SURVIVOR
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Catastrophic climate change
Ecological collapse
Pandemics
Environmental toxins
Nuclear war
Biological and chemical warfare
Artificial intelligence
Biotech disaster
Nanotechnology disaster
Fossil fuel overconsumption
Mental health decline
Unreliable government

Every day, we are living in a dramatic climate emergency; a spike in carbon emissions, the rapid melting of Arctic ice, the steady rise of global temperatures, the increasingly erratic and extreme storms assailing coastlines.

Fires are ravaging huge expanses of the Amazon rainforest. In Brazil, there's been a more than 80 percent spike in the number of forest fires from 2018. An area roughly the size of Connecticut in Bolivia's Chiquitania region burned to the ground this summer, endangering hundreds of animal species. By one account, it may take Bolivia's forests two centuries to recover.

A 2019 United Nations report says we only have 12 years to keep global warming to moderate levels. Projections of the effects of climate change vary depending on how much the Earth warms (usually modeled on an increase of 1 to 3 degree Celsius). At best, we're looking at more frequent and severe tropical cyclones. Midrange predictions include the loss of the majority of global agricultural land and freshwater sources, with major coastal cities like New York and Mumbai ending up underwater. At worst, human civilization would come to an end. Even if current global commitments to reduce carbon emissions are kept, there is a one-third chance of the Earth's temperature increasing by 3°C, which would cause most of Florida and Bangladesh to drown.

Rising sea levels, extreme weather events and lowered food production could lead to the death of millions, even billions of people. Some scientists fear the impact could upend ecosystems and make the planet uninhabitable.

Global warming is leading to the spread of infectious disease by providing a more suitable climate for parasites and spreading the range of tropical pathogens, including crop diseases which, combined with substantial climate shifts, might cause widespread famine.

As the global temperature increases, it is in danger of causing a feedback effect, in which water evaporates faster (water vapour is a potent greenhouse gas), which traps more heat, which drives carbon dioxide from the rocks, which drives temperatures still higher.

Ecosystems can recover from a certain amount of impact from humans, like temperature increases or habitat loss, but there's a tipping point at which they can't — and according to reports, we're reaching that tipping point.

Lake Chad in West Africa is an example of ecological collapse. Sixty years of drought, overuse of water, and the impacts of climate change have reduced the lake by 90 percent. Its massive reduction has adversely affected the livelihoods of more than 40 million people in Chad, Nigeria, Niger, and Cameroon.

Billions of years of evolution have produced a world in which every organism's welfare is intertwined with that of countless other species.

To meet the demands of the growing population, we are clearing land for housing and agriculture, replacing diverse wild plants with just a few varieties of crops, transporting plants and animals, and introducing new chemicals into the environment.

At least 30,000 species vanish every year from human activity, which means we are living in the midst of one of the greatest mass extinctions in Earth's history.

Stephen Kellert, a social ecologist at Yale University, sees a number of ways people might upset the delicate checks and balances in the global ecology and believes ecological collapse will likely lead to something we'd never think of, until it's too late.

The impact of ecological collapse is strongest in poorer countries, which will become uninhabitable, and lead to mass deaths, famines and mass migration.

New patterns of disease are emerging while pollinating insects are endangered, leading to the potential for widespread crop failure.

Clouds are moving away from the equator toward the poles, due to a climate-change driven phenomenon called Hadley Cell expansion. This deprives equatorial regions like sub-Saharan Africa, the Middle East and Central America of rainwater.

Climate change is increasing precipitation in other areas. Currently, at least 21 million people worldwide are at risk of river flooding each year. That number could increase to 54 million by 2030. All countries with the greatest exposure to river floods are least developed or developing countries – which makes them even more vulnerable to climate change and natural disasters. This summer, extreme flooding submerged over a third of Bangladesh, claiming over 115 lives and affecting 5.7 million citizens.

As populations increase and incomes grow, so does water demand, not only for water itself, but water-intensive products like meat and fossil fuel energy. The world's population, now at 7.5 billion, is projected to be 10 billion by 2050.

30 percent of Earth's fresh water lies deep underground in aquifers which are being extracted at dangerously unsustainable rates. 54 percent of India's groundwater wells are decreasing, meaning that water is used faster than it's replenished. In 20 years, 60 percent of India's aquifers will be in critical condition.

