



## Human Security and Existential Threats: A Governance Framework for Planet, Peace, People & Prosperity

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### Abstract

*A key priority for Human Security in the 21<sup>st</sup> Century is the prevention of existential threats to human civilisation to ensure the well-being of our future generations. This article describes the significant and escalating nexus between human security and existential threats and outlines the main risks to humankind from existential threats, considered under the interrelated themes of Planet, People, Peace and Prosperity. Planetary threats range from cosmic events such as meteorites, mass-extinctions and biodiversity collapse to threats from our climate emergency. The indirect pressures from climate change and our environment including food and water insecurity are examined as a driver for migration, conflicts and wars. Now more than ever human civilisation is under threat from nuclear, chemical and biological warfare, with as yet undetermined hazards from Artificial Intelligence. COVID-19 has revealed how increasing international trade and travel, urbanisation and population pressure are introducing new and emerging infectious diseases that risk becoming pandemics at an increasing rate. This article proposes an integrated governance framework that highlights the importance of strengthening multi-lateral governance mechanisms to prevent and reduce risks. Furthermore, it emphasises addressing priorities that create positive tipping points to assist in planetary recovery, whilst protecting people and promoting peace, combined with a transformation to renewable energy sources to secure our future prosperity. Existing integrated policy responses that build upon the Welsh Well-Being for Future Generations Act will be described with recommendations made to strengthen our global human security architecture to prevent existential threats and ensure the future of humanity.*

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### 1. Introduction

A key priority for Human Security in the 21<sup>st</sup> Century is the prevention of existential threats to human civilisation to ensure the wellbeing of our future generations. There are

significant interrelationships between human security and existential threats, however despite their crucial nature, risks are not sufficiently reflected within international policy responses. For example, until recently the Intergovernmental Panel on Climate Change summary reports for policy makers have not emphasised the existential risks from emerging Tipping Points, which are not always reflected in models and projections. Although some countries have declared a climate emergency, policies are not consistent with this endeavour, as investments continue towards the fossil fuel industry. Furthermore, the COVID-19 Pandemic has revealed substantial weaknesses in our collective ability to respond strategically and effectively to avert a global disaster. A large body of evidence already exists on existential threats, however much of it is examined within silos and communicated in scientific language. Therefore, a key aim of this article is to create an accessible summary and systems framework of existential threats with key interventions and governance mechanisms. The overall goal is the prevention of existential threats for human security—which needs to be our aspiration if we are to secure the wellbeing of future generations.

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This article considers the main risks to humankind from existential threats under the themes of Planet, Peace, People and Prosperity. Planetary threats range from cosmic events such as meteorites, mass-extinctions and biodiversity collapse to threats from our climate emergency. The indirect pressures from climate change and our environment including food and water insecurity are examined as a driver for migration, conflicts and wars. Now more than ever human civilisation is under threat from nuclear, chemical and biological warfare, with as yet undetermined hazards from Artificial Intelligence. COVID-19 has revealed how increasing international trade and travel, urbanisation and population pressure are introducing new and emerging infectious diseases that risk becoming pandemics at an increasing rate.

An integrated governance framework is presented to guide policy and to highlight the importance of strengthening multilateral governance mechanisms to reduce, mitigate and prevent risks. This article emphasises addressing priorities that amplify the creation of positive cycles to assist in planetary recovery, where possible through nature-based solutions. The war in Ukraine has revealed how important energy security is for protecting people and promoting peace, and the impending planetary crisis will require massive investment to scale a transformation to renewable energy sources to secure our future prosperity. Recommendations build upon existing integrated policy and political responses for leaders, (Dror Y, 2015 and 2017), including the Well-Being for Future Generations (Wales) Act to strengthen our global human security architecture to prevent existential threats and contribute to ensuring the future of humanity.

## 2. Human Security – and the Escalating Nexus of Existential Threats

The concept of Human Security first emerged within the United Nations Human Development Report in 1994. The Commission for Human Security in 2003 recognised the need to shift from traditional interpretations of security to one centred upon the freedoms and rights of the individual, and utilised the following definition for human security ‘...to protect the vital core of all human lives in ways that enhance human freedoms and human fulfilment.’ At that time the concept of Human Security was applied by the United Nations and the World Bank to address the building blocks of survival, livelihood and dignity, and became incorporated into the delivery of Social and Economic Development by the World Bank. Whilst the Human Security Unit at the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA, 2009) categorised vulnerability assessments as economic, food, health, environmental, personal, community and political threats. The concept of Human Security has since been adopted to advance social and economic development programmes within the World Bank and it has acted as an integrative force to assist in delivering the 17 Sustainable Development Goals.

