PROMOTING LEADERSHIP IN THOUGHT
THAT LEADS TO ACTION

THE WEALTH OF NATIONS REVISITED

CADMUS

NEW PERSPECTIVES ON MAJOR GLOBAL ISSUES

Volume 5, Issue 4 | JULY 2025 | ISSN 2038-5250

OUR VISION

The world is in need of guiding ideas, a vision, to more effectively direct our intellectual, moral and scientific capabilities for world peace, global security, human dignity and social justice. It needs evolutionary ideas that can spur our collective progress without the wake of destructive violence that threatens to undermine the huge but fragile political, social, financial and ecological infrastructures on which we depend and strive to build a better world. History has recorded the acts of creative individual thinkers and dynamic leaders who altered the path of human progress and left a lasting mark on society. Recently the role of pioneering individuals is giving place to that of progressive organizations inspired by high values and committed to achievement of practical, but far-reaching goals. This was the intention of the founders of the World Academy of Art & Science when it was established in 1960 as a transnational, transdisciplinary association to explore the major concerns of humanity. No single organization can by itself harness the motive force needed to change the world, but a group of like-minded organizations founded with such powerful intentions can become a magnet and focal point to project creative ideas that possess the inherent dynamism for self-fulfillment.

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Visit http://cadmusjournal.org/content/editorial-policy-and-process for Editorial Policy and Process.

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Inside This Issue

This edition of CADMUS confronts the interlocking crises of armed conflict, climate pressure, and disruptive technologies, and offers a coherent strategy for turning turmoil into progress. It outlines systemic reforms to strengthen overstretched multilateral institutions, revives shared human values to stabilise governance, and proposes a "peace offensive" grounded in local trust and the defence of human dignity. Contributors explore how artificial intelligence could unite scientific disciplines, how citizen-science networks are evolving into a novel security architecture, and why financing the SDGs is, above all, a coordination, rather than a capital challenge. They map deep-tech routes to a net-zero economy, trace the maturation of green innovation from guided nurture to market-driven scale, and show how Europe might channel its financial surpluses toward inclusive growth. Authors present historical reflections that caution us, progress is fragile. Essays on management education call for the fusion of humane values with digital fluency. Technological forecasts envision a post-monetary, abundance-based civilization. Taken together, these perspectives argue that ethically grounded, convergent innovation and broad-based collaboration can transform today's turbulence into the seedbed of a new global renaissance, and they invite readers to engage, debate, and act on these bold proposals.

We hope you enjoy this issue.

Editors

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Sources and Solutions for Global Turbulence

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Chair, Board of Directors, World University Consortium

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Chairman, Force for Good; Executive Director & Trustee,
World Academy of Art and Science; Co-founder, Greater Pacific Capital, UK

Abstract

This paper is intended to provide the conceptual background for discussion during the WAAS@65 conference in July 2025. The central focus of the paper is on the origins, root causes and potential solutions for the rising levels of global turbulence associated with the multidimensional polycrisis confronting humanity today. It explores possible solutions and raises challenging questions regarding the events unfolding and the deep sources behind the destabilizing threats. Our discussions are intended to serve as an introductory step in an ongoing process to enhance understanding of our human dilemma, to identify possible solutions, formulate practical strategies, and clarify the potential role that WAAS and partner organizations can play in addressing the global challenges that confront us.

1. Turbulent Times

We live in turbulent times characterized by rising levels of uncertainty, doubt, distrust, and insecurity. Rising insecurity is leading to the polarization of societies, social unrest, extremism, violence, war and geopolitical instability. These characteristics reflect symptoms of deeper underlying structural and systemic causes rather than isolated events. The world is in the midst of a multidimensional global crisis encompassing political, economic, technological, social, cultural and environmental components. Some refer to it as a Polycrisis, some others as a Perfect Storm.[1] Regardless of the name, its essential origins can be traced back to events that followed the end of the Cold War in particular, which evidenced the rapid globalization of society, accelerated pace of social change, rising levels of inequality and financial instability, competitive economic nationalism, and a scramble for global leadership and effective policies to fill the vacuum.

Since 2020 the process has been further fuelled by the COVID-19 pandemic, wars in Ukraine and the Middle East, the renewal of the arms race, a retreat to the Cold War mentality of competitive security, the acceleration of global warming, the threats posed by recent advances in generative AI (GenAI), the anticipation of artificial general intelligence (AGI) in the near future, and other real and potential existential risks.

The polycrisis is characterized by a weakening of democratic institutions, the rise of extreme nationalism and authoritarianism, the declining effectiveness of multilateral

institutions, and loss of confidence in the media, business, technology, science and other institutions. The sense of shared vision and universal values that has provided a platform for international collaboration and global leadership since the end of the Second World War are being challenged by a retreat to national self-interest that is fracturing domestic priorities and international relationships and undermining the capacity of multilateral institutions to effectively play the role for which they were created.

The turbulence is expanding simultaneously in many unpredictable directions, like a tsunami of global proportions rapidly swelling in size, speed and intensity. This storm seems to defy both the efforts of leaders and the collective will of humanity to control, master or direct it, with some leaders' actions serving to make it stronger. As a result, its power now threatens the world with unintended and unanticipated consequences.

1.1. The Global Context and Enabling Conditions

An understanding of the surface symptoms and consequences of the turbulence is not sufficient for mastering it. We require knowledge of the root causes that spur and energize it, the process that determines and drives its direction, and practical strategies that can alter its speed, direction, velocity and consequences and transform it into a conscious evolutionary movement.

The causes of the turbulence are multidimensional, complex and interdependent. But they are all linked to extraordinary movements characteristic of the current period of global social evolution. The process of social evolution from isolated local communities to a single, interconnected global community has been taking place for millennia, but the speed, magnitude and complexity of growth, development and evolution exceed that of any prior period in human history.[2] Population growth, modernization, urbanization, economic development, the evolution of international relations and globalization continue to accelerate. The rate of technological innovations and dissemination that has brought us computers, renewable energies, cloud computing, algorithmic trading, AI and robotics continues to accelerate. As a result, the speed and quantity of communications have multiplied exponentially since the advent of the internet, smartphones, social media, and the viral instant cultural exchange. Accelerating growth, technological innovation, communications and migration have brought along with them increases in inter-cultural contacts, influences and impacts between people around the world. The increasing contacts have brought with them increasing exposure to the full spectrum of global cultural values and rapid changes in social aspiration, expectations, styles and standards of living. And at the same time, all these movements have contributed to rapidly rising levels of pressure generating environmental instability and taxing planetary limits.[3]

Never before has humanity been subject to change of this speed, magnitude and intensity.[4] Historically, evolution has been a very slow, gradual process spanning countless centuries. It took Homo sapiens almost 200 millennia to reach a population of 10 million, another 10 millennia to reach 100 million, 18 centuries to raise it to one billion and only two centuries to raise that to eight billion.[5] During the last 200 years, global economic growth has multiplied

100-fold.[6] Humanity has evolved from a predominantly rural agrarian society to an urban cosmopolitan interconnected global society interacting instantaneously via the internet, mobile phones, and social media.

We are in turbulence, major turbulence and it is not just in the air, it is in our systems, in our institutions and in our everyday lives in education. And our lives are increasingly full of uncertainty and instability in the sense that the future is arriving much faster than our ability to anticipate or respond.[7]

> *"Turbulence is causing a major fear reaction because it's essentially about fear for our very survival and the pandemic particularly." – Joanna Nurse*

Each stage in social evolution opens up unprecedented opportunities but also generates new pressures and stresses on established traditional and conventional customs, beliefs, values, attitudes, social institutions, family and lifestyles.[8] And these things change much more slowly than the changes in technology, transport, communications and the pressures of work, population and migration. Increasing speed brings with it increasing uncertainty, insecurity, anxiety, stress, polarization of society and social turbulence. While some look forward with anticipation to a better future, many others feel that the speed and magnitude of change threaten and undermine their security, power, position and achievements. Turbulence is a natural and inevitable consequence of rapid change. When the turbulence exceeds the capacity of society to adapt, it disrupts the social fabric and gives rise to discontent, the polarization of attitudes, conflict and violence.[9]

> *"There have been many periods of turbulence in the past and many periods of transition to new states of social evolution." – Eden Mamut*

The pace of change since the end of the Cold War led to unprecedented achievements. Peace, demilitarization, the founding of the European Union and WTO, the birth of the Internet, the globalization of communications, economy and finance, and countless other wonders. But it also brought with it the frictions and pressures of close contact between traditional and modernized societies and cultures, increasing competition for scarce resources, international competition that shifted from military to economic dominance, financial instability, rising levels of unemployment and economic inequality. In addition, the increasing levels of environmental stress on the global habitat have led to a rapid shift in energy from fossil fuels to renewable forms.

1.2. Struggle for Solutions

In 2013, the World Academy of Art and Science launched a project in collaboration with the United Nations Office at Geneva to inquire into the emerging nexus of global challenges: political, economic, social, cultural and ecological. The study confirmed that all these challenges share certain common attributes. They are all global in reach, impact, complexity, and interdependent with one another. None can be successfully addressed by the unilateral initiatives of nation states, by unidimensional policy measures, or by specialized institutions at the national and international level. None can be effectively understood and explained by uni-disciplinary perspectives, prevailing theoretical frameworks, and predominant ways of thinking. Our research concluded that fundamental changes would be required at all these levels to address these challenges effectively. It called for the development of integrated modes of thinking, a transdisciplinary approach to education, and a new paradigm for global development.[10]

Two years later, in 2015, 193 UN member nations took the unanimous decision to adopt a comprehensive approach to address this complex nexus of interrelated global challenges. They adopted Agenda 2030, a program to achieve 17 Sustainable Development Goals (SDGs) and 169 targets within 15 years.[11] For the first time in history, the entire human community has joined together to address the global challenges confronting humanity.

After an impressive beginning, Agenda 2030 has met with increasing resistance and obstacles to realization. A decade after its inception, it is evident that the unprecedented levels of international cooperation, coordination and momentum required to address the existential threats to human security and sustainable development have not been achieved. The global community seems to have lost both its confidence and its commitment to its shared vision and values. It still lacks the integrated theoretical framework, institutional capabilities, essential policy measures, program initiatives, financial support, leadership, expertise and public endorsement required to respond effectively to the challenges we face. By 2024, only 17% of the SDG targets were on track, with nearly half showing only minimal or moderate progress, and over one-third stalled or regressing.[12]

2. Characteristics of Global Social Evolution

The turbulence humanity is facing today is not unique. The record of history is marked by numerous periods of rapid change accompanied by turbulent upheaval and sudden reversals interspersed by relatively longer periods of static stability. The turbulence results from the tension between the momentum of the forward movement and of traditional or inertial forces that resist change, reflecting gains and losses of various social groups and values.[13] The interaction and conflict between the two opposing forces generate zigzag patterns of progress and retreat. A longer term perspective reveals a spiralling upward movement of global social evolution with distinct characteristics and direction. Today's tensions also capture the tension of some groups pushing for the forward movement of humanity while other oppositional reactionary groups resisting the change. The characteristics of the progressive and resistance movements of the current period of turbulence have much in common with history but are distinguished by their magnitude and speed.

2.1. Progressive Social Movement

- **Acceleration of Global Integration**: The unprecedented speed of global social evolution, through increased physical mobility, scientific advances, technological deployment, economic interdependence, and expanding multilateral institutions, is transforming the autonomy of nation-states into shared governance shaped by universal values and global legal norms.
- **Systemic Complexity and Interdependence**: Intensifying interactions and interdependence across governance, defense, business, media, transportation, health, science, technology, and education are generating multilayered systems of mutual influence, feedback, and vulnerability.
- **Accelerated Contact and Sociocultural Transformation**: Accelerated contact, dialogue, and exchange among individuals and cultures are fostering mutual understanding and co-evolving shared worldviews, driving rapid shifts in values, knowledge systems, institutional norms, and relationships that redefine societal roles and ways of life.
- **Empowerment Through Distributed Tools and Networks**: Expanding access to education, digital tools, global communication networks, and participatory governance models is enabling individuals and civil society to shape innovation, culture, and decision-making across boundaries once restricted by geography or hierarchy.
- **Technological Convergence and Expanding Human Possibilities**: The integration of artificial intelligence, biotechnology, and digital platforms is exponentially expanding human capabilities in cognition, health, work, and learning, reshaping the functional fabric of modern life.
- **Rise of Ethical Universalism**: Emergent global values, equity, sustainability, justice, and inclusion, are becoming normative reference points that shape institutions, laws, and individual aspirations, reinforcing a cohesive global identity and shared purpose.
- **Cumulative Advancement and Rising Aspirations**: These converging forces are multiplying knowledge, expanding human capacity, and raising expectations, igniting a global revolution of aspirations for well-being, dignity, and meaningful progress.

