non-Proliferation of Nuclear Weapons and bodies such as the International Atomic Energy Agency. Threats from the latter are dealt with through a special subsidiary body established by the Security Council called the 1540 Committee.

The 1540 Committee is directly responsible for managing the threat of the use, and proliferation, of weapons of mass destruction by rogue elements and terrorist groups. It derives its legal authority by virtue of Resolution 1540 (2004) which imposes “*binding*

*obligations on all States to adopt legislation to prevent the proliferation of nuclear, chemical and biological weapons, and their means of delivery, and establish appropriate domestic controls over related materials to prevent their illicit trafficking.”<sup>1</sup>*

**As a creation** of the Security Council, the 1540 Committee could also, in theory, resort to Security Council sanctions as an enforcement tool to compel members states to comply with these legal obligations.

Elsewhere within the UN system, the response on nuclear weapons appears more equivocal. For example, the International Court of Justice (ICJ, another Security Council creation) ruled in its 1996 Advisory Opinion on Nuclear Weapons that it “cannot conclude definitively whether the threat or use of nuclear weapons would be lawful or unlawful in an extreme circumstance of self-defence, in which the very survival of a state would be at stake.”<sup>2</sup> Hardly encouraging if one’s very existence as a state was threatened by nuclear annihilation from a neighboring state.

This existential fear of annihilation is, of course, at the forefront of concern for many low-lying, small island states as a result of climate change and subsequent sea-level rise. Climate change is another of the ‘continuing risks’ highlighted by the Global Challenges Foundation Annual Report in 2016 and, in fact, in December 2014, the Pacific Island state of Palau announced it was seeking an advisory opinion from the ICJ on climate change damage. It would seek guidance from the Court on how the ‘no harm rule’ and the UN Law of the Sea Convention apply to climate change damage.<sup>3</sup> Most recently, the Commission on Human Rights of the Philippines, a constitutional body, has been approached by public-interest groups to assess the responsibility of the world’s top 50 fossil fuel companies such as Shell, Exxon and BHP Billiton, for human rights violations as a result of loss and damage caused by climate change.<sup>4</sup>

**For climate change**, unlike nuclear proliferation, there is no global issue owner. The only global treaty that exists to address the Global Catastrophic Risk of climate change is the United Nations Framework Convention on Climate Change (UNFCCC 1992).

Article 2 of the Convention sets out its objective as follows: “The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous

*anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.”<sup>5</sup>*

But the Convention is not legally binding on Member States in a conventionally understood way and does not constitute global climate change law as such. Its provisions, as with the recently concluded Paris Agreement, have to be translated into domestic legislation passed by national parliaments to acquire the force of law. This process has already begun and close to twenty countries (including the French parliament) have now ratified the Paris Agreement since it opened for signature on 22 April 2016. The Agreement will formally come into force once it has been ratified by national parliaments in fifty-five countries that represent at least 55% of global greenhouse gas emissions. National governments and parliaments can already enact laws and regulations that give the Agreement domestic legal effect. After ratification by the required number of signatory countries, the agreement will come into effect for all UN member countries, with enforcement subject to international laws and regulations.

One can argue, however, that the objective of the Convention has already been overtaken and undermined by events. Recent reports of record-breaking extreme weather events and phenomena such as widespread coral reef bleaching, unprecedented Arctic ice melt, drought in India and wildfires in North America have added to a high-pitch of alarm at the gathering storm of climate impacts. With 2014, 2015 and now 2016 consecutively confirmed as the hottest year in the century – and the planet reaching its highest temperatures in 5000 years – it is little wonder that scientists now openly describe the situation as a climate emergency.<sup>6</sup>