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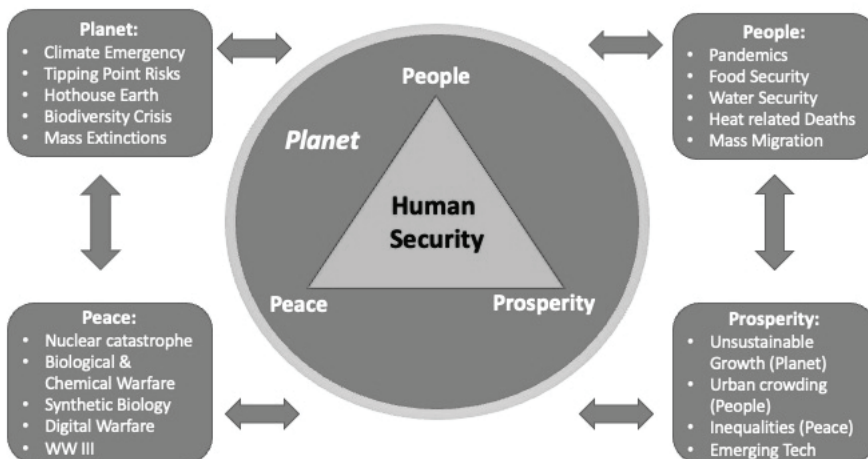
Human Security has been described by the United Nations General Assembly as an approach that puts people at the centre to create an integrated, comprehensive and context specific response; furthermore, the General Assembly resolution (66/290) on human security calls for an emphasis on prevention that protects and empowers all people. In this respect, human security differs from common security—which mainly focuses upon building security between nations through international law, conflict resolution and diplomacy. In contrast, human security is people focused (rather than state focused) and considers the complex interaction of challenges of security needs of people and communities living within their specific context. However, addressing the security needs of all of humanity requires a global response, whereby multilateral global solutions are advocated as an intrinsic aspect of the concept of Human Security (Granoff J, 2022). This is especially relevant for existential threats, which by their very nature are global threats requiring global coordinated action, albeit with context-specific responses.

A key aspect of the concept of Human Security requires an appreciation of the multiple and complex challenges affecting humans in a comprehensive, multi-sectoral way; (UNDP, 2022). This is especially relevant for the existential threats that humanity faces, which can be seen to interact and amplify other threats. For the purposes of this article, the main existential threats are categorised under the interrelated themes of Planet, People, Peace and Prosperity, to emphasise the interrelationship with the Sustainable Development Goals, and will be

described in turn in the next section with an emphasis on how they interconnect. Each of these aspects of Human Security interact with each other, with feedback loops within the context of a reinforcing nexus that often acts to escalate overall threats and risks to Human Security. For example, the changing climate has caused droughts and fires, creating food insecurity and migration, which in turn has contributed to conflicts such as the Arab Spring in 2011 as a consequence to destroyed crops from fire across the Eurasian Steppes in 2010. In a similar way, the combination of a warming world that favours many infectious diseases, with unsustainable growth and environmental decimation, has increased the threats of new and emerging infections that risks transference from animals to humans with the potential to generate further pandemics.

In many respects the escalating nexus of existential threats can be seen as a ‘wicked problem’ which is described as a complex and interconnected human-made social or cultural problems that are difficult to solve through siloed programmes or linear mechanisms. Within the concept of a wicked problem is the interrelated nature of the problems that can be considered a symptom of another problem which often makes wicked problems intractable (Rittel and Webber, 1973). However, the risks from our Planetary crisis, consisting of climate change and biodiversity loss, although progressing over a slower timescale than many of our other more immediate security threats, can be considered as a foundational principle for all of our security. Without a liveable Planet we will have nowhere to exist. Moreover, the Planetary Emergency often acts as an underlying root cause driving and escalating many of our other existential threats and requires prioritisation if we are to prevent and reduce risks from our existential threats. The diagram on the Escalating Nexus of Existential Threats to Human Security therefore places ‘Planet’ as the foundation of our home the Earth, as a foundational priority for the security of humanity.

Figure 1: The Escalating Nexus of Existential Threats to Human Security



In today's world, these interconnecting threats with increasingly complex global challenges, are also described as global polycrisis, whereby multiple global systems that humans are dependent upon, become casually entangled in a nexus that can affect our very own existence (Lawrence M et al, 2022). An appreciation of these concepts has the potential to transform how we frame solutions, actions and delivery systems in order to be able to address these existential challenges.

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### 3. Key Existential Threats for Human Security

For the purposes of this article Existential threats are defined as risks that have the potential to eliminate human existence, either in its entirety or to such an extent that human populations and their civilisations are not able to recover for millions of years. Although humanity has always been exposed to risks from natural disasters such as volcanoes or asteroids, we are becoming increasingly vulnerable to existential threats caused by humans, whether intentionally or unintentionally; (Rees M, 2021). The below section considers existential threats according to the main risks under the themes of Planet, People, Peace and Prosperity, although described in turn, they are each interconnected, with a tendency to exacerbate risks in other areas:

- **Planet:** threats range from mass extinctions from asteroids, massive volcanic eruptions and biodiversity collapse to threats from our climate emergency
- **People:** food and water insecurity act as drivers for migration and conflict, whilst a warming planet increases the risk of pandemics
- **Peace:** nuclear, chemical and biological warfare including synthetic biology; the role of Artificial Intelligence and Technology applied to Digital Warfare
- **Prosperity:** unsustainable growth (planet); unhealthy crowded cities and rapid travel (pandemics), widening inequalities (peace) and uncontrolled emerging technology

The threats to the Planet are especially emphasised as they act as a foundation for the majority of our other risks. With regard to our knowledge of the causes of past extinctions, the risks posed by our climate crisis due to the rapid release of excess carbon emissions, have similarities to extinctions caused by massive volcanic eruptions releasing extensive warming gases. Whilst, an asteroid hitting our earth as happened with the extinction of the dinosaurs, generates a massive quantity of debris into the atmosphere, causing rapid cooling in a process that has parallels with the potential creation of a ‘nuclear winter’.