"Today, our capabilities are doubling every 3 or 4 months. That's not evolution. That's an exponential leap. And if we don't evolve our inner architecture to match that curve, we will amplify the very flaws that got us here at scale and at speed. We are entering an age of absolute capability without having evolved our consciousness to match it." – Lawrence Ford

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2.2. Resistance to Change

- **Psychosocial Backlash Against Change**: The unprecedented pace of progressive transformation is generating widespread uncertainty, confusion, insecurity, and fear, provoking resistance and an urge to deny, prevent, slow, or oppose change.
- **Disruption of Established Power Structures**: Rapid shifts in social power, driven by scientific knowledge, technology, political influence, and digital communication, are displacing traditional hierarchies, sparking anxiety and rejection among entrenched institutions, elites, and populations.
- **Cultural Identity and Generational Resistance**: The pace of change challenges deeply rooted beliefs, values, and practices. Efforts to preserve national, cultural, or religious identity manifest as opposition to diversity, globalization, and universal norms, widening generational and cultural divides.
- **Economic Insecurity and Social Distrust**: Real and perceived displacement, rising inequality, and loss of relative social status intensify distrust in institutions and fuel a populist backlash against domestic and global authority structures.
- **Institutional Inertia and Adaptation Failure**: Conservative tendencies in cultural and political institutions, and their limited capacity to evolve at the speed required, undermine societal resilience, mobilizing resistance and exacerbating the clash between forward and reactionary forces.
- **Psychological Dislocation and Demand for Authoritarianism**: Disorientation in the face of complex change fosters nostalgia, ideological rigidity, and growing demands for authoritative (even authoritarian) leadership promising control, certainty, and the restoration of past norms.

The clash of the forward and reactionary movements generates tensions, conflicts, violence and stop-start progression.

2.3. Shifts in Social Power[14]

- The growth and changes in the distribution of all these forms of social power enhance the capacity and influence of those most prepared and capable of harnessing it compared with the relative power and influence of those who are not. The shifts in centres and levels of power result in an increase in force and impact of some groups and a reduction in that of others.
- Many centres of power are being rapidly altered from one group to another. These trends reflect a declining power of some centres and traditional seats of power relative to newly emerging centres of power.
    - From one or two dominant nation states to associations of nations such as G-7, G-20, and BRICS.
    - From physical size to the technological superiority of military power enabling even smaller entities to combat larger armies.

- From the middle of the political spectrum to the extremes, particularly towards the far right.
- From political influence of the Middle Class to increasing concentration of political and economic power of corporations and the super-wealthy resulting in plutocracy and oligarchy
- From government regulation of technology development and application to diminishing control of government over technological deployment
- From a wide distribution of wealth among many corporations and individuals to an increasing concentration of economic power in a small number of megacorporations dominating entire industries
- From dependence of business and economy on a skilled affordable workforce to increasing reliance on technology
- From government and public interest control of the media to corporates and informal social media
- From influence of scientific authorities to populist information and fake news
- From national to global financial flows, markets and banking
- From local to national and national to global markets, supply chains and global financial institutions
- From national government authority to global competitiveness of MNCs

Economic inequality, a key driver of the populism and extreme forms of government that we are seeing all over the world today, is probably set to continue unless these issues are addressed.[15] And technology supremacy, which has become central to military and economic power, is of course part of the solution too.[16]

2.4. Root Causes and Drivers of the Turbulence

The enabling environment of rapid and accelerating change has created a fertile field for instability. But the immediate source of the symptoms described above can be traced to more specific causes that have taken root in the unstable global social environment. Our discussions have identified a wide range of these root causes.

- Failure of socio-economic policies to deliver prosperity and meaningful inclusion to working classes.
- Failure to identify and protect the public or arm them for self-protection, against misinformation.
- Fragile governance structures unable to withstand technological, geopolitical, and social disruptions.
- Inability of democratic systems to evolve in response to rapid technological and communication changes.

- Weakening of national sovereignty and power versus the power of corporations, and financial markets, weakening state control.
- Weak governance and oversight of money and market economics, leading to extreme income inequalities and systemic imbalances.
- Inadequate strength of global governance to ensure equitable benefits of advancements.
- Neglect in addressing disruptive social and economic impacts of technologies such as automation, AI, robotics, and broader technological acceleration.
- Inadequate regulation to prevent weaponization of media and technology; AI, social media, espionage, and election manipulation.
- Weak common global social values due to rising uncertainty, insecurity, and inter-cultural tensions driven by globalization.
- Lack of integration of environmental sustainability into economic and political decision-making and rejection of scientific evidence as the basis for science diplomacy and policy-making.
- Failure to maintain global institutions' legitimacy, trust, and authority due to increasing resistance of nation states to modernization and power sharing, and the enforcement of global rule of law, human rights and universal values.

2.5. Symptoms, Outcomes and Consequences

The enabling environment and root causes are responsible for the consequences and outcomes we witness today.

- **International**: Declining authority of global institutions and weakening adherence to jointly made commitments demonstrating incapacity to adhere to commitments, such as the sustainable development commitments in Agenda 2030, Paris Agreements regarding containing global warming, the Geneva Convention on conduct in war, and the Universal Declaration of Human Rights on protecting human rights.
- **Military**: Return of competitive nationalism and the competitive security paradigm of the Cold War period, weakening of post WWII alliances and forging of new ones, revival of the arms race and reassertion of the nuclear threat. The result is the loss of the post-Second World War peace dividend, diversion of capital into rearmament, collapse of détente, and the reemergence of territorial disputes and security threats.
- **Political**: Decline in protection and enforcement of democratic principles and human rights and a shift of democracies toward autocracy, plutocracy and oligarchy. Declining authority of national governments over tax-payers, corporates, MNCs. National sovereignty is increasingly undermined by the rising influence of financial elites, multinational corporations, global capital flows, and tax arbitrage. Weak governance and oversight of monetary and market systems have contributed to widening structural imbalances. Democratic systems are struggling to evolve in response to rapid technological and communication changes. National sovereignty is seen to be

undermined by the rising influence of financial elites, multinational corporations, global capital flows, and tax arbitrage. Weak governance and oversight of money and market systems have contributed to widening structural imbalances.

The magnitude and complexity of the problems confronting us today confirm the need for a radical shift to a new paradigm for global peace and development that transcends the values and theories of imperial power, competitive nationalism, neoliberal economic policies, financialization, plutocracy and autocracy that have dominated international affairs through the 19th and 20th centuries.

- **Economic**: Historically high levels of economic inequality due to neoliberal economic policies favouring the wealthy and high-income earners combined with rising job insecurity due to foreign trade, AI, robotics, immigration and rising unemployment. Global financial markets and digital currencies are increasingly decoupled from regulatory oversight. Socio-economic policies have failed to deliver prosperity and meaningful inclusion to working classes due to neo-liberal policies supporting market fundamentalism, financial deregulation, the financialization of the global economy. The growing power of corporations and accompanying decline of the power of unions has spurred record levels of inequality, hollowing out the middle class and concentrating wealth in the top 10% of the population. This has been aggravated by policy failure to manage displacement and job insecurity tied to globalization and technology. Economic inequality, a key driver of the populism and extreme forms of government, is therefore set to persist until these issues are addressed.
- **Technological**: Technological supremacy has become central to military and economic power. The disruptive societal impacts of automation, AI, robotics, and broader technological acceleration remain inadequately addressed. Inadequate regulation and safeguards have been inadequate to prevent the weaponization of technologies such as AI, social media, espionage, and election interference. Global governance lacks the capacity to ensure equitable distribution of technological advancements.
- **Environmental**: Increased environmental threats to human security, with climate change now recognized as the single greatest threat to global health. Incapacity to mobilize global cooperation, financial investment, and technical expertise on the scale required to address escalating ecological challenges.
- **Migration**: Uncontrolled migration due to war, environmental degradation, cultural conflicts, declining economic opportunity and rising job insecurity. The 21st century

has seen increasing migration driven by a combination of local and regional conflicts, economic opportunities, and environmental changes. The global refugee population increased dramatically, from 14 million in 2000 to 27 million in 2020, straining national capacities and fuelling political and cultural backlash.[17]

Declining trust, influence, effectiveness and power of multilateral institutions and global rule of law, national governments, business, the media and science. Fake news is aggravated by social media and AI-based algorithms.

3. Strategies and Solutions to Address the Turbulence

Humanity has come to the end of an era that cannot be governed according to the ideas and institutions of the previous century. The magnitude and complexity of the problems confronting us today confirm the need for a radical shift to a new paradigm for global peace and development that transcends the values and theories of imperial power, competitive nationalism, neoliberal economic policies, financialization, plutocracy and autocracy that have dominated international affairs through the 19th and 20th centuries.

The range and magnitude of changes required exceed even that of the founding of multilateral institutions at the end of World War II. The solutions must necessarily commensurate with the range and depth of the root causes underpinning the global turbulence and resultant polycrises. Our research and discussions have identified some of the seminal issues that need to be addressed, highlighting the need for a radical shift in approach required to guide a conscious transformation of humanity to usher in a new era of peace and prosperity.

The sections of this article which follow illustrate some of the ideas identified which can inform the future programming of WAAS, working with its partners including, Force for Good, World University Consortium, ASU Global Futures Lab, Nizami Ganjavi International Centre, UNESCO-MOST Bridges Coalition, Club of Rome and others. The list is intended to serve as an invitation to our Fellows and partners to collaborate in formulation of a more comprehensive and cohesive set of solutions.

4. Global Governance and Multilateralism Solutions

RATIONALE: Strategies aimed at revitalizing and reshaping international institutions, finance, and citizen engagement to build a more inclusive and sustainable global order.

4.1. Global Solutions to Raise the World's Platform, The UN SDGs

The world's communities stand at a pivotal moment where systemic turbulence, overlapping global crises, and a fragmenting world order are threatening the very foundation of the Sustainable Development Goals (SDGs). Yet this also marks a turning point, where solutions exist, technology is ready, capital is abundant, and the opportunity to raise all of humanity is within reach. The SDGs, initially designed as a global roadmap for human progress, are not only vital goals but also the clearest path forward to ensure peace, prosperity, and sustainability. Fulfilling the vision of Agenda 2030 stands as one of the most effective

ways to reduce global turbulence and restore forward momentum on peace, human security and sustainable development. Work by Force for Good, a WAAS partner, has examined the nature of the crisis, the stock and flow of capital, sought out solution-sets, especially technological ones, and what it would take to achieve the goals.

Transforming the SDG Crisis into Opportunity: Despite unprecedented commitment from 193 UN Member States, progress on the SDGs is falling short, only 16% of targets are on track, and over 80% are off-course or regressing.[18] The annual funding gap has ballooned to over US$14 trillion.[19] However, unlocking just a fraction of the US$653 trillion in global wealth, and deploying the right solutions, can reverse this trend. The SDGs are not just obligations, they are market-making opportunities capable of unlocking trillions in economic value while addressing society's most urgent needs.

Scaling the Nine Solution Sets: Force for Good's research identifies nine transformative, scalable solutions which, if globally deployed, could progress achievement of nearly 90% of the SDG targets. These include:

- Climate and energy transition frameworks, closing up to 15% of the global SDG gap.
- AI-enhanced universal connectivity, contributing 14% by driving access, education, governance, and economic inclusion.
- Digital financial infrastructure, boosting financial inclusion and enabling e-services.
- Online delivery of essential services such as healthcare, education, and e-commerce.
- Sustainability reporting standards to direct capital flows.
- Scaled solutions for food, water, and human essentials.
- Unlocking human potential through digital education and skills for decent work.
- Climate resilience tools and disaster risk financing.
- Impact finance innovations like green bonds and SDG swaps to close funding gaps.

The research shows that no single entity or group has a monopoly on solutions. The diversity of innovation worldwide means solutions come from almost unlimited sources.

Hierarchies of Solutions: These solution areas broadly follow a hierarchy of human needs. At the foundation are essential life-support systems: clean water, sustainable food production, and access to basic services such as healthcare and education via digital platforms. Building on this, digital financial infrastructure and universal AI-enhanced connectivity unlock economic participation and social inclusion. Further progress can come from solutions to unlock human potential through education and decent work to empower individuals, while climate transition and resilience frameworks protect collective progress. System change initiatives such as pricing natural assets and including them in sustainability reporting can lead to innovative impact financing, improve institutional capacity, and fundamentally change capital allocation. Underpinning all these layers is the essential condition of global peace, without which no sustainable development can be realized.