Around the world, water infrastructure—treatment plants, pipes, and sewer systems—is in a state of disrepair. In the United States, 6 billion gallons of treated water are lost per day from leaky pipes

alone. Built infrastructure is notoriously expensive to install and repair, meaning that many localities ignore growing infrastructure issues until disaster strikes.

Healthy ecosystems are natural infrastructure and vital to clean, plentiful water. Loss of vegetation from deforestation, overgrazing and urbanization is limiting our natural water infrastructure and the benefits that it provides, including filtering pollutants, buffering against floods and storms, and regulating water supply. Forested watersheds around the world are under threat: watersheds have lost up to 22 percent of their forests in the past 14 years.

About 80 percent of the world's wastewater is discharged back into nature without further treatment or reuse. In many countries, it's cheaper to receive clean drinking water than to treat and dispose of wastewater, which encourages water waste.

Global water undervaluation means its price does not reflect the true, total cost of service, from its transport via infrastructure to its treatment and disposal. This has led to misallocation of water, and a lack of investments in infrastructure and new water technologies that use water more efficiently. Companies and governments don’t invest in expensive water-saving technologies because water is cheaper than the technology in question. Efficient water use will not be incentivized until the price of receiving clean water is closer to its actual service cost. The poor often end up paying disproportionately high prices for water, stunting development.

1.1 billion people worldwide lack access to water, and a total of 2.7 billion find water scarce for at least one month of the year. 2.4 billion people suffer from inadequate sanitation—they are exposed to diseases such as cholera and typhoid fever, and other water-borne illnesses. Two million people, mostly children, die each year from diarrheal diseases.

Rivers, lakes and aquifers are drying up or becoming too polluted to use.

More than half the world’s wetlands have disappeared.

Agriculture consumes more water than any other source and wastes much of that through inefficiencies.

By 2025, two-thirds of the world’s population will face water shortages.

Agriculture uses 70% of the world’s accessible freshwater, but 60% of this is wasted due to leaky irrigation systems, inefficient application methods as well as the cultivation of crops that are too thirsty for the environment in which they are grown. In addition, agriculture generates considerable freshwater pollution both through fertilizers and pesticides.

Many countries that produce large amounts of food—including India, China, Australia, Spain and the United States—have reached or are close to reaching their water resource limits.

In the last 50 years, the human population has more than doubled. This rapid growth— with its accompanying economic development and industrialization—has transformed water ecosystems around the world and resulted in a massive loss of biodiversity.

41% of the world’s population lives in river basins that are under water stress.

80 per cent of wastewater flows back into the ecosystem without being treated or reused.

297,000 children under five die every year from diarrhoeal diseases due to poor sanitation, poor hygiene, or unsafe drinking water.

As many as one million plant and animal species are now threatened with extinction because of farming, poaching, pollution, the transport of invasive species and global warming.

The loss of wild plant varieties are making it harder to breed new, hardier crops to cope with threats like increased heat, drought, and pestilence.

4 billion people rely primarily on natural medicines for their health care.

70 per cent of drugs used to treat cancer are natural or are synthesized by plant and animal products.

More than 75 per cent of global food crop types, including fruits and vegetables and some of the most important cash crops such as coffee, cocoa and almonds, rely on animal pollination.

Marine and terrestrial ecosystems are the sole sinks for anthropogenic carbon emissions, with a gross sequestration of 5.6 gigatons of carbon per year (the equivalent of 60 per cent of global anthropogenic emissions).

11 per cent of the world's population is undernourished, and diet-related disease drives 20 per cent of premature mortality.

The great expansion in the production of food, feed, fibre and bioenergy has occurred at the cost of air and water quality, climate regulation and habitat provision.

Since 1970, trends in agricultural production, fish harvest, bioenergy production and harvest of materials have increased, while 80% of the mitigating contributions of nature have declined – meaning nature is markedly less able to fight the forces of human impact.

Global agricultural crop production has increased threefold since 1970, and raw timber harvest has increased by 45 per cent. However, regulating contributions, such as soil organic carbon and pollinator diversity, have declined, indicating that gains in material contributions are not sustainable.

Land degradation has reduced productivity in 23 per cent of the global terrestrial area, and between $235 billion and $577 billion in annual global crop output is at risk as a result of pollinator loss.