**Planet:** Despite the process of the annual Climate Conference of the Parties (COP) meetings with incremental agreements made between nation states, our year-on-year increase in emissions makes our ability to deliver on climate commitments that will be within safe limits for human civilisation. Our current trajectory will exceed the safe 1.5 degrees C with current estimated temperature exceeding 2-3 degrees C by the end of this century (UNEP 2022). Of particular concern is that once we exceed 1.5 degrees C we are more likely to enter cascading temperature rise due to reinforcing cycles as different earth system and climate tipping points are exceeded; (Kemp L et al, 2022). This will lead to a continued increase in global temperatures over the next centuries until a new steady state is reached.

***“The world still needs a giant leap on climate ambition. The red line we must not cross is the line that takes our planet over the 1.5 degree temperature limit. We can and must win this battle for our lives.”*** – **António Guterres**, United Nations’ Secretary General, Climate Change COP27, 2022.

Recent projections by the United Nations estimate that, depending upon the pathway we choose over the coming decades, temperatures could reach between 3-10 degrees C by 2200 and 3-12 degrees by 2030 (IPCC 2018). Global average temperature rises of 4-5 degrees are likely to result in sea level rises of 10-60 metres. To put these risks into perspective the Permian Extinction 252 million years ago, was called the ‘great dying’—as it killed:

- 96% of marine species—from loss of oxygen
- 70% of land species
- Most of the planet’s trees, insects, plants and microbes

This occurred from temperature increases of 8-10 degrees C—which according to our current trajectory we could reach by 2200. This would not just represent the end of human civilization, but would result in the earth’s 6<sup>th</sup> Mass Extinction. This is no longer just some future possibility, without urgent interventions, our children and grandchildren may be witnesses of the end of humanity.

Unfortunately, evidence already indicates that safe limits for temperature thresholds are becoming exceeded at current temperatures for a number of critical earth and climate systems. For example, melting of the ice sheets and glaciers across Greenland, the Arctic and the Antarctic is already occurring at a rate much faster than modelling has predicted. Unless we can reverse current trends, even at today’s temperatures according to historical records our oceans will rise by 5-9 metres at some point in the future. However, evidence indicates that thresholds are already being exceeded for critical tipping points at our current temperatures, many of which will take millions of years to reverse.

This includes melting of our permafrost regions which releases methane—a highly potent warming gas. Ahead of COP 27, the United Nations World Meteorological Organization reported record high levels of carbon dioxide, nitrous oxide and methane, with an unexpected jump in these greenhouse gases that warm our planet. Levels exceed what would have been expected from human activity, potentially indicating that biological processes are starting to

cascade as tipping points are surpassed. Of concern, there is an estimated 1.5 trillion tonnes of carbon captured under permafrost regions, which is triple the amount of the total of all the carbon released since 1850; (Spratt and Dunlop, 2022).

Additionally, our ocean, soil and forests act as carbon sinks, having absorbed much of human created carbon emissions will reach a point when they are no longer able to absorb carbon and start to release emissions back into the atmosphere. Research over the last year indicates that, the combination of warming temperatures, droughts and wildfires have started to reverse the role of some of our main carbon sinks, turning them into carbon emitters. Of concern, over the last decade, Brazil’s Amazon basin forest has already emitted more carbon than it has absorbed. (Spratt and Dunlop, 2022). Even at 1.2 degrees C it appears that critical thresholds are being exceeded which could lead to cascading temperatures resulting in an unliveable ‘hothouse earth’ scenario, (McGuire, 2022). Our planet is sick and many of our previously stable earth systems are oscillating, indicating the beginnings of multi-system failure and climate breakdown (IAC, 2019).

**People:** With regard to our Planetary Emergency, as People we are primarily focused upon our own survival, however our survival as homo sapiens is intrinsically interconnected with that of the survival of a healthy biosphere and planetary eco-systems. Since 1970 we have already seen an estimated 60% decline of our mammals, fish and birds (Living Planet Report, 2018); and we face an estimated 3-48% of species extinction at 5 degrees of global warming; (IPCC 2022). To put this into perspective, an estimated 99% of all previous living organisms have been made extinct across the past 5 mass extinction events on our Earth. As we head towards the threat of a sixth mass extinction, the outlook for meaningful human survival does not look good. Based upon current knowledge, largely from previous extinction events, it has been estimated that global temperature averages above 6 degrees C of pre-industrial levels could lead to possibility of human extinction (Lynas 2020). On our current trajectory, we risk reaching 6 degrees C or higher at some point in the next century. There are concerns that these impacts may occur at lower temperatures than indicated, especially with the amplification of tipping points resulting in cascading climate breakdown.

*Table 1: Estimated Risks of Average Global Temperature Increases*

<ul style="list-style-type: none"> <li>One Degree Celsius = Increased Storms and Wildfires; 3-14% species extinction risk at 1.5 degrees C</li> </ul>
<ul style="list-style-type: none"> <li>Two Degrees Celsius = Disappearance of Artic Sea Ice, Widespread Droughts; 3-18% species risk extinction</li> </ul>
<ul style="list-style-type: none"> <li>Three Degrees Celsius = Global Food Crisis &amp; Amazon Rainforest Collapse; 3-29% species risk extinction</li> </ul>
<ul style="list-style-type: none"> <li>Four Degrees Celsius = China and India largely uninhabitable; 3-39% species risk extinction</li> </ul>
<ul style="list-style-type: none"> <li>Five Degrees Celsius = Mass extinctions occur; 3-48% species risk extinction</li> </ul>
<ul style="list-style-type: none"> <li>Six Degrees Celsius = Possible Human Extinction</li> </ul>
<p><i>(Adapted from Lynas M, 2020 and IPCC 2022)</i></p>