Digital and Technological Infrastructure as a Foundation: Digital infrastructure is central to achieving all SDGs. India's "India Stack" shows what's possible: digital IDs, mobile banking, and transaction platforms financially included over 500 million people.[20] Scaling such models globally can deliver exponential inclusion and efficiency. Digital public goods, telecom networks, data centres, and financial platforms form the essential bedrock for scalable change. The India digital platform is now being extended to healthcare and education, offering a powerful foundation for inclusive, tech-driven development. Force for Good supported the transfer of these digital assets for transformative impact in the world, particularly across the Global South. While there are many challenges to execution, Africa is illustrative of a continent where such solutions have the potential for dramatic impact.[21] Solutions are required there in the form of telecoms and data centre infrastructure, banking and financial infrastructure, and execution by government to protect privacy.

Commercial Rationale for SDG Investment: Force for Good's research shows that meeting the SDGs creates US$15 trillion in new markets globally, especially across the Global South. Key opportunity areas include food systems (US$3.2 trillion), climate and nature-based solutions (US$2.4 trillion), gender equity (US$2.4 trillion), and inclusive digital economies (US$2.1 trillion). Policy is the critical enabler, by reforming barriers to capital flows, infrastructure deployment, and cross-border digital solutions, countries can transform development needs into investable markets.[22]

Execution Strategy: Transactional, Targeted and Technologically Enabled: Given global fragmentation, multilateral consensus is no longer sufficient. Achieving the SDGs will require a win-win "transactional" approach, country by country, initiative by initiative, backed by global partnerships and policies that facilitate private sector participation in markets that need special support. Key execution principles include prioritizing large developing nations, which can drive 65% of SDG progress, leveraging scalable solutions often found in developed economies, creating the conditions needed for leading private-sector actors to deploy them, securing diverse funding sources such as private investment, blended finance, and where appropriate, philanthropy, and using technology as the primary delivery mechanism to maximize reach, efficiency, and adaptability.

The SDGs are no less than a litmus test of the level of progress of our civilisation… They go to the root of our ability to deliver peace, prosperity, and freedom to all—regardless of our differences… This is a pivotal moment for the world and the stakes are higher than ever. The urgency of scaling proven, existing solutions to close the SDG gap is clear. Just as previous big ideas, as putting a man on the moon galvanised the human spirit, it is time to do that again and on this planet.[23]

Together, these strategies provide a roadmap for converting the current turbulence and SDG crisis into a historic turning point, one that can lift all of humanity, unlock trillions in value, and chart a path to a secure, inclusive, and sustainable future. WAAS and its partners invite collaborators to join in deploying these solutions at scale to make this future a reality.

4.2. Governance While Unlocking Innovation in Banking and International Financial Markets

One approach to finance is to carefully manage its risk. The East Asia Financial Crisis of the late 1990s, the Global Financial Crisis of 2008, rising levels of inflation and public debt today are consequences of the globalization and liberalization of the international banking and financial system in the 1990s and the progressive decline of national control over multinational corporations. If financial markets were to become destabilised by global turbulence, the world would face a far greater challenge. The early signs of that are in the recent trade and tariff wars initiated by the current US administration as it seeks to re-balance its trade deficit and re-shore its offshore corporations' factories. A risk approach would seek to establish effective policies and governance to address the instabilities introduced by financial liberalization, deregulation of banking, cross-border financial flows, corporations and wealthy individuals. An alternative approach would seek to initiate a "big bang"—a mass liberalisation of capital—to take risk and fund new opportunities the world over; seeking to turn the SDGs into opportunities. Force for Good is examining this idea as a potential way to see if systemic change can be brought to the world's capital flows and stock.

4.3. Redesigning Multilateralism

The foundation of the international rules-based order is undergoing a significant transformation driven by ongoing global conflicts—most notably the Russia-Ukraine war, the Israel-Gaza war, and the increasing use of tariffs as tools of foreign policy rather than adherence to World Trade Organization (WTO) rules—shifting the system from one grounded in universal law and cooperation to one shaped by power and strategic coercion. These developments are reshaping the core principles that have traditionally governed international relations, namely, the universal rule of law, multilateralism, and the primacy of human rights, into a more predatory, might-is-right paradigm.[24] The rule of law is increasingly being displaced by the rule of power, as powerful nations openly disregard international legal norms in pursuit of strategic advantage. Multilateralism is giving way to selective multilateralism, with institutions like the United Nations being co-opted by dominant states to serve narrow national interests. Meanwhile, the principle of human rights is being subordinated to geopolitical calculations, with violations often ignored or downplayed when they conflict with strategic alliances or factional priorities.

The retreat to national competition, the dominance of power politics and militarization will only magnify and multiply the problems, enhance the turbulence and lead to increasing levels of social unrest, conflict and war. The problems confronting humanity today can only be effectively and permanently addressed by strengthening and empowering the international institutions of governance based on global rule of law and an inclusive system of cooperative

security for all nations that renounce war as an instrument for national policy. This requires a re-imagining of the world order to handle the extremes that have arisen.

4.4. Global Voices for Citizens' Participation

The SDGs recognised the critical role of the individual as a responsible actor (SDG16.7), calling for inclusive and participatory decision-making for individuals entailing active citizen engagement, especially among youth and marginalized voices.[25] Social media has the potential to provide a platform for that, and it has amplified this potential by enabling billions to participate in public discourse across borders. However, these platforms also intensify polarisation as studies have shown, soliciting anger and moral indignation through their algorithms, reinforcing aggressive rather than responsible behaviour and undermining constructive debate.[26] Universal citizen participation, most especially that of youth and the voice of future generations, is an essential condition for giving expression to the aspirations and concerns of the global populace, encouraging active participation in public debates and political processes. Emergence of collective global social consciousness and identity can be facilitated by launching a transnational, global platform to give voice to the silent billions of people and empower the global public to support fundamental global systems change. This is an initiative that has been specified by Force for Good and WAAS jointly.

5. Security and Peacebuilding Solutions

Rationale: Strategies that promote peace, protect human life and dignity, and foster collaborative international security frameworks.

5.1. Human Security

Human security is the essential foundation for peace and social stability. At a time of unprecedented opportunities for global progress, the collective quest for human security for all is in retreat. Those with the greatest power to lead and support global security are turning inward in a desperate pursuit of self-interest and self-assertion. The rising levels of violence and social instability are the product of a rising sense of uncertainty, insecurity and helplessness, a loss of trust in our national and multilateral institutions, a loss of confidence, commitment and momentum in implementation of Agenda 2030.

The unprecedented threats to peace and human security confronting humanity today point to the inadequacy of the current system of global governance and global rule of law. Radical change in our concept of security is needed to reverse the contagion of insecurity, violence and war spreading around the globe.

A fundamental shift in strategy must place human security at the top of the levels of investment in military preparedness for national security, which increases the temptation and propensity for war. War directly attacks all the dimensions of human security. War is the single greatest source of violence, famine, forced migration, poverty, and threats to human rights. Investment needs to be shifted to address the root causes of human insecurity.

The 17 SDGs goals represent a top-down approach to global transformation backed by in-depth data at the macrolevel. But they have not yet captured the attention and support

of the world populations at large needed to generate the awareness, social aspiration and political will required to compel governments to act with the necessary seriousness. The UN concept of Human Security represents such an approach. It addresses the same issues as the SDGs from the bottom up, from the perspective of the individual and community. It speaks the language of the common citizen on issues that everyone understands—food, health, peace, human rights, jobs, pollution, community and individual safety, etc.

The Human Security for All campaign launched by WAAS in association with the UN Trust Fund for Human Security in 2022 is a pilot project that has confirmed the efficacy of a person-centred effort that resonates with a very broad range of constituencies, including business and technology leaders of leading corporations, members of parliament, educators, scientists, and NGOs. The project is now being tested at the level of school children in Indian schools. A global public relations program based on this approach can build widespread support for reviving momentum for implementation of Agenda 2030.[27]

5.2. Peace Offensive

The concept of the Peace Offensive transcends traditional conflict management and embraces the goal of comprehensive peace. It includes efforts to transform crises into opportunities for enduring peace. The objective of the Peace Offensive is to promote positive momentum on peace and human security by innovative strategic initiatives that present viable pathways for resolving protracted crises at the local, regional and global levels. The strategy focuses on positive reciprocal initiatives for compromise and calls for unilateral, symbolic gestures to encourage reciprocal actions in response. Through citizens' diplomacy and peacebuilding initiatives spearheaded by the academic community across civil society, the Global Peace Offensive intends to support worldwide peace efforts. The Global Peace Offensive is a new initiative launched by WAAS in 2024 in collaboration with the European Academy of Sciences and Arts, Alma Mater Europea University, Club of Rome and the World University Consortium (WUC). Discussions are underway with other organizations to expand the network and commence project work.[28]

> *"The timeliness of the Global Peace Offensive is compelling given the heightened political polarization and violence, the failure of global leadership to address such challenges at a more official level, and the ongoing surge of social movements, groups and individuals, in particular young people, that support peace efforts. It differs from peace-building efforts that are reserved to a select few individuals representing civil society or government representatives behind closed doors."* – *Donato Kiniger-Passigli*

5.3. Common Security

The retreat to Cold War power struggles and nationalistic militarization highlight our failure to evolve from the competitive security system that dominated international relations during the pre-1990 period. The opportunity was missed during the early 1990s to evolve an inclusive cooperative security system supportive and protective of all nations. The Warsaw Pact dissolved but NATO survived and expanded eastward, enhancing the security only of its members. A negotiated ceasefire or peace in Ukraine will be at best temporary unless the deeper institutional foundations are created to ensure peace and security for all the nations of Europe from the Atlantic to the Pacific and beyond.

> *"The present competitive system depends on the ability of each individual nation to defend its own borders and interests against external threats. Such a system necessarily demands massive investments by each country in military capabilities. These investments are inevitably perceived by other nations as real or potential threats to their own security, thus fuelling compensatory escalation of military capabilities by other states. Calls for disarmament alone cannot and will not eliminate the problem. They must be complemented by concrete measures to establish an alternative mechanism to ensure the security of nations. This is one of the major reasons why expectations of a massive peace dividend have not been fulfilled. World military spending has not declined significantly because the competitive security system remains intact."*[29]
>
> – *International Commission on Peace and Food*

6. Economic Justice and Equity Solutions

Rationale: Measures to ensure economic stability, counter rising inequality, and restrain the undue influence of concentrated wealth.

6.1. Job Security

In a world characterised by multi-tier development, some regions are stuck in an agricultural age, others in an industrial age, and others are rapidly advancing to a post-industrial information era. This multi-tier approach creates disparities in all aspects of human development with different countries, and sometimes sub-populations within countries at

different levels in Maslow's Hierarchy of Needs. However, the level and speed of change provide the opportunity and challenge of job growth for all. Over the next decade, this job growth is expected to be driven by intersecting technological, economic, and demographic trends. By 2030, 170 million new roles will emerge across sectors, notably in AI, data analytics, renewable energy, and frontline care, while 92 million existing positions are displaced, resulting in a net gain of 78 million jobs.[30] The fastest growing occupations include AI and machine learning specialists, big data analysts, renewable energy engineers, and nursing professionals, reflecting both rapid technological advancement and ageing populations.[31] However, 39 percent of current skills will become obsolete, and 59 percent of workers will require reskilling or upskilling; of these, 11 percent face redundancy if training is inaccessible.[32]

> *"Employment must be recognized as a fundamental human right, the economic equivalent of the right to vote. As the electoral franchise is the basis for the legitimacy and operation of democracy, access to gainful employment constitutes the economic franchise that lends legitimacy and functionality to a market economy. The right to employment must be constitutionally guaranteed to enable all citizens to exercise their fundamental right to food and health security and a share in national wellbeing."*[33]
>
> *– International Commission on Peace and Food*

However, looking further ahead to 2050, experts warn that, without absent systemic adaptation, continued convergence of AI, robotics, and other emergent technologies may drive global unemployment to nearly a quarter of the world population.[34] They foresee new professions emerging and advocate for lifelong learning, but warn of the potential damage to livelihoods amid automation. Without coordinated, transnational policy responses, encompassing education reform, social safety nets, and skills ecosystems, purely national strategies risk exacerbating inequality and social unrest.