**While the UN Security Council** has debated climate security on two occasions (2007 and 2011)<sup>7</sup>, there are no visible attempts to formalise attention to this global catastrophic risk through a separate committee structure as with the 1540 Committee. In the meantime, the pulverizing force of climate impact is leading some to the doors of the courts for the judiciary to rule where legislators and policymakers have been unable to effect change quickly enough. For example as in the Urgenda case in the Netherlands and the Leghari case in Pakistan, where petitioners claims of climate inaction by national governments were upheld by sub-national courts. Litigation is

## FIGURE 2.4. WHEN COURTS RULE ON CLIMATE CHANGE

Where governments are perceived to fail, those affected by climate impacts are increasingly taking to the courts for redress. The most well-known is the Urgenda case in the Netherlands. In 2013 a Dutch NGO, the Urgenda Foundation, and 900 citizens took the government to court for failing to respond adequately to climate change. In a widely-publicised decision in June 2015, the District court in The Hague, after taking the known scientific evidence into account, ordered the Dutch government to reduce its emissions by a minimum of 25% by 2020 compared to 1990. The country is currently on a path towards 17% in 2020. The ruling sets an important legal precedent affirming the danger presented by climate change to societies, based on the scientific facts, and affirming the duty of governments to act. The Dutch government, despite parliamentary and public opposition, is presently appealing the decision.

Meanwhile, in Pakistan, an extraordinary though lesser-known ruling by the Lahore High Court took place in September 2015. In this case, an individual farmer, Asghar Leghari, acting on his own initiative, took the government of Pakistan to court for failing to enforce its own framework law on climate change. With his livelihood damaged by successive catastrophic floods, the farmer from Punjab province filed a complaint in the Lahore High Court in summer 2015. Within weeks, the sitting judge, Justice Syed Mansoor Ali Shah, had not only ruled in favour of Leghari, but also set in motion a series of remedial steps. Justice Shah concluded that “the most serious threat faced by Pakistan is that of climate change”. The court’s September 2015 ruling established a high-powered Commission supporting the government to deliver on domestic commitments on climate change, including adaptation measures to protect the livelihoods of vulnerable groups such as agricultural workers.

therefore likely to rise in popularity as a measure for short-term redress, and to establish principles of transboundary responsibility of State and non-State actors such as business and industry for climate change damage.

As with the whole field of global catastrophic risk,

this is a rapidly changing area and one is likely to see developments in the near to mid-future establishing clarity on who owns the issue, and what is required at the global level to more effectively manage this global catastrophic risk.

### MALINI MEHRA

Malini Mehra is Chief Executive of the GLOBE International Secretariat. GLOBE International brings together prominent serving politicians and lawmakers, across party lines, to exert their authority and powers of law-making, legislative and budgetary oversight to advance practical action on sustainable development. As a civil society leader, Malini served on UN Secretary-General Kofi Annan’s Panel on UN-Civil Society Relations and co-authored two UN flagship Human Development Reports. She was the architect of the UK Governments’ pioneering Sustainable Development Dialogues with China, India, Brazil, South Africa and Mexico, and has served on the corporate boards of numerous world-leading companies.

## Postface

# Building a shared narrative

Ama Van Dantzig, Earth Charter, Accra, Ghana

How can we build a sense of collective responsibility for risks that affect us all? Depending on where we live, in the developed North or in the Global South, we most likely tell different stories about the world that we live in. This fragmentation stands in the way of effective measures to address global catastrophic risk. And so, we must invent and share new stories, stories of a unified world where risks and challenges form part of a shared human narrative.

All global challenges, whether environmental degradation, wars or poverty, have a fundamental ethical dimension, best understood through this one question: how far should we track the consequences of our actions? This question applies to all official accounts of history and, indeed, to any narrative construction, collective or personal.

Let us consider the progress of new communication technology. Its positive effects are well documented, informing a global tale of increased connection through the power of innovation. But if we change the frame, and look slightly further, the story changes. Most of the mineral resources that make up our devices are extracted from the “Global South”, with significant consequences on local environment and social structures. Then, after a few years of use in the developed world, outdated gadgets finish their lifecycle in the “Global South”.