The existential risks from the climate emergency for the fate of humanity are significant and profound. However, they have been largely overlooked within the Climate COP discussions and the wider climate and health literature which mostly focuses on shorter-term impacts within the range of 1.5-2.0 degrees Celsius. The recent Lancet Commission on Climate Change and Health (Romanello M et al, 2022), highlights the health impacts already occurring from our climate emergency, including excess deaths, disease and injuries from heat, floods and storms. The impacts upon food security, economic productivity and widening inequalities are outlined. The lack of preparedness and adaptation measures is concerning, with only an estimated 50% of countries having assessed their adaptation health needs, and a third of countries still have inadequate health emergency management systems—even after COVID-19. With an estimated 1.2 million excess deaths occurring in 2020 due to exposure to fossil fuel related poor air quality, the case is made for a health and people-centred response to the Climate Emergency. Whilst from the perspective of existential threats, our warming world is causing an increase in infectious diseases emerging with pandemic potential.

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Historically, Pandemics have had a decimating impact upon human civilisation. For example, the bubonic plague killed an estimated 30-60% of the European medieval population, with cities and urban populations mainly being affected. Whilst a devastating 90% of the indigenous populations died following colonisation, of which the main cause was due to a previously uninfected population being exposed to measles, smallpox and influenza for the first time. Even in the 20<sup>th</sup> Century smallpox killed an estimated 100 million people around the world before it was totally eliminated in 1980; (Oldstone M, 2020). The COVID-19 pandemic has had a fatality rate of approximately 3% of those infected—a similar rate to the Spanish flu, whilst in comparison the mortality rate from Ebola was approximately 50%. The devastating impact of pandemics have altered the course of history and shaped our current geo-political landscape. The recent experience of COVID-19 with a relatively low mortality rate, reveals how disruptive pandemics are to human civilisation—even without the risk of decimating the human population.

Existential risks exist from pandemics that are allowed to spread widely, with new mutations emerging. A particular threat is from the increasing development of synthetic biology and ‘gain of function’ research, whereby infections are genetically engineered to enhance their lethality for research or for the purposes of biological warfare. The potential existential risks from engineering future pandemics are of particular concern, especially as the technology becomes increasingly available, combined with very variable and absent governance mechanisms. The widescale and rapid spread of the COVID-19 Pandemic



revealed how unprepared individual countries and the global community were for dealing with an infection with relatively low fatality rates, and calls into question our current capacity and collective ability to deal with a more lethal pandemic in the future; (IAC, 2022).

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*“Despite the progress made by non-nuclear proliferation agreements, the threats posed by the recent conflict in Ukraine, have escalated risks and substantially threaten our human and global security.”*

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**Peace:** we have lived with the threats of nuclear obliteration for well over a generation with an all-out exchange of 4000 weapons having the potential to kill billions within the initial and short-term impacts. Such an event would be followed by the creation of an unlivable world that is 8 degrees C cooler where food would not be possible to grow for 4-5 years. Even a small regional nuclear war involving 100 nuclear weapons could result in a nuclear winter that could devastate crops and put billions at risk of food security; (Global Priorities Project 2017). Despite the progress made by non-nuclear proliferation agreements, the threats posed by the recent conflict in Ukraine have escalated risks and substantially threaten our human and global security; (Jacobs G, ed. et al, 2022). The Doomsday Clock originated in 1947 to reflect the catastrophic impact of nuclear weapons, and was later expanded to include other existential risks including climate change, biothreats and disruptive technology. The clock is updated on a yearly basis, where in January 2022 it stood at 100 seconds to midnight, with the conflict in Ukraine and escalating climate risks the clock is ticking ever closer to midnight; (Doomsday Clock, 2022).

Aside from the dangers of nuclear weapons being utilised in response to the conflict in Ukraine, there are substantial risks from accidental or near-miss nuclear attacks. Since the 1950s over 20 near misses have been recorded—and this figure is likely to be much higher as it reflects those where we have access to information. It can be speculated that due to the number of nuclear weapons that exist, the nature of near misses and the variable governance mechanisms regarding nuclear safety and decision making, it is only a matter of time before a serious nuclear incident that threatens human existence occurs. However, it is valuable to understand our near misses to draw out lessons and recommendations to prevent and reduce our risks going forward. Some of these near misses have resulted from heightened tensions during the Cold War, where there was a high degree of fear and alert to nuclear threats. This led to events being misinterpreted as nuclear attacks for example, in 1962 a bear was mistaken for a Russian intruder at an air base in Minnesota, whilst in 1983 the sun’s reflection off of clouds were interpreted as US missiles heading towards Russia, and in 1995 a Norwegian-US research rocket studying the northern lights was misinterpreted as a missile targeted at Russia. These cases fortunately were not acted upon due to human judgement, for example in 1995 President Yeltsin was given the suitcase to launch a strike in retaliation but decided not to whilst averting the Cuban Missile Crisis in 1962 was down to the decision of

the head of the submarine fleet overriding the go-ahead of the captain, to not respond with nuclear weapons when a Russian nuclear submarine had been surrounded by a US fleet.