The level of employment in any society is the direct result of a nation's laws, policies and modes of implementing them, not the result of impersonal forces of nature beyond human control. Studies confirm that the cost of unemployment to society arising from unutilized manpower, lost skills, declining mental and physical health, rising crime, law enforcement and imprisonment are considerably greater than the cost of providing public employment for the unemployed. There are effective instruments available to enhance employment and economic security. In India, as an example, programs such as India's National Rural Employment Guarantee Act have ensured job opportunities for tens of millions of low-income workers and raised the minimum wage in a country which does not have an effective national

minimum wage program. Recognizing the right to employment, extended vocational training through career, public job programs, Basic Minimum Wage and related welfare programs for all citizens can be effective long-term strategies to enhance job security.[35]

6.2. Taxing Technology

As the world enters the information era, it is clear that technological innovation is essential for national security, social progress, and value creation. However, it is also clear that the beneficiaries of technology are highly concentrated in richer countries. Indeed, there is a growing disparity between where digital technology value is created and where it is consumed. In 2020, North America accounted for 40% of global information industry value creation, while only 12% of internet users lived there. In contrast, East and Southeast Asia had 41% of global users but only 22% of value creation.[36] This mismatch fuels tensions over taxation. Tech companies often pay lower effective taxes because they are taxed where operations occur, not where users are. As a result, many countries have introduced unilateral digital services taxes (DSTs), which apply to gross revenues, often at 2–5%, disproportionately affecting U.S. firms.[37] Meanwhile, the digital divide persists; only 56% of Indians and 57% of Nigerians are online, with access gaps driven by income, age, and education.[38] Addressing tax and equity issues in the digital economy requires global coordination and policies aligned with consumption and access realities.

Technological innovation is essential for social progress. But current practice distributes almost all the rewards of rising productivity to investors and shareholders, while reducing both the number of jobs and pay scales for human beings. Introduction of national or even international taxation on technological applications in the workplace can provide resources to redistribute a portion of the financial gains to the workforce and working age unemployed.

6.3. Economic Inequality

Despite global GDP per capita increasing by 1.5x in the past 20 years, wealth and income inequality are intensifying.[39] The bottom 50% of the world's population owns just 2% of global wealth and 8.5% of income, while the top 10% controls 76% of wealth and 52% of income.[40] Many countries are caught in a middle-income trap, unable to transition to high-income status. Since the pandemic, staple costs have surged 40-60% in some countries, and inflation reached 8.8% globally.[41] More nations have fallen behind the U.S. in relative income than advanced over the last 60 years. By 2023, 165 million people were pushed into systemic poverty.[42] Even in wealthy countries, poverty and social exclusion affects up to 25% of populations, harming mental health and social cohesion. Frustrated by unresponsive governments, citizens are increasingly turning to radical political alternatives.[43]

Neoliberal economics and financial policies have resulted in raising levels of economic inequality to the highest level in a century. The rise of the power of money and plutocratic forms of government need to be governed to ensure the fruits of value creation flow to the population at large. This requires addressing the economic roots of insecurity, discontent, and social unrest that past theories and policies have led to. Incentives and levers for participation, including investment incentives, equitable taxation of value creation, and addressing differences in tax between countries and how they affect comparative advantage.

Such measures are required to restore a more equitable distribution of value and wealth, while not disincentivising entrepreneurial risk-taking and scaling.

6.4. Money Power and Plutocracy

The American system of enterprise has proven to be the most robust at creating shareholder value, evidenced by the scale of its global market capitalization at US$115 trillion (as of March 2024). Nearly 50% of the top 20 companies in the world by market capitalization are American, with 14 of the top 20 in technology and 11 in financial services, and American companies contribute 72% of GDP across OECD countries.[44] However, the dynamic at the centre of this is one akin to the 'survival of the fittest' and is reinforced by structures that disproportionately reward top earners and wealth holders.[45] This faces America with a dilemma of how to reconcile its economic dominance with the income inequality that generates it, and which in turn fuels more radical politics. One of the remedies to the use of politics to sell people politics that further divides them from prosperity is to prohibit or limit political donations by corporations and ensure full disclosure of the source of donations. However, the problem of how to sustain a scaled economic engine of the nature of a modern America while diminishing economic inequality is a critical issue requiring further investigation.

7. Future Education

Education is the institution devised by countless ages of civilization to pass on to future generations the cumulative knowledge and experiences of learning in a concentrated and abridged form so that today's youth can learn from the errors of our ancestors and move forward to a better future. Education is humanity's instrument for conscious social evolution. However like all human institutions, education is a work in progress and we are still striving to learn how to develop a system of education suited to prepare us to cope with the speed and complexity of change in the 21st century.

> *"The world is undergoing a very fast transition, faster than academia can adapt to it. We are prompted to ask ourselves profound questions… We are not connected to what the world needs. We need to come back to the point where we are an integral part of society, where we are serving society, where we fulfill the mandate that society gives us to be one of the primary knowledge generators for society to move safely into the future."*
>
> *– Peter Schlosser*

At a conference partnered by WAAS and Arizona State University (ASU), the context provided by the university was that the pace of global change today is outstripping academia's ability to keep up, prompting urgent reflection on the role, responsibility, and ethical

obligation of universities. A call was made for higher education institutions to re-examine their purpose and reconnect with society's need. It was asserted that, over time, academia has grown overly abstract and detached, leading to a loss of public trust. Universities need to re-establish themselves as vital contributors to societal progress by generating knowledge that supports a safe and sustainable future. This requires embracing not only disciplinary depth but also holistic, transdisciplinary, impact-driven thinking, along with lifelong and intergenerational learning. To meet these challenges, academic systems must be reformed with the courage to abandon outdated structures and return to the founding ideals of the university as a service to society.[46]

7.1. AI-Powered Global Higher Education Delivery System

Global demand for higher education is soaring—experts project enrolment will double from about 250 million students today to nearly 500 million by 2050. Meeting this need through traditional brick-and-mortar campuses alone is financially and logistically impractical. Building enough universities and classrooms to accommodate this growth would require around $10 trillion in infrastructure investment, an unattainable burden for most nations. Clearly, new approaches are needed to expand access without incurring exorbitant costs.[47]

> *"Technology is moving forward too rapidly. We need to harness artificial intelligence for effective analysis of global problems to fast-track creative solutions for the future."*
> *– Francis O'Donnell*

One promising solution is the adoption of AI-powered hybrid digital (AIHD) systems to deliver higher education at scale. These approaches blend online platforms, artificial intelligence tutors, and existing institutions to teach far more students at a fraction of the usual cost. Early evidence shows that online AI-enhanced programs can educate students at one-third the cost of conventional in-person instruction. Moreover, they are highly scalable. For example, ASU already enrols over 180,000 students (nearly half online), and Stanford professors reach hundreds of thousands of learners worldwide through Coursera. AI tools help maintain rigorous assessment and engagement even in large virtual classes. It is estimated that doubling global capacity by AIHD can be done for less than a third of the cost of expanding the brick-and-mortar system. The two models can also operate in hybrid combination to derive the advantages of both.[48]

Such AI-driven education systems enable personalized, self-paced learning tailored to each student's abilities and schedule. They provide *multilingual, anytime-anywhere access*, lowering language barriers and allowing students in remote areas to learn from top programs. *Real-time assessments and AI tutoring* give instant feedback and support, while *global virtual classrooms* connect peers and professors across continents for collaborative

projects. By harnessing these capabilities, AI-powered delivery can reach underserved populations, adapt to learners' needs, and make quality education more equitable and sustainable globally.

> *"Universities all across the world are under tremendous financial stress, political pressures, harassment and blackmail. This is something really important to take note of because it threatens the independence of teachers and the authenticity of what is taught." – Mila Popovich*

By democratizing opportunity and building human capital at an unprecedented scale, AI-powered education serves not merely as an adaptation to global challenges but as a powerful mechanism for creating more stable societies.[49] WAAS and WUC have already promoted seven international conferences on future education, more than a dozen curriculum development programs, and recent events presented plans for development of global online and hybrid delivery systems that harness the power of generative AI for self-paced, interactive, multilingual education. WAAS has recently projected the need for a massive effort to upgrade global higher education at the UN Summit of the Future, 2025 Consumer Electronics Show, and Alma Mater Europea University. Plans are now underway for an International Future Education Conference in India in late 2025.

7.2. Value-based Education

The founders of WAAS recognized that the age of education founded on the ideal of scientific secular objectivity is not sufficient to guide us. The power humanity possesses today is too great to be employed dispassionately as part of a grand scientific experiment. The stakes for humanity are too great to assume the detached perspective of witnesses to our existence. The knowledge we need must integrate the objective facts and insights of detached scientific observation and experimentation with the subjective values and intuitions of arts. And of the two they placed arts first because universal values are closer to the truth than facts.

> *"We have to move to a model of education where students see something of a purpose that is larger than their own personal. Higher education needs to build, reform and transform curriculum and modes of teaching to engage students in being part of the solution." – Ralph Wolff*

7.3. Transdisciplinary AI-Enabled Education

Addressing today's complex problems requires an educational approach that integrates knowledge from multiple domains, encouraging students to think holistically and collaborate effectively. AI plays a vital role in enabling this transformation. Through AI-powered platforms, educators can design learning experiences that seamlessly combine insights from science, technology, policy, economics, and the social sciences to solve real-world issues. One strong example is Harvard's course *Harnessing Artificial Intelligence for a Sustainable Future*, which helps students apply AI in areas such as energy, agriculture, and transportation. The program is designed to equip learners with the skills to drive sustainability through innovative thinking. Similarly, IBM's *Quantum Learning Accelerator* shows how AI can scale transdisciplinary learning on a global level. In just six months, the initiative successfully trained 25,000 employees in 40 countries in quantum computing, a field that unites physics and computer science, achieving an impressive 92% completion rate. This blend of AI and transdisciplinary education not only fuels innovation but also cultivates a sense of global citizenship. Students develop the ability to navigate cultural and disciplinary boundaries, fostering empathy, resilience, and a shared commitment to building a better future.[50]

> *"ASU is the first university to partner deliberately with open AI through ChatGPT Edu, and it's a very different model. It's not just open source, it's open source with guard rails and with an Ethics Committee. And I think that's one of the key defining questions of our time. With all its power, how do we ensure that AI is used for good?" – Amanda Ellis*

7.4. Lifelong Vocational Learning with AI for a Resilient Workforce

Elevating the quality, accessibility and affordability of education needs to be rapidly increased at all levels in order to better equip and prepare younger generations with the values, knowledge, and skills needed for accomplishment in a rapidly changing world. Education and employment must be synchronized at all stages of the working career in order to continuously enhance the range and quality of knowledge and skills required to keep pace with the speed of technological innovations and deployment.

In today's turbulent world, driven by rapid technological change, economic uncertainty, and industry disruption, workforce adaptability is crucial. As many jobs now require skills that did not exist a decade ago, workers can no longer depend on one-time education. Instead, lifelong learning and continuous upskilling are essential to remain employable. McKinsey has projected that AI will replace 800 million existing jobs. But it is also true that AI can create 800 million new jobs by training existing members of the workforce to acquire new skills tailored to their capability and the needs of the workplace.

AI-powered learning platforms offer a strategic response to meet these challenges. Tools like LinkedIn Learning and IBM SkillsBuild use intelligent algorithms to deliver personalized training aligned with real-time job market needs. Workers can swiftly gain new skills without long career breaks, maintaining economic stability amid change. Laing O'Rourke, a multinational construction firm, leveraged its AI-driven platform to deliver role-based training to reskill over 5,000 staff, for just 10% of its traditional L&D budget.[51]

> *"Globally, we have to bring the decision-makers on board to train people for the changing economy. It is one of the biggest challenges that we have to face." – Denis Naughten*

While digital training alone cannot replace hands-on experience, hybrid models that combine AI guidance with practical learning offer greater resilience. By democratizing access to just-in-time, lifelong vocational education, AI systems serve as economic shock absorbers, empowering workers to navigate uncertainty and thrive in the future of work.

8. Changing the way we think and the theory based on it

The Academy's decade of research on global challenges has confirmed that the turbulent consequences we now face are a direct reflection of fundamental limitations and flaws in the concepts and theories underpinning the management and governance of nation states and global society. A change of thinking is an essential condition. Our recent discussions and analysis highlight a few of the essential changes in thinking needed to address the sources of the social turbulence, reduce its negative consequences and support peaceful, prosperous, sustainable global social development for humanity.