Approximately half the live coral cover on coral reefs has been lost since the 1870s, with accelerating losses in recent decades. Loss of coastal habitats and coral reefs reduces coastal protection, which increases the risk from floods and hurricanes to life and property for the 100 million–300 million people living within coastal 100-year flood zones.

Over 85 per cent of the world's wetlands have been lost due to climate change.

Across the highly biodiverse tropics, 32 million hectares of primary or recovering forest were lost between 2010 and 2015.

The average abundance of native species in most major terrestrial biomes has fallen by at least 20 per cent; this decline has mostly taken place since 1900 and is accelerating.

Rapid increases in transportation and migration have dramatically increased impacts by invasive alien species.

25 per cent of the plant and animal species on earth are threatened, suggesting that around 1 million species already face extinction, many within decades, unless action is taken to reduce the intensity of drivers of biodiversity loss.

The global rate of species extinction is tens to hundreds of times higher than it has averaged over the past 10 million years.

Loss of diversity, including genetic diversity, poses a serious risk to global food security by undermining the resilience of agricultural systems to pests, pathogens and climate change.

Humans are relying on significantly fewer varieties of plants and animals to produce food. Of the 6,190 domesticated mammal breeds used in agriculture, more than 559 have gone extinct and 1,000 more are threatened. That means the food system is becoming less resilient against pests and diseases, and it will become harder in the future to breed new hardier crops and livestock to cope with the extreme heat and drought that climate change will bring.

Genetic diversity within wild species globally has been declining by about 1 per cent per decade since the mid-19th century; and genetic diversity within wild mammals and amphibians tends to be lower in areas where human influence is greater.

The direct exploitation of animals, plants and other organisms mainly via harvesting, logging, hunting and fishing has had the biggest impact on nature of any other factors in the past century next to climate change.

Agricultural expansion is the most widespread form of land-use change, with over one third of the terrestrial land surface being used for cropping or animal husbandry. This expansion, alongside a doubling of urban area since 1992 and an unprecedented expansion of infrastructure linked to growing population and consumption, has come mostly at the expense of forests, wetlands and grasslands.

Climate change is a direct driver that is increasingly exacerbating the impact of other drivers on nature and human well-being. Humans are estimated to have caused an observed warming of approximately 1.0°C relative to pre-industrial levels, with average temperatures over the past 30 years rising by 0.2°C per decade. The frequency and intensity of extreme weather events, and the fires, floods and droughts that they can bring, have increased in the past 50 years, while the global average sea level has risen by 16 to 21 cm since 1900, and at a rate of more than 3 mm per year over the past two decades. These changes have contributed to widespread impacts in many aspects of biodiversity, including species distributions, phenology, population dynamics, community structure and ecosystem function. According to observational evidence, the effects are accelerating in marine, terrestrial and freshwater ecosystems and are already impacting agriculture, aquaculture, fisheries and nature's contributions to people. Compounding effects of drivers such as climate change, land/sea-use change, overexploitation of resources, pollution and invasive alien species are likely to exacerbate negative impacts on nature, as has been seen in different ecosystems such as coral reefs, the arctic systems and savannahs.

Marine plastic pollution has increased tenfold since 1980, affecting at least 267 species, including 86 per cent of marine turtles, 44 per cent of seabirds and 43 per cent of marine mammals, and affecting humans through food chains.

Greenhouse gas emissions, untreated urban and rural waste, pollutants from industrial, mining and agricultural activities, oil spills and toxic dumping have had strong negative effects on soil, freshwater and marine water quality and the global atmosphere.

Cumulative records of alien species have increased by 40 per cent since 1980. Nearly one fifth of the Earth's surface is at risk of plant and animal invasions, impacting native species, ecosystem functions and nature's contributions to people, as well as economies and human health.

In the past 50 years, the human population has doubled, the global economy has grown nearly 4-fold and global trade has grown 10-fold, together driving up the demands for energy and materials.

A variety of economic, political and social factors, including global trade and the spatial decoupling of production from consumption, have shifted the economic and environmental gains and losses of production and consumption, negatively impacting nature and its contributions to people.

Levels of consumption of material goods (food, feed, timber and fibre) vary greatly, and unequal access to material goods is associated with inequity and social conflict.

Economic exchange contributes to aggregate economic development, yet often is negotiated between actors and institutions of unequal power, which influences the distribution of benefits and long-term impacts. Countries at different levels of development have experienced different levels of deterioration of nature for any given gain in economic growth.