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*“The very nature of conflict and warfare is now changing and reflects the wider transformations that our humanity is undergoing.”*

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Fortunately, in these situations, wise human judgement prevailed in avoiding nuclear war, that resulted from the misinterpretation of a potential attack within a tense context that generated a background of fear. However, of significant concern has been a number of unintentional releases of nuclear armaments due to accidents during transport manoeuvres, whereby American B-52 bomber planes carrying nuclear weapons accidentally released their explosives or the plane crashed. This is known to have occurred in 1957 when a nuclear weapon accidentally fell from an aircraft in New Mexico creating a large crater—fortunately the nuclear component had been detached; however, this was not the case when 2 B-52 planes transporting nuclear weapons crashed above Palomares in Spain and contaminated the village and nearby Mediterranean Sea in 1966. Whilst in 1961, a B-52 released its two 20 megaton hydrogen bombs over North Carolina after an explosion due to a fuel leak; one bomb landed to safety with a parachute, whilst the other nearly exploded when 5 of its 6 safety mechanisms failed; (Davidson L, 2022). Going forward, the application of submarine drones and ocean scanning has the potential to destroy submarines and a key aspect of our second-strike capability and deterrence infrastructure, which further increases the risk of nuclear catastrophe from occurring.

Learning from these mistakes, as well as successes from the Treaty on the Non-Proliferation of Nuclear-Weapons, can guide an integrated response for Human Security. Furthermore, preventing nuclear war and conflict requires the creation of pathways to peace, based upon respect and understanding with active diplomacy (Sen A, 2011). In turn, early risk detection combined with the application of scientific evidence to prevent violence within families, communities and between countries can act to promote respectful relationships across society and to create a cultural foundation for peace (Bellis et al, 2017). To enhance this further, the establishment of multi-country trade agreements with socio-economic development such as the European Union, can act as a tool of soft diplomacy to enable recovery and reconciliation following conflict. Social Development, including Health, has been applied successfully as a tool of soft diplomacy following the conflict across South East Europe in order to rebuild trust and collaborative exchange to create a culture of peace, (SEEHN).

**Prosperity:** In modern times, our prosperity has largely been built upon the rapid exploitation of energy from millennia of the earth’s carbon reserves that has created an artificial prosperity and unsustainable wealth. In essence, much of our modern-day existence is reliant upon the application of these carbon reserves, for transport, food, clothes, utensils, heating and cooling our homes and allowing a huge population expansion with the creation of mega-

cities. However, this is all built upon unsustainable energy and resources, which are of their very essence time limited, and in the process of exploitation, are making our home the earth, sick. The mass illusion of this artificial energy and reality is driven by selfishness, greed and short-sightedness, as well as the fear of insecurity. Furthermore, we continue to subsidise and invest in fossil fuels at the expense of a safe world based upon renewable energy solutions. To justify this boom of unsustainable prosperity, we have created a post-truth world whereby we choose to believe in an alternate reality because it is an existence that we desire rather than reflecting the reality of the risks that we are generating and the sick world we are making. The increase of emerging infections and pandemics, which is related to rapid trade and travel, combined with crowded living and exploitation of the Earth's energy and resources, can be seen as symbolic of the wider sickness we are creating for our Planet's Health.

***“With our bottomless appetite for unchecked and unequal economic growth, humanity has become a weapon of mass extinction. We are treating nature like a toilet. And ultimately, we are committing suicide by proxy.” – António Guterres, United Nations’ Secretary General, Biodiversity Conference, COP15, 2022.***

Founded upon colonisation and slavery, human and planetary exploitation has been justified in the name of progress and prosperity. However, the disproportionate prosperity of the super-rich billionaires and countries grows at the expense of much of the rest of the world's population, our children and future generations, and our home, the Earth. With increasing pressure on limited resources, combined with access to information on widening inequalities in wealth that are becoming visible and acting as a driver for economic migration as well as a source of conflict. The very nature of conflict and warfare is now changing and reflects the wider transformations that our humanity is undergoing. Historically we can be seen to have transitioned through the agricultural and industrial revolutions, and with the development of computers and the internet, our current stage has been described as the ‘Digital Revolution’. The Digital Revolution will become even more pronounced and rapid with the application and uptake of Quantum Computing and Artificial Intelligence in the coming years. The innovation and connectivity of the Digital Revolution have the potential to bring great opportunities to advance knowledge, health and prosperity for everyone, as well as to contribute to solutions that address global security and our existential challenges (Nurse et al, 2022).

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*“Within the next decade, Artificial Intelligence and nanotechnology combined with the increased speed and complexity of Quantum Computing have the potential for uncontrollable disruption of the internet and digital tools.”*

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However, unfortunately we have also witnessed how the negative aspects of digital technology have been utilised to create misinformation and destabilise governments and

democratic processes and allow criminal activity via the ‘dark web’ that exploits and abuses children and women. Along with weaponised drones and driverless aircraft, in many respects these negative advances can be seen to have been created by the negative aspects of the human mind and have been described as Digital Warfare. Existing disruptive technology includes the application of Artificial Intelligence Image Generators to spread misinformation and corrupt perspectives, and can act to undermine political stability and democracies. Into the future, within the next decade, Artificial Intelligence and nanotechnology combined with the increased speed and complexity of Quantum Computing have the potential for uncontrollable disruption of the internet and digital tools. Technological companies are beginning to collaborate for self-regulation, however many of these technologies are emerging faster than can be controlled and have the potential to be weaponised in the wrong hands. The continuation of new technologies without the application of international governance frameworks based upon human rights and values, has the potential to threaten the very foundations of what it is to be human as well as our collective human security.