To address today's global turbulence, we must go beyond policy reforms and confront the assumptions at the heart of our systems. The crises we face are symptoms of deeper structural flaws. Ten core concepts underpin the architecture of modern civilization. Each now demands critical rethinking, redesign, and renewal to serve a just, sustainable, and peaceful future. These are matters of concern to the design of a civilisation, demanding philosophical and political consideration. So, in this paper only a high-level overview is provided for each.

8.1. Concept of Security

Security has long been framed in militaristic terms: power projection, deterrence, and threat elimination. This doctrine, inherited from centuries of imperial rivalry, still dominates today's strategic thinking. Yet its outcomes—endless arms races, proxy wars, and global instability—have undermined real security. A shift toward human security for all is not idealism; it is the only pragmatic response in a world where no fortress can contain pandemics, climate, or cyber threats. Multi-dimensional security for others, coupled with securing oneself, may be the realpolitik of a path to lasting peace.

8.2. Concept of Freedom

Freedom has become a contested battlefield between unaccountable individualism and illiberal state control. Both extremes weaponize the language of liberty while undermining democratic cohesion. In a world of surveillance capitalism, algorithmic control, and shrinking civic space, freedom must be reimagined as both personal autonomy and collective empowerment, safe-guarded by institutions capable of resisting both populism and plutocracy. The debate needs to move beyond democracy to what true liberty from barriers—economic, social, political, psychological and self—looks like.

8.3. Concept of Sovereignty

Sovereignty, once a shield against external domination, has become a sword for self-interest. The traditional doctrine of sovereignty, founded to protect empires, now undermines global cooperation. In an interdependent world, narrow definitions of national self-interest destroy shared responsibility and ultimately destroy sovereignty. Today's agreements on trade, finance, security, rights, travel and more require some surrender of sovereignty for mutual benefit, making populist rhetoric mere noise. Even the most powerful nations are vulnerable to forces they cannot control alone—climate disruption, global finance, migration, pandemics. Sovereignty must evolve into cooperative agency: a capacity to act in concert with others to protect not only national interest, but planetary viability.

8.4. Concept of Economics

Economics has become divorced from nature, measuring GDP rises even as forests fall, ecosystems deplete and inequality deepens. Yesterday's world grew on resources and inequality. In today's world, resource extraction fuels conflict; inequality breeds populism and collapse. A system built for exchange and accumulation has to return to its purpose: to sustain life, not simply markets. This requires a holistic economics reflecting human and planetary well-being. Economics must be redefined not as a machine for endless growth, but as a system of provisioning for long-term human welfare and wellbeing and ecological survival and sustainability, grounded in strategic resilience, not quarterly returns.

8.5. Concept of Identity

Identity has become a fault line in domestic and global politics. Identity now fuels exclusion, division, and extremism. Nationalism, sectarianism, and racial grievance are tools of power as much as expressions of belonging. A new understanding would embrace differences, seeking value in them, while fostering unity through values and purpose. A global society requires inclusive narratives that value differences, fostering unity across cultures, transcending borders while preserving dignity and diversity.

8.6. Concept of Justice

Justice is not neutral, it is shaped by the hands that wield it. From global impunity for powerful nations to domestic systems of control, systems of justice often protect power, not people. Restoring trust requires systemic reform: systemic justice that protects the vulnerable, enforces accountability, and fosters reconciliation, moving beyond punishment to restoration,

peace, and social cohesion. Such a shift requires that empathy and equity converge in both principle and practice, making justice a force for healing rather than retribution, punishment or control.

8.7. Concept of Knowledge

In the search for certainty and simple answers, we have lost the empathy and compassion that turn knowledge into wisdom. Knowledge was essential in building our world, yet that world now stands on the brink of a post-truth society. In the age of AI, surveillance, and strategic disinformation, knowledge itself has become a theatre of geopolitical struggle. Who controls data, defines truth, and builds narratives shapes public belief and power. Knowledge must be defended not only by scientists and academics, but by institutions. It must be open, plural, and resilient to manipulation, or it becomes just another weapon. It must be founded on the interrelationships and interdependence of phenomena and reconcile the objective and subjective dimensions of reality affirmed as universal values.

8.8. Concept of Time

Power politics operates on short-term calculations, but the crises we face—climate tipping points, AI risks, demographic shocks—are slow-burning and systemic. Our current time horizons are too narrow to manage existential risk. A realist strategy for survival must face the long-term consequences of its actions. This makes inter-generational thinking an essential ingredient in survival. Society, including work, leisure, education, finance, trade, and politics, runs on a clock that ticks too fast. Yet nature operates on multiple time cycles such as the body clock, lunar phases, seasonal rhythms, planetary movements, and the vast cycles of the universe. We have fallen out of tune with these. Our quest for control has forced everything into a tempo that is too short for success. A realistic strategy for survival must begin with confronting the short and long-term consequences of human action, across generations too.

8.9. Concept of Nature/Human Relationship

Exploitation of nature has been a driver of empire and war, from oil to water to arable land. Today, the ecological crisis is reshaping geopolitics: drought destabilizes regions, climate migrants reshape borders and wars reshape relations. Ecological-human interdependence is no longer a moral argument; it is a strategic imperative. This requires a fundamental realization that humanity is not separate from nature. Redefining humanity's relationship with the Earth is not only essential for survival, it may be an essential route to peace.

8.10. Concept of Power

Power, with its origins in military affairs, has come to be defined by control over others and is measured by its concentration. It is often considered greater when separated from accountability. However, real power is the ability to set others free, not the ability to impose one's will. The dominant view of power fails to recognize that it always carries a cost. Whatever one does to others, in some form, also affects oneself. The psychological and cognitive burden of causing harm, whether at the individual or societal level, weighs as

heavily on the perpetrator as on the target. This ultimately damages the integrity of both. A re-conception of power as a positive and growing force would be based on its use in service of others, to set them free, rather than for control. As such, it would be rooted in the capacity for achieving the highest levels of accomplishment in a manner that affirms the highest recognized universal values.

9. Unanswered Questions

The research and discussions hosted and participated in by WAAS have raised fundamental questions regarding the sources, nature, and potential solutions for today's global turbulence. As the Academy enters a new phase in its intellectual and institutional journey, a deeper exploration of key themes is emerging, ones that will shape the basis for future WAAS events and collaborative research.

One core area of focus is the **nature of global social evolution**. Critical questions include whether evolution has a discernible direction and what forces are driving the transformation of global society. Is this evolution shaped by conscious human agency or subconscious processes, and to what extent can it be deliberately guided? The role of leadership, the influence of aspirations and collective choices, and the potential for a global social movement to catalyse a conscious transition toward a better future are all central concerns. At the same time, we must confront whether global society can adapt quickly enough to respond to the accelerating pace and scale of crises, and what historical patterns warn us about assuming inevitable progress.

Understanding the **nature of the current crisis** is equally essential. Are there reliable early warning signals that we have failed to heed? Is today's turbulence a transitional stage toward greater integration, or the prelude to regression or collapse? Unlike earlier crises—the Age of Imperialism, the World Wars, or the Cold War—today's polycrisis is characterized by interlocking systemic challenges. To what extent is this driven by poor decisions, inertia, or deeper structural flaws? And does it reflect a moral failure that transcends governance alone?

In the domain of **governance and multilateralism**, pressing questions arise about the future of international cooperation. If today's institutions are faltering, what forms of reform or replacement are viable? Can global governance exist without a shared identity or common moral authority? What guiding principles should underpin the redesign of 21st-century institutions? Moreover, can governance become anticipatory, rather than reactive, in managing risks? How do we balance global coordination with the preservation of national autonomy and democratic accountability in an age of rising hard power?

Another critical arena is the relationship between **social evolution and cultural change**. We must examine how to reconcile rising global aspirations with cultural resistance to change, and how to accelerate value evolution without inciting backlash. Cultural narratives, digital platforms, and algorithmic systems now play powerful roles in shaping perceptions, yet they also pose risks of fragmentation and radicalization. How can we counter these dynamics and support the emergence of a more inclusive human identity, beyond narrow affiliations of locality, religion, or nationality?

Technological advances, especially in **AI and emerging technologies**, demand urgent attention. Humanity must confront whether it can govern technologies that may soon surpass human control. What does responsible AI look like in a fractured and unequal world? Can it serve to democratize knowledge and decision-making, or will it exacerbate centralization of power? There are also critical questions about how to safeguard human agency, values, and social trust in an era of automation and surveillance. Global standards may be necessary, but can they be agreed upon without sparking geopolitical conflict?

The intellectual challenge before us is to fully understand the circumstances and factors that have brought us to the present situation, the root causes and deeper processes governing global social evolution, and the opportunities and catalytic strategies for effective action.

At the heart of systemic transformation lies the reform of **knowledge systems and education**. How can we dismantle entrenched silos in academia and policy and reconcile disciplinary specialization with the integrated, holistic approaches of transdisciplinarity? What might such an educational model look like, especially in the Global South? Education must cultivate not only complex systems thinking but also ethical awareness. Furthermore, traditional and indigenous knowledge systems offer important contributions, how can they be integrated into global problem-solving frameworks, and what biases must be overcome to enable true epistemic pluralism?

The evolution of **values, ethics, and identity** is central to navigating this turbulent era. Society's values must evolve from exclusive, sectarian roots toward a more inclusive universality. This raises challenges about reconciling individual rights with collective responsibilities and institutionalizing value-based leadership. We must explore the role of spirituality, philosophy, and the arts in fostering understanding across divides, and whether ethical norms can endure in the face of geopolitical rivalry and market competition. Moreover, how do universal ethical frameworks emerge, and how can we guard against their manipulation?

Questions about **humanity's future** demand perhaps the greatest collective imagination. Is it possible to craft a shared global narrative capable of uniting humanity in a time of fragmentation? Are current authoritarian trends a reversal of democratic gains, or temporary reactions against deeper shifts toward universal rights? How can individuals act meaningfully when faced with planetary-scale problems? Are we nearing an evolutionary bottleneck that demands a civilizational leap, one in which humanity must choose between extinction and transformation? What does it mean for our species to reach maturity as a steward of the planet?

Finally, the **role of WAAS and its partners** must be re-examined in light of these questions. What unique contributions can the Academy and its allied organizations make in

addressing these profound challenges? How can we catalyze collective intelligence across institutions and disciplines to co-create real strategies? How can WAAS influence policy and institutional actors while retaining independence and avoiding co-optation? And what alliances and coalitions are needed to turn vision into real-world impact?

We live in exciting times, fraught with danger, and filled with great opportunities, catalysed both by those of ill will and those of goodwill, many with great power to change the trajectory of humanity. WAAS was founded for such times and it is our time to rise to the responsibility bestowed upon us.

10. Conclusions and Future Work

Addressing the impact of global turbulence and its global consequences cannot be achieved by incremental measures such as those designed simply to address the symptoms of the global turbulence. The programs described above illustrate the type of solutions needed to address the root causes of global turbulence. The magnitude of the challenges confronting humanity today will require addressing issues of this importance on a global scale by nations and institutions around the world. They must be taken as elements of a comprehensive agenda for conscious social transformation of our human community. Efforts of such magnitude are rare. But the unprecedented threats confronting humanity today are of the magnitude that warrant an effort of this nature. Nothing less will suffice.

The World Academy was founded 65 years ago at a time when the remarkable advances in science and technology opened up unprecedented opportunities for our collective progress as well as unprecedented threats to our collective survival. Either by good common sense or miracle, we have managed to survive this long by an aspiration to build a better world combined with an ambivalent, haphazard, sporadic and stumbling exercise of good judgment and self-restraint and their very opposite. Today the scope of the challenges and existential threats we face are far greater in intensity and urgency than ever before. So too are the opportunities, capacities and potential benefits for all humanity, provided we chart the right course and persist in achieving it.

The world today needs leadership in thought that leads to effective action. The intellectual challenge before us is to fully understand the circumstances and factors that have brought us to the present situation, the root causes and deeper processes governing global social evolution, the opportunities and catalytic strategies for effective action. The leadership needed is the willingness and ability to reach out and share a unifying vision and strategy with all those who share like-minded values, understanding and willingness for action to set a common course leading ultimately to peace and human security for all.

To create the next civilization, it is not enough to raise the alarm, nor is it sufficient to propose new policies, initiatives or technologies. We must also question the foundational concepts that underpin the world. Concepts such as security, freedom, sovereignty, and economics are not fixed truths, they are human constructs, historically conditioned and often outdated. Many of today's crises arise from outdated ideas. This paper proposes the need to re-examine the foundations of our world, the very ideas it was built on. This allows us to expose the hidden assumptions that limit our imagination and action, and begin to construct

a more coherent, inclusive, and future-fit civilizational logic, one capable of creating a far fit and superior future.