Exclusion, scarcities and unequal distributions of nature's contributions to people (in a complex interaction with other factors), fuel social instability and conflict. Armed conflicts have an impact on ecosystems beyond destabilizing effects on societies and a range of indirect impacts, including displacement of people and activities.

Economic incentives favour expanding economic activity and environmental harm over conservation or restoration. Harmful economic incentives and policies associated with unsustainable practices of fisheries, aquaculture, agriculture, livestock, forestry, mining and energy are associated with land/sea-use change and overexploitation of natural resources, as well as inefficient production and waste management. Vested interests oppose the removal of subsidies and the introduction of mitigating policies.

A quarter of the global land area is traditionally owned, managed, used or occupied by indigenous peoples, but Indigenous knowledge of land management is rapidly declining. 72% of this land shows trends that threaten livelihoods and well being of the populations that inhabit it. Growing resource extraction, commodity production, mining and transport and energy infrastructure, and climate change mitigation programs are major contributors to this loss.

Goals for conservation and achieving sustainability, including those of the Aichi Biodiversity Targets, the 2030 Agenda for Sustainable Development, the Paris Agreement goals adopted under the United Nations Framework Convention on Climate Change, and the 2050 Vision for Biodiversity cannot be met by current trajectories.

Land or resource tenure insecurity, as well as declines in nature, have greater impacts on women and girls, a fact that is not accounted for in existing environmental or social studies.

Areas of the world projected to experience significant negative effects from global changes in climate, biodiversity, ecosystem functions and nature's contributions to people are also home to large concentrations of indigenous peoples and many of the world's poorest communities, who will be will be disproportionately hit by those negative changes.

Except in scenarios that include transformative change, even with global goals being targeted, negative trends in nature, ecosystem functions and in many of nature's contributions to people are projected to continue to 2050 and beyond, due to the projected impacts of increasing land/and sea-use change, exploitation of organisms and climate change.

Human actions have driven at least 680 vertebrate species to extinction since 1500, including the Pinta Giant Tortoise in the Galapagos in 2012. The threat of extinction is accelerating.

Rising temperatures in Australia are causing wild fires to spread in drought-stricken New South Wales. Animal habitats have been destroyed, and countless animals have died. The Koala bear's eucalyptus food source has been decimated. Authorities estimate that between 4,500 and 8,400 koalas have been killed. As of January 1, 2020, it is estimated that 5 million hectares of land have burned nationwide with more than 1,000 homes destroyed. It is also estimated that over 1 million animals have died. There are still 3 months of summer left.

Oceans store carbon dioxide, but as more CO2 is stored in the ocean, there is less oxygen, causing fish to dying. With fish dying there is less food for the larger ocean animals such as whales. As temperatures rise, sea ice is melting at an alarming rate, causing ocean levels to rise. It is estimated by 2050 our world will be mostly under water.

Melting permafrost is uncovering formerly controlled diseases. Reindeer herds have been impacted by the melting of permafrost, as dormant diseases such as anthrax are revived.

Areas of the Arctic are eroding, as land is defrosting and becoming unstable.

As temperatures change, plants and animals are migrating. Animals are seen more and more out of their natural habitats. Moose are being seen on the plains. Mosquitoes that carry disease such as malaria have been discovered in North America.

Global temperature increases are leading to changes in the geographic distribution of tree species and altering the frequency and intensity of pest outbreaks. A rise in temperatures in Canada has allowed the Spruce Budworm to spread throughout forests in Western Canada. The budworm causes the fir trees to die and allows forest fires to move faster.

More than 40 per cent of amphibian species, almost a third of reef-forming corals, sharks and shark relatives and over a third of marine mammals are currently threatened. Ten percent of insect species are threatened with extinction.

Habitat loss and deterioration, largely caused by human actions, have reduced global terrestrial habitat integrity by 30 per cent; even of those species not classified as threatened, 9 per cent of the world's estimated 5.9 million terrestrial species – more than 500,000 species – have insufficient habitat for long-term survival and are committed to extinction, many within decades.

The Living Planet Index, which synthesises trends in vertebrate populations, has declined rapidly since 1970, falling by 40% for terrestrial species, 84% for freshwater species and 35% for marine species.

Biotic homogenization or the ‘anthropogenic blender’ is the phenomenon of widespread erosion of differences between ecological communities in different places; the loss of diversity has dramatically affected the structure, fire regimes, seed dispersal, land surface albedo and nutrient availability of many ecosystems.