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*“Advancing the application of Human Security to address our multiple and complex challenges posed by existential threats, offers a critical opportunity to reframe how we ensure the security of humanity.”*

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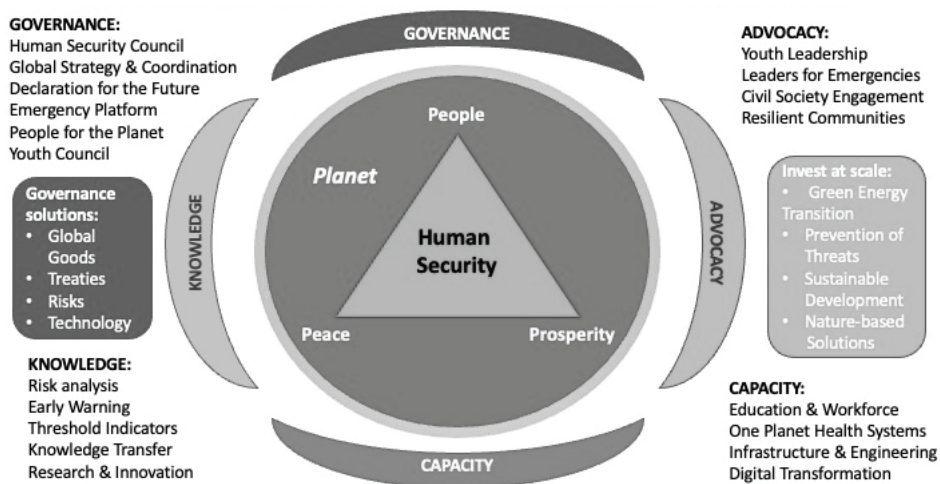
#### **4. Governance for Existential Threats – a Complex Adaptive Systems Framework**

Our world is becoming increasingly dangerous for humankind, with the amplification of existential threats affecting our very survival. When considering the complexity of multiple threats and risks that we have already been exposed to, we may even consider how lucky we are still to exist as a human species. However, our future may not be so fortunate. We can reflect upon how what we have done so far and our current systems have only partially worked in achieving a safer world. In essence we are applying limited human invented systems to address increasingly complex and interacting global challenges. Addressing our escalating global polycrisis requires framing solutions within the context of complex adaptive systems, which recognises the interrelated nature of our challenges and provides an integrated framework to intervene effectively. The application of complex adaptive systems frameworks allows us to move beyond analysis to the identification of strategic solutions that assist in rebalancing reinforcing feedback loops; (Preiser R et al, 2018). Moreover, having a greater appreciation of how ecological and energy cycles naturally occur, combined with an understanding of the organisational principles of our life systems, provides us with a different way to find sustainable solutions that can aid us in healing our world.

Going forward, we need to learn from where we have failed, apply what has worked and build upon success. Moreover, we need to be realistic about the size and scale of the

existential threats that face us, especially with regard to our Planetary Emergency, and the interrelationship that this has with People, Peace and Prosperity. For example, the COVID-19 Pandemic and the war in Ukraine have brought into sharp focus the failings of our existing security mechanisms in dealing with individual challenges. Moreover, our current security architecture is not set up to address the significant threats and risks posed by our climate and biodiversity crisis. The rapid amplification of Existential Threats to Humanity requires a significant paradigm shift to the application of the concept of Human Security. Advancing the application of Human Security to address our multiple and complex challenges posed by existential threats, offers a critical opportunity to reframe how we ensure the security of humanity. To achieve this will require a transformation of our international security architecture to include risk analysis, early warning systems, prevention and early intervention for Human Security challenges that threaten our existence; (IAC, 2022). It will also require a balanced governance structure that represents the needs of all of humanity’s security from existential threats, from all parts of the world, including women, as well as youth leaders to represent the voices of our future generations; (Mayor F, 2022).

Figure 2: A Governance Framework for Existential Threats to Human Security



The dilution inherent in our current climate COP consensus building processes is driven by politicians and policy makers reflecting national agendas, rather than based upon science, reality or responding to risks. This has perpetuated the charade of achieving progress when we are nowhere close to safe limits and instead of calling an emergency state, the narrative of being able to reverse ‘temporary overshoots’ of climbing temperatures creates a sense of false optimism and reversibility of tipping points that have been exceeded (IPCC 2022). Examining the process and parallels of past extinction events, and not relying on projections based upon incomplete modelling, will be essential to understanding the extent of our risks. Moreover, appreciating the interdependencies and reinforcing the nature of tipping points

and existential risks will be a key to our ability to find solutions and identify priorities. Doing so will enable us to take a strategic systems perspective for the multiple risks that we face, which in turn will allow us to identify and target priorities that create positive tipping points and generate multiple benefits for people, peace, prosperity and the planet.

The Governance Framework for Existential Threats to Human Security proposes a complex adaptive systems response with the aim of transforming the future possibilities of human survival. At the centre of this framework is the goal of achieving human security, which is based upon the primacy of ensuring a healthy home—our planet, for people to live on, in peace and be able to flourish and prosper. The framework adopts a multi-disciplinary approach, by applying the main requirements for human existence captured by the Sustainable Development Goals-related themes of Planet, People, Peace and Prosperity.

Due to the nature of non-reversible risks (or risks that would take millions of years to recover), posed by climate tipping points, the main emphasis needs to be upon prevention, with the application of the precautionary principle applied to risks. Potentially, for non-critical aspects, a focus upon reduction, resilience, mitigation and recovery may be appropriate, however given the existential nature of many of the threats discussed in this article, we need to justify to future generations that we were as ambitious as possible.

In essence, we talk about aiming to prevent pandemics and to prevent violence and nuclear wars, because not to do so can result in an out-of-control escalation of an existential crisis.