WAAS and its partners are uniquely positioned to serve as a hub for this convergence of minds, disciplines, strategies, and communities. Our goal is not merely to understand the world, but to help shape it, by catalyzing a conscious evolution toward peace, prosperity, justice, and human security for all.

Acknowledgements

This paper captures key themes and insights from two special events, a one-day conference conducted by WAAS and hosted by ***Nizami Ganjavi International Centre (NGIC)*** in Baku on March 16, 2025 and a web panel discussion hosted by ***ASU Global Futures Lab in collaboration with Force for Good***, ***UNESCO-MOST Bridges Coalition*** and ***World University Consortium (WUC)*** on May 1, 2025.[52] It has also drawn insights from dozens of research papers prepared by WAAS Fellows in the last decade, WAAS conferences and seminars conducted over the past three decades on themes related to the process of social evolution, global challenges and opportunities, and global leadership in the 21st century, and more than two dozen other conferences and workshops on new economic theory, education, leadership, multilateralism, social power, democracy, human security, sustainable development, education. We would also like to especially acknowledge the contributions of the following individuals who actively contributed in the organization and discussions during the two workshops mentioned above. **Rovshan Muradov**, Secretary General of NGIC; **Peter Schlosser**, Vice President & Vice Provost of Julie Ann Wrigley Global Futures Lab, ASU; **Steven Hartman**, Executive Director, UNESCO-MOST Bridges Coalition; **Ralph Wolff**, President of WUC; **Walton Stinson**, WAAS Director Finance; **Janani Ramanathan**, Secretary General, WAAS; **Grant Schreiber**, WAAS General Manager; **Amanda Ellis**, Sr Dir., Julie Ann Wrigley Global Futures Lab, ASU; **Iveta Silova**, Professor and Associate Dean of Global Engagement Julie Ann Wrigley Global Futures Lab, ASU; **Eden Mamut**, Secretary General, Black Sea University Network; **Isabella Bunn**, Professor, Regent's Park College, University of Oxford; **Francis O'Donnell**, Ambassador and UN Resident Coordinator, Ukraine 2004-9; **Lawrence Ford**, Founder and CEO, Conscious Capital Companies; **Mila Popovich**, Director General, Directorate for Interculturalism, Montenegro; **Shaurya Doval**, Founding Director, India Foundation, India; **Jonathan Granoff**, President, Global Security Institute, WAAS Trustee; **Joanna Nurse**, Chair, Existential Threats and Risks to All (EXTRA) Working Group, WAAS and Director General, InterAction Council; **Moneef Zou'bi**, Science Advisor, InterAction Council, Director General, Islamic World Academy of Sciences 1998-2019; **Denis Naughten**, Member of Parliament of Ireland 2020-2024, Minister for Communications, Climate Action and Environment 2016-2018 and Chairperson, Working Group on Science and Technology, Inter-Parliamentary Union.

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Root Causes and Deep Drivers of Global Turbulence*

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Abstract

"Desperate Hope", which predates Trump's return to power, articulates profound concern for the state of global civilisation, emphasizing the fragility of human resilience amidst escalating turbulence. It analyses systemic issues driving global instability and proposes pathways for sustainable progress. Some updated data is included here. The following analysis identifies the root causes and deep drivers of global turbulence as presented in the text, organized into thematic categories, evaluating interconnections. The essay's central thesis is that ***the survival of our first truly planetary civilisation hinges on preserving universal values****—enshrined in documents like the UN Charter, the Universal Declaration of Human Rights, the Millennium Declaration, Agenda 2030 and the Sustainable Development Goals (SDGs), and more recently, the Pact for the Future—****while addressing structural deficiencies in global governance****.*

1. Overview of the Text

"*Desperate Hope*" begins with a stark acknowledgment of global challenges: wars, climate change, pandemics, nuclear risks, market concentration, apex wealth, corruption, AI and governance failures. It is argued that these crises threaten the aspirations of humanity as outlined in foundational international frameworks, and the subsequent exponential growth in international treaties, conventions and global law. It critiques the outdated structures of global institutions, particularly the United Nations, and calls for reforms to address democratic deficits, incorporate new societal actors (e.g., civil society and corporations), and manage emerging domains like AI/QC, robotics, outer space, deep ocean and genetic resources. The essay concludes with a hopeful vision, emphasizing the need for collective action, ethical leadership, and a renewed commitment to universal human values and international obligations, to navigate the "perfect storm" of global turbulence and avert supremacist tyrannies.

2. Introduction

Human civilisation is much older than most people realise. It is not just an invention of ancient Sumerians, Egyptians, Greeks or Romans, let alone the cultures of the Indus, archaic Mesoamerica, or the Yangtze. Even long before *Göbekli Tepe,* humanity was

* This analysis was prepared initially to support the intervention of the writer on 1 May 2025 for his participation in the panel on the subject of the Root Causes and Deep Drivers of Global Turbulence. It endeavours to identify the root causes and deep drivers of global turbulence as presented in the work "Desperate Hope: Reflections on Survival Pathways for Civilisation" (2023), a paper by Francis M. O'Donnell, presented at the 37th Annual Plenary Meeting of the InterAction Council, held from 15 to 17 May 2023, in Valletta, Malta. Global challenges warrant an urgent renewal of universal values and democratic governance.

engaged in sophisticated collaboration, producing the Palaeolithic Acheulian, Mousterian and Aurignacian industries, art and ornament going back hundreds of thousands of years, and evidence of musical instruments, cultures and spirituality, including apparently by our Neanderthal and possibly Denisovan predecessors.

We are more than our nations, more than our myths, and need a globalisation of compassion and conscience, not a debasing instrumentalization of the person.

The point of this recitation of antiquity is to debunk the exceptionalism claimed by some, notably now the 'Third Rome' (Moscow), in its neo-imperialism. There can be no room left today for unique claims to ancient heritage, let alone modern supremacism, whether in the Kremlin, Kyivan Rus, Jerusalem, Cairo, Brussels, Capitol Hill or any Forbidden City. Only lately have we achieved a global civilisation with agreed norms and laws, and with common global institutions, after hundreds of thousands of years of human effort. But our "progress" has led us to mass extinctions, as human domination exhausts our ecosystems and biosphere, and as a few egoistic strongmen dominate humanity itself, increasingly seeking survivalist "rapture" in a growing superstition of "end times".

Yet genetics tells us we ALL descend from ancient civilisations of a thousand years or more ago. Ancient migrations with interweaving generations of DNA and the exponential magnitude of our ancestral genealogy as we multiply two by two by two, *etcetera* lead us to realise that, generally, for any individual alive a thousand years ago on any continent, either no descendants survive today, or almost all of those on that continent are so descended. In varying degrees, Europeans have a mix of Celtic, Roman, Gothic, Slav, and Barbarian ancestry, rooted in Yamnaya (20-50%), Neolithic farmer (20-50%), and hunter-gatherer (5-20%) DNA; and including Arab/Muslim (5-10% in Iberia, Balkans), Jewish (1-5% in central/eastern Europe), African (1-5% in the south), and Asiatic (1-10% in eastern Europe). With the exception of Africa, most of humanity has some Neanderthal/Denisovan DNA. Beyond cherishing our heritage, we must preserve the inherent human dignity of all peoples through the institutionalised solidarity painstakingly developed with decades of hitherto successful multilateralism. We are more than our nations, more than our myths, and need a globalisation of compassion and conscience, not a debasing instrumentalization of the person.

Multilateralism, which underpins the institutional expression of dialogue, negotiation, compromise, and common prioritisation on a global scale, espouses *common values, as universal*, and aspires to *pluralism through diversity*. We may think: much of this is in question today, but it *has always been*. The challenge is to understand the relative strengths, the trends, and the factors that play in *determining interim outcomes, for there is no ultimate result—we are in a world of flux and of continuous evolution* to a point, theoretical if not teleological, let alone theological, a fulfilment we know not, although Pierre Teilhard de Chardin and Vladimir Vernadsky had some thoughts on that in their *Noosphere*. Our time

horizons are also paramount determinants and benchmarks, as we set goals with targets: the Sustainable Development Goals by 2030, de-carbonization by 2050, and so on. Our experience tells us we *can* progress, even if we falter presently.

An era of huge biodiversity loss and mass extinctions is upon us. Oceans and seas are polluted, with growing dead zones. Our atmosphere is increasingly toxic. Our potable water is scarce. Polar ice caps are melting and glaciers are disappearing. In 2020/2021, we lost seven years of human development, falling back to the position in 2016, slowly managing lately to recover somewhat, albeit not beyond the pre-COVID-19 pandemic level. Another deadly pandemic of catastrophic proportions looms, as well as the increasingly pervasive intrusion in all life forms of toxic PFAS "*forever chemicals*".

It is getting worse: the Global Human Development Index (HDI) has not yet recovered beyond the level before the COVID-19 pandemic hit, with persistent inequalities between rich and poor nations, exacerbated by economic concentration and polarization, hindering full recovery—all factors that these latest developments will aggravate further. The latest 2023/2024 Human Development Report indicates *the world is falling short*. It may be more accurate to say it risks *falling apart*.

The UN and other world institutions require radical surgery, greater representativity and democratisation, and dramatically boosted resources to restore global trust, security, and stability. The *'Summit of the Future: Multilateral Solutions for a Better Tomorrow'* attempted to advance Agenda 2030 and the Sustainable Development Goals, building on the SDG summit in 2023. What resulted is the Pact for the Future, adopted by world leaders, with its annexes: the *Global Digital Compact* and *Declaration on Future Generations.*[*] It focuses on a broad range of issues, including peace and security, sustainable development, climate change, digital cooperation, human rights, gender, youth and future generations, and the transformation of global governance.

Since the Pact was adopted on 22 September 2024, progress includes the UN General Assembly's commitment to three 2025 dialogues, starting 28 March, to advance its 56 actions, and US$1.05 billion pledged for digital inclusion. However, US aid cutbacks, including a 90-day freeze and 83% USAID program cancellations, threaten implementation, risking millions of lives dependent on health and food aid. Tariff wars raise borrowing costs and disrupt trade, disproportionately impacting vulnerable nations like Burundi and Lesotho, exacerbating poverty and debt distress. Official Development Assistance (ODA) reductions by the US and some in Europe further strain financing for sustainable development, with global economic growth projected to slow to 2.8% in 2025. The Pact's non-binding nature and geopolitical mistrust, evident in Russia's amendment attempt, hinder enforcement, reflecting scepticism about multilateralism's effectiveness. Civil society also faces challenges in leveraging UN reform for stronger multi-stakeholder engagement. Shrinking civic space, with only 2% of people in open civic environments, limits CSO advocacy. US aid cuts, tariff wars, and ODA reductions strain resources, hindering implementation. Currently, the estimated funding gap for the Pact and the SDGs is in the order of US$4 trillion annually, over half of which is investment required for the energy transition.

* United Nations General Assembly, "The Pact for the Future," A/RES/79/1, September 22, 2024, https://www.un.org/en/summit-of-the-future/pact-for-the-future

And it is from Africa that most growth will come in the future, its share of the world's population is expected to increase from 10% to 28%, meaning over 1 in 4 people will be African, and mostly young. Whilst most ODA has focussed with great success on Africa in the early decades following de-colonisation (building health, education, institutions and investment), today corruption, including grand corruption of its leaders, has become a systemic plague, but also beyond Africa, including in America and Russia. But apart from the nefarious capital flight of corrupt leaders banking abroad, most developing countries in Africa and beyond benefit from the internal mobilisation of resources more than ODA, and the bulk of resources for post-conflict recovery are domestically generated. Many prefer fair trade to more aid. There appears no or little correlation between large ODA infusions and economic performance in countries with weak institutions, therefore, the role of ODA, whether catalytic, thematic, or as fiscal support must be challenged, and attuned to the declining resource base now emerging from altered US policies and the European push to defence and security.* Where the institutions of national governance are weak, corruption thrives; where they are very strong, less so. Declining ODA should therefore be primarily used to strengthen governance.