300–400 million tons of heavy metals, solvents, toxic sludge and other waste from industrial facilities are dumped into the world’s waters each year.

Fertilizer runoff enters freshwater and coastal ecosystems, producing more than 400 hypoxic zones, which affect a total area of more than 245,000 km^2.

Over one third of the world’s land surface and nearly three-quarters of available freshwater resources are devoted to resource-depleting crop or livestock production.

Approximately 25 per cent of the globe’s greenhouse-gas emissions come from land clearing, crop production and fertilization, with animal-based food contributing 75 per cent of that.

Climate change is outpacing evolutionary and behavioural change in the vast majority of species worldwide, meaning they are not able to adapt as quickly as they need to in order to survive.

If climate change were the only problem we were facing, a lot of species could probably move and adapt, but populations are already small and losing genetic diversity, natural landscapes are already fragmented, and plants and animals can’t find adequately suitable habitats.

Mined products contribute more than 60 per cent of the GDP of 81 countries. There are approximately 17,000 large-scale mining sites in 171 countries, with the legal sites mostly managed by international corporations but also extensive illegal and small-scale mining that is harder to trace, and both types negatively impacting biodiversity.

Coastal development, offshore aquaculture, mariculture and bottom trawling, onshore land clearance, urban sprawl along coastlines, and pollution of rivers have severely affected coastal habitats, including estuaries and deltas critical for marine biota and regional economies.

Island nations will be most vulnerable to sea-level rise, displacing close to 40 million people, particularly those in East Asia and the Pacific region.

The global human population has increased from 3.7 to 7.6 billion since 1970, distributed unevenly across countries and regions, which has strong implications for the degradation of nature. Per capita consumption also has grown, also unequally, with wide variation in lifestyles and access to resources across and within regions, plus consequences for nature that are distributed globally through trade.

Approximately 821 million people face food insecurity in Asia and Africa while 40 per cent of the global population lacks access to clean, safe drinking water.

Environmentally-based health burdens such as air and water pollution are more prevalent in least developed countries.

Expansions of infrastructure are opening extensive areas of the planet to new threats. Globally, paved road lengths are projected to increase by 25 million kilometres by 2050, with nine tenths of all road construction occurring within least developed and developing countries. The number of dams

has escalated in the past 50 years. Worldwide, there are now about 50,000 large dams (higher than 15 metres) and approximately 17 million reservoirs (larger than 0.01 hectares OR 100m2). The expansions of roads, cities, hydroelectric dams, and oil and gas pipelines coincide with deforestation, habitat fragmentation, biodiversity loss, land grabbing, population displacement, and social disruption especially for indigenous peoples and local communities.

Changes in ocean ecosystems go far beyond rising sea levels. Ocean acidification is increasing, as is oxygen loss.

Increasing ocean acidification will rapidly and significantly alter many ecosystems and food webs.

Crops grown in high-CO2 conditions will be less nutritious, leading to mineral deficiencies.

Scientists are finding more links between melting Arctic sea ice and weather extremes like heat waves, droughts and blizzards.

Global warming affects a key North Atlantic current that carries ocean heat from the tropics toward Western Europe. The Atlantic Meridional Overturning Current is online to weakening by 37 percent by 2100, which will have devastating effects on European climate and food production.

Up to 350 million people in places like Karachi, Kolkota, Lagos and Shanghai are likely to face deadly heat waves every year by 2050—even if nations are able to rein in greenhouse gas emissions enough to keep the average global temperature increase to 1.5 degrees Celsius.

The rise in airborne and seaborne transportation of both goods and people, including a threefold increase in travel from developed and developing countries in particular, has increased pollution and significantly raised invasive alien species

Between 2009 and 2013, the carbon footprint from tourism rose 40 per cent to 4.5 gigatons of carbon dioxide and overall 8 per cent of the total greenhouse-gas emissions are from transport and food consumption that are related to tourism

Reduced, declining and unequal access to natural resources is a source of social conflict, particularly via mining and logging, as is population displacement. Least developed countries, often rich in and more dependent upon natural resources, have suffered the highest land degradation, and have also experienced more conflict, and lower economic growth, and migration.