In order to communicate to wider audiences, the concept of prevention conveys a desirable goal, which is much required to counter the relatively unambitious narratives (and potentially dangerous terms such as ‘temporary overshoot’), currently used in the IPCC in respect to our climate emergency. Furthermore, the added value that the World Academy of Art and Science can potentially bring to this agenda is the ability to take a transdisciplinary approach to enable a holistic systems perspective and in doing so transform dominant narratives and contribute to wider advocacy. Within this context, the concept of Prevention as applied by the Health-Sector is utilised as an accessible, ambitious, umbrella term that is used to cover the following concepts:

- **Primary Prevention:** whereby the onset of the threat or hazard is prevented from occurring
- **Secondary Prevention:** early detection with early intervention is applied to halt and reverse progression of the hazard—this is often seen as risk reduction, resilience and adaptation
- **Tertiary Prevention:** to make an established problem less severe in order to improve outcomes—this relates to the concepts of mitigation and recovery

The framework builds upon the Sendai Framework for Disaster Risk Reduction, with an emphasis on strengthening governance and an integrated systems response for multiple hazards. Although complementary and reinforcing to existing international initiatives, including the Paris Climate Agreement, Our Common Agenda and the Pandemic Treaty,



this framework specifically focuses upon strengthening an integrated systems response to our existential threats. In doing so it aims to transform our current trajectory of multiple existential risks with a strategic systems response that places human security at the heart of our global security architecture. Therefore, a key aspect of transforming our security systems entails strengthening our **Governance** mechanisms, supported by the additional systems enablers of **Knowledge – Advocacy – Capacity** which are illustrated in the integrated systems framework for Human Security below:

- **Governance:** Human Security Council, Global Strategy and Coordination, an Emergency Platform, a Declaration for the Future, a Youth Council and People for the Planet Alliance
- **Knowledge:** Risk analysis, early warning systems, threshold indicators, research and innovation, multi-sectoral knowledge transfer
- **Advocacy:** Youth leadership, Diverse leadership for Emergencies, engage civil society, create resilient communities
- **Capacity:** Education and Workforce development, create One Planet Health Systems, scale infrastructure and engineering solutions and the digital transformation

By focusing upon the generic systems enablers allows for the creation of an integrated response to our existential threats and risks. In turn the application of a systems framework facilitates a strategic response to prioritising solutions that have multiple benefits and creates desired impacts at scale, whilst averting unwanted consequences. In prioritising threats, the risks posed by tipping points leading to a cascading climate catastrophe, with the interrelated impacts upon People, Peace and Prosperity, requires that planetary risks are framed as foundational. In essence, in order for humanity to survive, we need a habitable planet or home to live on. Therefore, the risks and solutions for the Planet need to be placed centrally in considering sector-specific interventions for People, Peace and Prosperity, as outlined below:

- **Planet:** Heat, Air, Water, Land, Food—risks, resilience and recovery; the poles and oceans as global goods; nature-based solutions; governance for climate engineering
- **People:** Pandemics—global and regional coordination enhance community capacity with ‘One Planet Health systems’ for prevention; detection; early warning systems, preparedness and response; transform global health security as a common good with digital solutions
- **Peace:** Risk analysis, climate justice, rights, responsibilities and the rule of law; violence prevention and the promotion of peace; bridges for peace: role of multilateral organisations, trade agreements and cross border social initiatives for soft diplomacy
- **Prosperity:** Scale renewable energy to underpin Sustainable Development and Growth; Digital Technology and AI—governance, scaling responses and private sector role; accessible Research and Innovation to create a flourishing world



Placing the Planet at the heart of policy requires investment at speed and scale in the Renewable Energy Transition, combined with the application of nature-based solutions; this can act as a driver for sustainable development and prosperity, which in turn acts to strengthen planetary resilience and reduce risks from our climate emergency.

## **5. Recommendations: Transforming Governance for Existential Threats to Human Security**

Going forward, if we are to be successful in preventing the extinction of our human species, we need to be realistic, strategic, ambitious and courageous. We need to look to the future, act with urgency and appreciate the value of everyone on this planet now, as well as valuing our future generations. To be able to scale up solutions rapidly, requires putting aside egos, greed and selfishness to work together and advance common goals. The current narrative of vulnerability, blame and denial continues to reinforce global power imbalances—and needs to shift to one of responsibility, respect and empowerment. Survival mechanisms such as competitiveness and self-interest that have worked in the short-term on a small scale in the past, will not work in the long-term on a global scale. In order to secure the future of humanity, arguing about costs is meaningless in the context of our survival. Ultimately, we are all in this together and the sinking ship ‘Planet Titanic’ will take us all down.

*“We cannot solve our problems with the same thinking we used when we created them.”*

**– Albert Einstein**

In order to transform our current trajectory where we are chaotically falling towards the end of human civilisation through the amplification of our multiple existential risks requires us to create solutions at a different level to the problem. We understand in depth the individual components of many of the threats and risks that we face. However, we need to have a greater understanding of how these operate within a reinforcing system, in order to be able to take strategic and coordinated action to prevent risks from turning into catastrophic collapse. In doing so, we can apply lessons from our previous successes and failures, for example in the creation of peace or responding to the pandemic (IAC 2022).

A common failing seen with our planetary emergency, the pandemic and the recent conflict in Ukraine has been the inability of individual nations and our global community to work together at the speed and scale required. Going forward, enhancing our international security architecture will be instrumental to allow our existing infrastructure to operate according to our changing and complex threats.