It is also time for the citizens of all nations to denounce the delinquency of the major superpowers, particularly, the Permanent Five (P5) members of the UN Security Council, in undermining multilateralism, and betraying in various ways and times, the hopes and aspirations of all humanity. At the foundation of the United Nations, a special custodial responsibility was granted to the top five powers, namely the "Veto" in the UN Security Council, in order to guarantee international peace and security and *"save succeeding generations from the scourge of war*". Almost immediately, the Cold War began, with proxy conflicts hampering the progress of many newly independent states emerging from colonialism. Some former colonies broke up: Cyprus, Palestine, India-Pakistan and later offshoot Bangladesh. Yet many former imperial powers, especially P5 members Great Britain and France persisted with overseas territories, and the Treaty of Rome was partly shaped by discriminatory colonial policies (involving also former colonial powers Belgium, Germany, Italy, Netherlands, Portugal, Spain). Hence, the EU still bears some marks of colonialism in the treatment of various overseas territories of its members, going back to the Treaty of Rome.† Vestigial colonial concepts haunt its trade policies with inequitable relations that perpetuated unequal exchange with former colonies. Replacement frameworks such as EPAs, may still prioritise benefits with Eurocentric narratives and policies. Nonetheless, the EU commitment to multilateralism, and the UDHR (along with its own Copenhagen Criteria/values, *mutatis mutandis*) distance it from its major members' imperial past, but require better partnerships grounded in equality. At the same time, within the advanced industrialised world, it has been argued that it is, so far, the most successful voluntary constellation of states.‡

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* It should be noted that some EU countries, while fully supporting new defence and security priorities, and substantially increasing national expenditure on the same, still maintain their ODA targets.

In 2024, these members met or exceeded the 0.7% ODA/GNI target: Luxembourg (1.05%), Norway (1.02%), Sweden (0.99%), and Denmark (0.71%). Germany also achieved 0.8% in 2022. These countries have consistently prioritized aid, driven by strong multilateral policies and public support for solidarity. Ireland remains committed to the target by 2030, increasing ODA in absolute terms, but GNI growth increases the challenge (0.55% in 2023).

† Hanna Eklund, "People, Inhabitants and Workers: Colonialism in the Treaty of Rome," *The European Journal of International Law* 34, no. 4 (2023).

‡Timothy Snyder, "A Speech to Europe 2019," *YouTube*, May 9, 2019, https://www.youtube.com/watch?v=7zs41CkIjRw

The USSR persisted until the end of the Cold War, with its fragmentation fostering ethnic conflicts elsewhere, and the often violent break-up or collapse of several states (Afghanistan, Czechoslovakia, Ethiopia/Eritrea, Iraq, Somalia, Sudan, Syria, Yemen, Yugoslavia, etc). It did not take long for Russia, under Putin, to embark on destabilising its neighbours, such as Georgia, Moldova and Ukraine, now directly invaded. China has also robustly asserted its claims in the Himalayas, the South China Sea, and over Taiwan. And India and Pakistan remain at regular loggerheads over Kashmir. Venezuela versus Guyana, and Guatemala versus Belize, have at least referred their border disputes to the ICJ, pending. Other disputes persist, e.g. Argentina-Falklands/UK, Chile-Bolivia, Colombia-Nicaragua, Brazil-Uruguay, etc., without warfare. And yet over 40 armed conflicts rage in various places of the world, in most continents. So much for the UN Charter—but perhaps the absence of major armed conflict in Latin America in a measure of the maturity of their post-colonial relations, and a respect for the rule of law, through recourse to the ICJ, which should be seen as a credit to the UN system and multilateralism. But new threats are also made today by the USA to Greenland and Panama, following its kinetic interventions with its allies in Afghanistan, Iraq, Somalia and elsewhere, such as Central America, Korea and Vietnam in bygone decades.

Every time in the past 25 years that the world has come together with a blueprint for the future of humanity, it is shortly scuppered or sabotaged by a direct superpower assault. America's globalisation of its so-called "war against terror" in 2001, after the 9/11 attacks, immediately diverted resources from implementation of the *Millennium Declaration* and the *Millennium Development Goals*. It took fifteen more years after 2000 for the world to come together again in 2015 with of Agenda 2030 and the *Sustainable Development Goals*. Only late last year, a new *Pact for the Future* was adopted. Now, the shocking and explicit denunciation of Agenda 2030 and the Sustainable Development Goals by the US delegate to the UN General Assembly on 4 March 2025, itself deserves the strongest repudiation, as a crude attempt to sabotage the global consensus that tried back in 2015 to rebuild that pillar of multilateralism that was previously sundered by the American response to 9/11 terrorist attacks,*

Equally abrupt, arbitrary and harmful is the abandonment of the DAC/OECD target of 0.7% of members' GNI by several donor countries, mostly European, and which must be resoundingly denounced as it jeopardises the relative achievements to date, and endangers the health and well-being of hundreds of millions of vulnerable people across the developing countries, especially in Africa,† There are strong arguments therefore that ODA targets must be maintained, both to honour COP-29 obligations, but also to restore the path to SDG achievement and effectively implement the globally-agreed Pact for the Future. With political will, and international solidarity, this can be done while nonetheless reforming its delivery, and re-focussing it on the separation of powers, the rule of law, judicial and media independence, and civil society and women's empowerment, all the while pursuing

* US delegate, Edward Heartney, Counselor for Economic and Social Affairs (ECOSOC) at the U.S. Mission to the UN, stated "The United States rejects and denounces the 2030 Agenda for Sustainable Development and the Sustainable Development Goals, and it will no longer reaffirm them as a matter of course," and further that the agenda advances "a program of soft global governance that is inconsistent with U.S. sovereignty and adverse to the rights and interests of Americans." https://usun.usmission.gov/remarks-at-the-un-meeting-entitled-58th-plenary-meeting-of-the-general-assembly/

† The EU itself is curtailing its External Action Service, trimming away development emphasis in favour of "strategic interests" and security, but the scope of this shift may become clearer in the budget negotiations around its next Multiannual Financial Framework, Nicholas Vinocur, "Europe's diplomatic arm to slash foreign offices," *Politico.eu,* May 20, 2025, https://www.politico.eu/article/eu-diplomacy-downsize-staff-budgets-kaja-kallas/.

the fight against grand and petty corruption, and accelerating national implementation of the UN Convention Against Corruption. If these measures are pursued, with or without ODA support, the countries concerned will most likely prosper. They are *sine qua non* conditions for sustainable human development, which depends heavily on good governance.

Clearly then, we urgently need a new global human security architecture that guarantees resilience in the face of mounting existential threats, posed equally by mass extinctions and biodiversity loss, climate change, pandemic disorder, migration upheavals, and growing geostrategic instability due to erosion of the rule of international law, and failures of global governance.

That ODA and its intermediate agencies, including bilateral USAID-funded NGOs, and UN agencies, had become so dependent on US funds, often way beyond America's share of assessed core UN budget percentage, has surprised many, and its cutbacks now shocked by their abruptness. Yet as much as it has been portrayed as a grievance for US taxpayers, it is also an awakening for more equitable burden-sharing, and indeed a need to re-focus and reform its delivery.

Against this background, the UN80 drive to trim bureaucracy by 20% or more and rationalise institutions and mandates must be correlated with the Pact for the Future, and the globally-agreed Agenda 2030 and the Sustainable Development Goals. Other member states must be encouraged to step forward and increase their level of commitments to peace and security, and also to the achievement of the SDGs, which lag too far behind already. In this regard, more attention also needs to be paid to mediation for conflict prevention/resolution, and to the role the UN system can play in catalysing development where ODA and local resources are insufficient or absent.

The cutbacks and scarcity of resources as well as the general over-militarisation of "traditional peacekeeping" which was not part of the UN's original design, also warrant a shift to greater reliance on civilian peace work, including unarmed civilian protection (UCP), a concept and methodology pioneered by Nonviolent Peaceforce, which has come to the fore in Mindanao/Philippines, Sri Lanka, the OPT, and Sudan, and been recognised in the UNSC and UNGA,* Equally, UNV's role could be expanded, along the lines exemplified in the book

* UNSC res. 2327 (2016) and res. 2514 (2020) supported UCP for enhancing civilian safety in South Sudan, emphasizing its deterrence capabilities and acknowledging UCP's role in complementing protective environments, particularly in deterring sexual and gender-based violence in South Sudan. The UN General Assembly Resolution 69/139 (2015) notes UCP's contribution to a culture of peace, highlighting civil society initiatives with NP's involvement. The 2015 High-Level Independent Panel on Peace Operations (HIPPO) report asserts unarmed strategies, including NP's work, should lead UN civilian protection efforts. In Sudan, Resolution 2524 (2020) establishing UNITAMS includes UCP for peacebuilding and civilian protection. NP's advocacy is reflected in Resolution 2594 (2021), emphasizing UCP in peacekeeping transitions. These resolutions and reports underscore NP's impact in conflict zones like South Sudan, Sudan, and beyond, validating UCP's effectiveness in fostering dialogue and protecting civilians nonviolently, as recognized by UN bodies.

"Volunteers against Conflict."* The impact of militarisation on the SDGs also bears study.† UN advocacy can make more use of its peacekeeping successes, e.g. UNTAC (Cambodia), UNTAET (Timor Leste), UNMIK (Kosovo). This is also the 25th anniversary of the landmark UN Security Council resolution 1325, on *Women Peace and Security*, but progress has been slow, undermined by patriarchal norms, and resources are now in doubt following the US assault on DEI programmes.‡

We are at an 'existential' moment where not only is multilateralism being challenged, as it has been acutely in recent years, but the entire post-1945 architecture, i.e. the UN system, that underpins it is being assaulted and degraded.

In all of this, we are challenged to advance *welfare not warfare*, yet global arms expenditures now total US$2.7 trillion, with 2024 recorded by SIPRI showing the steepest year-on-year rise since at least 1988 and marking the 10th consecutive year of increases, dominated by the China, Russia, and the USA—three of the P5 UN veto-wielding powers in whom our global security is paradoxically entrusted in the UN Security Council—joined by Germany and India to account for 60%.

There is grave urgency therefore, the risk rendered more acute by Russia's abandonment of the New Strategic Arms Reduction Treaty (2010), on top of its launching the biggest war since World War Two, at the very heart of Europe, for over eleven years against Ukraine. The continued defiance of the UN Security Council and the International Court of Justice by Hamas and Israel in the ongoing devastation of Gaza further erodes the global rule of law. America's effective abandonment of foreign aid, the Paris Agreement on climate change, tariff wars and denunciation of Agenda 2030 and the Sustainable Development Accords, combined with some European reductions in ODA to favour re-armament and defence, place hundreds of millions at risk of starvation, death and the upheaval and collapse of many of the Least-Developed Countries, leading to a surge of failed states, regional wars, mass displacement and migration—*the scale of which we have never seen before*. Yet, at this precise moment of global jeopardy, the very institutions that the world has nurtured for the last 80 years (UN system), if not more (ICRC, founded in 1863), that can prevent or mitigate catastrophe, are being gutted with the most savage cuts ever, led by a hostile United States administration, followed by increasingly chauvinist régimes.

Clearly then, we urgently need a new global human security architecture that guarantees resilience in the face of mounting existential threats, posed equally by mass extinctions and biodiversity loss, climate change, pandemic disorder, migration upheavals, and growing

* A copy of this book was shared with the late UN SG Boutros Boutros-Ghali during his visit to Turkey in May 1996, and he remarked that UNV is "the best kept secret in the UN" and should be widely better known. https://archive.unu.edu/unupress/backlist/ab-volunteers.html

† UNODA call for papers, January 2025: "Call for Papers: The Impact of the Global Increase in Military Expenditure on the Achievement of the Sustainable Development Goals," accessed May 27, 2025, https://disarmament.unoda.org/fr/update/call-for-papers-the-impact-of-the-global-increase-in-military-expenditure-on-the-achievement-of-the-sustainable-development-goals/

‡ "Women, Peace and Security," UN Women, accessed May 27, 2025, https://www.un.org/womenwatch/osagi/wps/

geostrategic instability due to erosion of the rule of international law, and failures of global governance. We also need to ensure the permanent service and subordination of artificial intelligence to human control and our responsible authority.

We are at an "existential" moment where not only is multilateralism being challenged, as it has been acutely in recent years, but the entire post-1945 architecture, i.e. the UN system, that underpins it is being assaulted and degraded. This is not "reform", but demolition and destruction. But the transition to "a new era", multi-polar or whatever it can be called, does not warrant such deliberate systemic dilapidation—for which no coherent plan (other than Agenda 2030 & SDGs) has been discussed let alone negotiated by member states, or the wider cohort of what might be called "*stakeholder multilateralism*" as distinct from state-holder multilateralism. In the past few decades of accelerated change, technology, and mass social media, we have lived through the birth of the *first truly global civilisation*—now, to preserve it from fragmentation and destruction by predatory greed and narrow narcissistic chauvinism, we must mature it into *a truly global conscience*—diverse, egalitarian, and inclusive, and resoundingly reject the denunciation of those concepts.