Ghana has one of the largest electronic waste dumps in the world. Young unemployed people, often migrants from the North of the country, spend their days burning used electronics to extract valuable minerals and resell them. The air, the soil and the nearby ocean waters are heavily polluted, with direct

impact on the health of these Ghanaian youth and local communities. Some choose to search greener pastures, and venture across the Mediterranean towards a cleaner Europe. But Europeans are selective: African resources are welcome, people searching for unpolluted homes – not so much.

**Improved international** and local environmental regulations could form an important part of addressing these interconnected problems. But we will not reach a systemic solution to the major challenges that we face without a shared understanding of what is at stake, and a sense of common destiny.

Sixteen years ago, the Earth Charter was launched as an effort to build a shared ethical framework for a globalised world. It brought together civil society, political and spiritual leaders, including representatives of indigenous people from around the globe. After a decade long process of consultation and negotiation, sixteen core principles were distilled, and the Earth Charter – the people’s treaty – was born. This was the most inclusive and participatory process ever associated with the drafting of an international declaration.

**The Earth Charter** proposes a vision for a just,

sustainable and peaceful world. This vision is one in which environmental protection, human rights and human development are interdependent and indivisible. The Earth Charter emphasises the importance of unity in diversity: “We stand at a critical moment in Earth’s history, a time when humanity must choose its future. As the world becomes increasingly interdependent and fragile, the future at once holds great peril and great promise. To move forward we must recognize that in the midst of a magnificent diversity of cultures and life forms we are one human family and one Earth community with a common destiny. We must join together to bring forth a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace. Towards this end, it is imperative that we, the peoples of Earth, declare our responsibility to one another, to the greater community of life, and to future generations.”

This vision is anchored in Indigenous wisdom. Its core principle is that our efforts to create a sense of common destiny across the globe – uniting people across space – must be accompanied by parallel efforts to build a sense of common destiny between generations – uniting people across time. This continuity between generations is fundamental to the worldview of most indigenous people. When it comes to decisive life choices, we must look beyond our

contemporaries, and fully consider our responsibility to both our ancestors, and future generations.

Most indigenous groups use stories to capture this sense of common purpose, and instill a profound reverence for life among their people. Stories give an understanding of the world and our place in it. Therefore, setting the right frame for the stories that bind us together is a crucial ethical and intellectual challenge. Stories of technological progress rarely feature Ghanaian waste dumps. Stories of African misery rarely mention affordable technology, and the possibilities it opens. Until they do, systemic problems will continue to grow in this fragmented world, and the risks that we face will remain.

But things can change. We can choose to think of the world as fragmented or whole, by the stories we tell, and the stories we listen to. New stories will lead us to new solutions, and make us question our idea of progress. We are at a turning point. To face the challenges of our interconnected world, we must invent new modes of storytelling that can include the many voices of the planet, those of the developed West and North, those of a rising Asia and those of the Global South. We must invent new stories that will help the youth of today, living in fragmented countries, become the joint ancestors of tomorrow’s unified world. Together, we must start telling new stories that make change both imaginable and urgent.

## AMA VAN DANTZIG

Ama Van Dantzig is a Dutch-Ghanaian innovator and community leader. She co-founded and directs Dr. Monk, an international innovation studio with headquarters in Amsterdam and Accra, and is a member of the Earth Charter Council. The Earth Charter is a universal expression of ethical principles to foster sustainable development, launched in 2000 following an extensive community engagement model on a global scale. It inspires the Earth Charter Initiative, a global network that embraces, uses and integrates the principles expressed in the charter.

# Endnotes

1. <http://www.un.org/en/sc/1540/>
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# Continuing the conversation

**W**e hope the conversation will continue. You can help us by simply sharing this report with a friend or colleague. We're looking for partners around the world to join future publications, organise events, workshops and talks, or more generally support our engagement effort.

For more information, visit our website:  
[www.globalchallenges.org](http://www.globalchallenges.org)

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