We do not necessarily need to create radical change to achieve this, we need to start appreciating the resources we already have within the context of a wider global system, it is possible to make relatively minor but strategic adjustments to the system to create a functioning response. This can mainly be achieved by altering governance mechanisms, with key recommendations below pertaining to reinforcing and enhancing our existing global governance infrastructure, including the ambitions outlined in the United Nations’ ‘Our Common Agenda’; ‘A Pact for the Future’ and the UNSG’s Futures Summit.

Table 2: Governance Recommendations for Existential Threats to Human Security

<ul style="list-style-type: none"> <li>• <b>A Human Security Council for People, Planet, Peace and Prosperity</b> – reporting to the United Nations General Assembly, co-chaired by high-level leaders, with balanced representation from our diverse global communities, and coordinated input from the United Nations organisations and international community, scientific, expert and professional alliances, along with youth and civil society representatives</li> </ul>
<ul style="list-style-type: none"> <li>• <b>A Global Strategy for the Future of Human Security</b> – focusing upon Existential Threats and risks, utilising an integrated systems framework to prioritise risks and identify interventions, including Governance for Global Goods, Treaties, Risks and Technology; combined with an action plan clarifying roles and responsibilities, indicators, timelines, resources; reporting and governance to the proposed Human Security Council which could potentially include an annual Poly-crisis Status Review</li> </ul>
<ul style="list-style-type: none"> <li>• <b>An Emergency Platform for the Planet</b> – focusing upon Existential Threats and Risks to Human Security that utilises digital technology to synthesise and coordinate global risks, identify critical thresholds and indicators for early warning systems in order to scale preventive, preparedness, response and recovery mechanisms; reporting to the Human Security Council, with links to the United Nations Office for Disaster Risk Reduction to build resilience at regional and national levels</li> </ul>
<ul style="list-style-type: none"> <li>• <b>A Global Declaration for the Well-Being of Future Generations</b> – mainstreamed by a Commissioner to ensure a coherent and future-focused perspective across international organisations, agreements and policy and programmes, including strengthening delivery across the Sustainable Development Goals; and building regional and national capacity with legal instruments and tools</li> </ul>
<ul style="list-style-type: none"> <li>• <b>A Youth Council for the Well-Being of Future Generations</b> – with balanced and diverse representation to empower our future leaders, provide advocacy to the international community and communicate to the wider world; supporting the role of the Commissioner for the Well-Being of Future Generations and reporting to the Human Security Council</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Leaders for the Well Being of Future Generations</b> – develop the skills of current and future leaders to deal effectively with existential threats and complex global challenges and emergencies; incorporate scientific, strategic and multi-disciplinary complex systems skills and capabilities within education, training, professional development and workforce planning, along with the development of personal resilience, ecological and emotional intelligence in response to emergencies and crisis situations</li> </ul>
<ul style="list-style-type: none"> <li>• <b>People for our Planet Alliance</b> – to create values for global citizenship and proactively engaging with civil society, donors, the private sector and innovators, in securing the health of our planet to enable the survival of human civilisation into the future to create a safe world where all can flourish</li> </ul>

Although new innovation will become increasingly important, we already have sufficient technological solutions to reverse global calamity. Engaging wider expert and professional bodies to address our complex challenges through multi-disciplinary knowledge transfer can help to solve our existential risks. For example, we have developed comprehensive health systems that can prevent and treat disease and disability, and bring someone back from the brink of death and aid their recovery to health and wellbeing. Essentially, the functioning of our human bodies has evolved from our earth's systems, and drawing parallels for how we can resuscitate a critically sick person can give us hope in our ability to rescue 'Patient Planet' (IAC 2019).

***“The Planet is Sick – and we all need to work together to ensure the health and wellbeing of future generations”***

– **HE Bertie Ahern,**

Co-Chair, InterAction Council, former Taoiseach, Prime Minister, Republic of Ireland

## **6. A Vision for Human Security – Creating a Resilient and Flourishing Planet for All**

We have the potential to re-envisage our future through the creation of systems that promote and protect the health of humans, animals, the environment and our planet. Furthermore, combining the arts with the sciences can enable us to utilise science whilst seeing the whole picture with realistic optimism, in order to create comprehensive strategic responses and systems. An important aspect of this involves the application of principles and values to engage the heart to reorientate actions towards humanity that motivate people to work together towards common goals. The below outlines principles for leaders and global citizens committed to enhancing human security based upon the goal of securing the well-being of our future generations to achieve a vision of creating a resilient and flourishing planet for all. Everyone, every community and every sector can play a role in creating the future world that we want our children and grandchildren's children to inherit and live in. Achieving this requires a transformation in governance and leadership based on **values** for the creation of a safe, diverse, just, healthy, sustainable and flourishing people and planet, and that is built upon the following **principles**:

- **Future:** focus upon a common future vision to orientate our current policy solutions
- **Youth:** engage our future generations to determine the future of a sustainable world
- **Inclusion:** respect and value everyone to create a diverse and flourishing planet together
- **Security:** strengthen global responses to tackle threats from our Planetary Emergency
- **Resilience:** nurture resilience across our life-course, communities and our eco-systems
- **Care:** for all and inspire dignity, hope, compassion and well-being for creative solutions
- **Wisdom:** enhance accessible knowledge, research, innovation and digital solutions
- **Well-Being:** place flourishing People and Planet at the heart of our communities

**Note:** The WAAS Existential Risks for Humanity (ER4H) Working Group is in the process of being established, and welcomes the engagement of committed Fellows and young Associate Fellows. Please contact the author for further information.

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