Small numbers of individual people are capable of controlling large shares of any market or capital asset affecting huge populations and implicating natural environments. More than 2,500 conflicts over fossil fuels, water, food and land are currently occurring across the planet, including with at least 1,000 environmental activists and journalists killed between 2002 and 2013.

Global goals for education, gender equality, inequalities and peace, poverty, justice and strong institutions do not factor in their relationship to nature, which has a critical impact on each. Goals would be more effective if they took into account the impacts of climate change.

Plans for large-scale land-based mitigation measures to achieve global warming-limiting objective are projected to have significant negative impacts on biodiversity.

5 percent of species worldwide are threatened with climate-related extinction if global average temperatures rise 2 degrees Celsius above preindustrial levels. (The world has already warmed 1 degree.)

Twice in modern history, plagues have swept across the world, killing an estimated 15 percent of the population in a few decades. They occurred way back in the fifth and 14th centuries, respectively — but there is a serious risk that a new infectious disease could cause another outbreak, especially with today's urban and mobile global population.

Luckily, deadly diseases with the capacity to spread globally are rare. A century ago, the Spanish flu killed more than 50 million people. Outbreaks of SARS and Ebola in recent years ring alarm bells that another global pandemic is near.

Today, with cities more massive than ever and the world interconnected by air travel, there are concerns that a new disease could quickly spread across the planet.

Antibiotics, our greatest defense against disease, are becoming less effective as some strains of bacteria become resistant to them. Antibiotic-resistant bacteria are responsible for an estimated 700,000 annual deaths. If we don't develop new advances against antibiotic resistance, that number is estimated to reach 10 million annual deaths by 2050.

With viruses mutating more rapidly than ever and bacteria becoming increasingly resistant to antibiotics, public health experts believe the risk of a global pandemic is greater than ever before.

With airline travel, so we can ship the pandemic disease around the globe in less than 24 hours, if the disease is virulent enough, humanity could be wiped out in a matter of months.

Pandemic crop diseases can be just as virulent as animal diseases, and they can decimate an entire season's worth of staple foods. Because many farmers buy identical strains of staple crops from corporations, all their crops would be vulnerable to the same infectious diseases. A pandemic could rip through large parts the world's food supply in just one season. If enough crop pandemics struck, humanity could slowly starve to death, or rip itself apart with food riots.

In major cities around the world, the air is thick with carcinogenic diesel particulates. Heavy metals from industrial smokestacks circle the globe, even found in the Antarctic snow.

In high doses, dioxins can disrupt fetal development and impair reproductive function—and dioxins are everywhere. Your house may contain polyvinyl chloride pipes, wallpaper, and siding. Every year health organizations around the globe add to their lists of cancer-causing substances—the number is in the hundreds. Dioxins and other, similar chlorine-bearing compounds may be mimicking the effects of human hormones well enough that they could seriously reduce fertility.

A nuclear detonation from one of today's more powerful weapons would cause a fatality rate of 80 to 95 percent in the blast zone stretching out to a radius of 4 kilometers —severe damage could reach six times as far.

In the event of all-out nuclear war between the US and Russia, which hold the vast majority of the world's stockpile — 4,000 nuclear weapons could easily be detonated, enough to ensure global nuclear winter.

In a post-war nuclear winter, (when the clouds of dust and smoke released shroud the planet and block out the sun, causing temperatures to drop, possibly for years), temperatures could drop by 8 degrees Celsius over four to five years. Humans wouldn't be able to grow food; chaos and violence would ensue. The effects would lead to the disintegration of the global food supply - making widespread starvation and the collapse of states likely.

While numbers have fallen over several decades, the United States and Russia have just under 7,000 active nuclear warheads each, the largest collections in the world. The UK, France, China, India, Pakistan, North Korea, and Israel all have nuclear weapons. And a ballistic missile defense system, given current technology, will catch only a handful of stray missiles. Hundreds of nuclear weapons are ready to be released within minutes, a troubling fact considering that the biggest threat of nuclear war may be an accident or miscommunication. A few times since the 1960s, Russian officers (and, in 1995, the president) narrowly decided not to launch a nuclear weapon in response to what they'd later find out were false alarms. That threat may have reduced, but the potential for deliberate or accidental nuclear conflict has not been reduced, with some estimates putting the risk in the next century at around 10 per cent.

Unlike nuclear weapons, which require complex engineering, biological and chemical warfare can be developed at a relatively low cost and with relatively attainable materials.

Weaponized toxic chemicals could do tremendous harm to a localized target if the toxins were released into the air or into the water supply. Biological weapons represent an even greater catastrophic threat.

Advances in synthetic biology have made very real the possibility of malicious actors creating harmful pathogens for weaponization — or innocent researchers accidentally releasing a lethal infectious bug out into the world. In the event of a fast-moving pandemic, the world would be pretty vulnerable.

Many countries already possess biological weapons that could have horrific consequences if unleashed.

New technology, such as the CRISPR-Cas9 which allows users to genetically change and recombine bacteria, makes it cheap and easy for non-state actors to modify or weaponize viruses and bacteria.

Genetic engineering might permit the creation of "ethnic" biological weapons that are tailored to attack primarily one ethnic group.

Artificial intelligence (AI) is progressing rapidly. Surveyed scientists estimate, on average, that there is a 50 percent chance of AI being able to perform most tasks as well as, or better than, humans by 2050, with at least a 5 percent chance of surpassing human intelligence a couple of years after that. There's a common misconception that the risk of AI is that it will become malevolent. The bigger concern is that it will become too good at its job. The implications become much more frightening when you consider AI weapons in the hands of the wrong person, or an AI arms race leading to an AI war.

Once humans develop artificial intelligence, it will take off on its own and redesign itself at an ever-increasing rate. Humans, who are limited by slow biological evolution, couldn't compete and would be superseded.

While we are extinguishing natural species, we're also creating new ones through genetic engineering. Genetically modified crops can be hardier, tastier, and more nutritious. Engineered microbes might ease our health problems. And gene therapy offers an elusive promise of fixing fundamental defects in our DNA. Although there is no evidence indicating genetically modified foods are unsafe, there are signs that the genes from modified plants can leak out and find their way into other species. Engineered crops might foster insecticide resistance. The resulting superweeds and superpests could further destabilize the stressed global ecosystem.

Within a few decades, maybe sooner, advances in nanotechnology will make it possible to build microscopic robots that can assemble and replicate themselves. Super-precise manufacturing on an atomic level could create materials with new properties - such as being highly resilient or 'smart' - that would be highly beneficial. They might perform surgery from inside a patient, build any desired product from simple raw materials, or explore other worlds. After an industrial accident, however, bacteria-sized machines could spread like blowing pollen, replicate swiftly, and reduce the biosphere to dust in a matter of days.

These manufacturing technologies could offer some of the world's biggest problems - including the depletion of natural resources, pollution, climate change, clean water and even poverty – but it could also lead to the creation of large arsenals of conventional or more novel weapons made possible by atomically precise manufacturing. Nano-machines could be employed as the perfect precision military or terrorist tools.

While physical health has improved in most parts of the world over the past century, mental health is getting worse. The World Health Organization estimates that 500 million people around the world suffer from a psychological disorder. By 2020, depression will likely be the second leading cause of death, behind cardiovascular disease. Increasing human life spans may actually intensify the problem, as people have more years to experience the loneliness and infirmity of old age. Americans over 65 already are disproportionately likely to commit suicide. If, due to technological advances, an extended life span becomes common, it will pose unfathomable social and psychological challenges. Researchers have no good data on the long-term effects of taking psychoactive medicines, which are currently used as one main solution to mental health issues.

Much of human civilization is now inextricably linked to a readily available supply of inexpensive oil and petroleum products. From heating, electricity production and transportation to cosmetics, medicines and plastic bags, modern life runs on oil.

Global reliance on fossil fuels is unsustainable; the consumption and extraction of these fuels are doing immeasurable and irreversible harm, and as non-renewable resources, their continued use is unsustainable.

The risks of surprises like "tipping points" or "compound extremes" are global catastrophe sucker punches, combination punches, and even knockout punches. The more the climate changes, the greater the potential for these.

Increases in extreme weather events are going well beyond what has been predicted or projected in the past. We're learning more and more about factors we were not previously aware of that are magnifying the impacts of human-caused climate change.

Unreliable leadership is one of our biggest threats; how governments handle funding for infectious disease research and other science and conservation programs, nuclear policy, international cooperation and more can make all current situations worse.

It wasn't that long ago that climate change and nuclear warfare were largely unheard of. Today, they're risks we've already seen the devastating effects of — and that we worry could get much worse. Because of this, there's a possibility that we haven't even conceived of what is most likely to kill us.

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