In this regard, we need to *explore the dynamic* between populism, liberalism and multilateralism; but also the core values of the UN system; the evolving role of the inter-governmental processes, and the complementarity with civil society and other vectors of influence, including corporate, as these affect the global commons on land, sea, and in air and outer space. These factors together will determine our priority challenges, and the consequent imperatives for structural and constituency reforms and resources of the UN, and indeed the Bretton Woods institutions, and other global instruments, at global and subsidiary levels. We need shared ethics for common laws.

Following on various appeals to the UN Secretary-General since April 2022, a group of former UN officials joined forces in a *Peacemaking Reflection Group* to actively advocate UN System reform and address imperatives for peace and justice, and other existential challenges.* This work has been facilitated by the Foundation for Global Governance and Sustainability. Benefitting from a decade of such interactions including in the Global Baku Forum, the author presented an early version of his essay "Desperate Hope" at the 37th Annual Plenary Meeting of the InterAction Council, an independent international organisation of former heads of state and government, held in May 2023 in Valletta, Malta.

3. Root Causes and Drivers: A Thematic Overview

The analysis below now organizes the root causes and drivers into four thematic categories: (i) *Geopolitical and Security Failures*, (ii) *Environmental and Resource Crises*, (iii) *Governance and Institutional Deficiencies*, and (iv) *Socioeconomic and Ethical Disparities*. Each category is explored with reference to the argued narratives, updated to May 2025 where possible, and supported by direct references to the text.

* Following his prompting of the PRG's first retreat in France in early May this year, it rebranded as the Peace Reflection Group, and later launched the call to conscience to reclaim the UN Charter's values, principles and purposes at its 80th anniversary. It was signed by former UN Secretary-General Ban KiMoon and over 320 former senior UN officials, as well as 16 former Presidents and 20 former Prime Ministers, being members variously of the InterAction Council, the Club de Madrid and The Elders, and including some members of the Council of Women World Leaders. The appeal is now broadened until 24 October, here: https://www.foggs.org/prg/call-un-charter-at-80/

3.1. Geopolitical and Security Failures

The essay identifies geopolitical tensions and security failures as primary drivers of global turbulence, rooted in the persistence of conflict, nuclear proliferation, the assault on multilateralism, the erosion of human security, and the debasing of human dignity.

Root Causes

- **Ongoing Wars and Conflicts**: Over the past decade, the number of armed conflicts worldwide has risen, reaching 59 state-based conflicts in 2023, the highest since 1946. Conflict-related deaths surged, with 170,700 fatalities in 2023, driven by major wars in Ukraine, Gaza, Myanmar, and Sudan, where genocide is being normalised. These conflicts reflect a failure to uphold the UN Charter's principles of peace and security, exacerbating human suffering and destabilizing regions. Artificial intelligence (AI) in military applications, including drone warfare, increases risks of escalation, e.g., Israeli AI/Lavender failures in Gaza.
- **Breakdown of Multilateralism:** The essay points to a "failure to deliver on nuclear non-proliferation" and the undermining of arms control agreements, such as the Anti-Ballistic Missile Treaty and the Intermediate-Range Nuclear Forces Treaty. This erosion of multilateral frameworks weakens the global security architecture.
- **Nuclear Proliferation Risks**: The essay highlights the "risk of nuclear catastrophe" as a critical threat, noting that the Doomsday Clock was set at 89 seconds to midnight in January 2025, closer than ever. This underscores the failure of non-proliferation regimes and escalation of tensions among nuclear powers, lately between India and Pakistan. Ongoing concerns include Russia's suspension of the New START treaty, North Korea's expansion of its nuclear arsenal, and America's costly nuclear modernization program.

Deep Drivers

- **Erosion of Trust in International Norms**: It is argued that the "profound democratic deficit" in institutions like the UN Security Council and the IFIs reflects a broader erosion of trust in international norms. Veto powers held by UNSC permanent members stifle collective action, perpetuating impunity and conflict.
- **Power Rivalries and Hegemonic Ambitions**: The essay implicitly critiques the competitive dynamics among major powers (e.g., the U.S., Russia, China), which fuel arms races and proxy conflicts. The text laments that these rivalries prioritize narrow national interests over collective security, undermining global stability.
- **Militarization of Emerging Domains**: The essay notes the proliferation of satellites by state and corporate actors (e.g., Amazon, OneWeb, Boeing) and the ambitions of U.S. Space Command, Russia, and China in outer space. This militarization of new frontiers risks extending terrestrial conflicts into space, amplifying global insecurity.

Analysis

Geopolitical and security failures are deeply interconnected with other drivers of turbulence. For example, conflicts exacerbate environmental degradation (e.g., destruction in war zones) and strain governance systems, while nuclear risks amplify the stakes of diplomatic failures. The essay lays emphasis on the UN Charter as the guiding framework for reinvigorating multilateralism, and as essential to mitigating these drivers.

3.2. Environmental and Resource Crises

Environmental degradation and resource mismanagement are *accelerating existential threats*, driven by climate change, biodiversity loss, and exploitation of the global commons. Greenhouse gas emissions must decline by 43% by 2030 to limit warming to 1.5°C. US policy shifts pose drastic obstacles. The scale of extinctions is most alarming.

Root Causes

- **Climate Change and Extreme Weather**: These are immediate challenges, cited in the 2023 IPCC report's warnings of worsening impacts over the next 30 years. These phenomena disrupt ecosystems, economies, and human livelihoods. Record-breaking global temperatures in 2023–2024, with a 66% probability of exceeding 1.5°C above pre-industrial levels by 2027, exacerbate the crisis.
- **Biodiversity Loss and Pollution**: The author references "ecological overshoot" and pollution as contributors to environmental collapse, which threaten food security and public health. The rate of extinction is alarmingly high, with species loss occurring at 1,000 to 10,000 times the natural background rate. Scientists estimate 10,000 to 100,000 species vanish annually, driven by human activities like habitat destruction, climate change, pollution, and overexploitation.
- **Exploitation of Global Commons**: Unregulated appropriation of genetic material and the proliferation of satellites in outer space are examples of mismanaged global commons. These activities risk long-term harm to shared resources.

Deep Drivers

- **Unsustainable Economic Models**: The prioritization of short-term economic gains over sustainability drives deforestation, overfishing, and fossil fuel dependency. Alternative investments and partnerships are needed to achieve the SDGs, as current economic systems are misaligned with planetary boundaries and financial flows for mitigation are 3-6 times below needed levels. Market concentration warrants regulation of global conglomerates, as well as of the obscene concentration of wealth in the hands of the 1%.
- **Technological Overreach:** Concern about genetically-modified organisms and satellite proliferation reveals unchecked technological advancement without ethical oversight. This overreach amplifies environmental and biosecurity risks.
- **Lack of Global Cooperation:** The absence of an Outer Space equivalent to the International Seabed Authority, reflects a failure to establish cooperative frameworks

for managing shared resources. This gap enables a race to exploit space, and equally, genetic resources, exacerbating environmental risks.

Analysis

Environmental crises are a cross-cutting driver of turbulence, amplifying geopolitical tensions (e.g., resource conflicts) and socioeconomic disparities (e.g., climate-induced migration). A focus on the global commons aligns with emerging scholarship on planetary boundaries, and also addresses specific actors (e.g., fossil fuel industries) or structural incentives (e.g., capitalism's growth imperative). The call for bio-ethical standards and governance reforms suggests a pathway to address these drivers, in tandem with tripartite collaboration, e.g., between governments, civil society, and the private sector, as in the *Extractive Industries Transparency Initiative*.

3.3. Governance and Institutional Deficiencies

The accelerating rate of change exceeds the adaptive capacity of existing global governance; hence, outdated and unrepresentative global governance structures are a root cause of turbulence, failing to address modern challenges or include new societal actors. This translates into SDG failures: The 2025 UN *World Economic Situation and Prospects* report notes only 17% of SDG targets are on track, 33% stalled, and 50% weak or reversed. Geopolitical tensions, climate and debt crises, especially in LDCs, are key barriers.

Root Causes

- **Democratic Deficit in Global Institutions:** The essay critiques the UN Security Council's "fossilized" composition, particularly the veto power of its five permanent members, which still paralyzes decision-making and perpetuates impunity, despite the recent Liechtenstein veto initiative of the UNGA in 2022.
- **Exclusion of Non-State Actors**: Civil society organizations, corporate giants, and digital media are "new forces" still excluded from global governance. This exclusion limits the legitimacy and effectiveness of institutions like the UN.
- **Failure to Adapt to New Domains**: The text highlights the absence of adequate governance frameworks for outer space and genetic resources, allowing unchecked exploitation by states and corporations.

Deep Drivers

- **Resistance to Structural Reform**: Entrenched interests—particularly those of powerful states—resist reforms that would democratize global governance. This resistance preserves an anachronistic system unfit for 21st-century challenges.
- **Fragmentation of Global Leadership**: There is a lack of cohesive leadership, with very low integrity standards for many national leaders, and most national leaders prioritizing domestic agendas over global cooperation. This fragmentation undermines collective responses to crises like pandemics or climate change, and has been decried by The Elders and others.

- **Erosion of Universal Values**: The "progress of our planetary civilization" depends on universal values (e.g., human rights, rule of law), but these are undermined by governance failures and the rise of authoritarianism. This erosion weakens the moral foundation of global cooperation. Systemic and leadership corruption aggravates this. The erosion is mirrored in the erosion of trust in democracy, government, science and religion and the emergence of corrupt populist leaders spreading fear, doubt, and falsehood in their treacherous march to autocracy.

Analysis

Governance deficiencies are a linchpin of global turbulence, as they impede coordinated responses to other crises. Proposals for new UN chambers (e.g., for civil society and corporations) and a parliamentary network are innovative but face practical hurdles, such as securing consensus among member states. Governments' focus on the UN reflects an institutionalist perspective, but overlooks the role of regional organizations or grassroots movements in addressing governance gaps. The call for "radical" reform of the UN Security Council is compelling and many proposals advanced include those through the *Peacemaking Reflection Group*, to overcome the veto-wielding states' opposition. We need *stake-holder governance*, not partial *state-holder dominance*.

3.4. Socioeconomic and Ethical Disparities

Socioeconomic inequalities and ethical failures act as deep drivers of turbulence, manifesting in poverty, exclusion, and the erosion of human dignity. The focus on the SDGs as a framework for addressing poverty and sustainability is validated by 2025 data showing persistent gaps, particularly in LMICs. Calling for partnerships aligns with the UN emphasis on global cooperation, but slow progress underscores concerns about governance failures and ethical disparities as drivers of turbulence.

Root Causes

- **Persistent Poverty and Inequality**: In 2024, 8.8% of the global population (700 million people) lived below the $2.15/day poverty line, with progress stalled by conflicts, climate impacts, and economic slowdowns. The SDGs' goal is to eradicate poverty of billions who still live in low- and middle-income countries (LMICs) without access to climate-smart development, which perpetuates cycles of deprivation and instability.
- **Social Exclusion and Marginalization**: As America actively now undermines DEI (diversity, equality and inclusion) globally, increasing exclusion based on race, gender, or socioeconomic status fuels social unrest, undermines cohesion and warrants urgent renewed emphasis on universal human rights. The Trump attack on DEI undermines the very ethos on which human development is predicated.
- **Ethical Lapses in Technology and Business**: Proprietary appropriation of genetic material and unchecked corporate orbital satellites reflect a broad failure to prioritize ethical considerations in technological and economic pursuits.

Deep Drivers

- **Capitalism's Inequitable Outcomes**: The author critiques global capitalism's role in concentrating wealth and power, as seen in the call for partnerships to support LMICs' renewable energy transitions. This suggests that market-driven systems exacerbate disparities. A shift from *shareholder to* CSR-based *stakeholder* capitalism and a return to socially based regulation would help.
- **Moral Disengagement**: The essay's focus on universal values points to a deeper driver: the disengagement of individuals, corporations, and governments from ethical responsibilities. This is evident in the exploitation of genetic resources and the prioritization of profit over sustainability.
- **Cultural and Ideological Polarization**: A renewed drive for a global civilization based on human rights would counter the cultural and ideological divides that fuel turbulence. Divergence risks are borne out in the *World Values Survey,* which highlights ongoing cultural shifts, with unequal socioeconomic development driving transitions toward emancipative self-expression versus conservatism.

Analysis

Socioeconomic and ethical disparities are both cause and consequence of global turbulence, interacting with geopolitical, environmental, and governance drivers. For example, poverty exacerbates climate vulnerability, while ethical lapses in technology amplify biosecurity risks. The emphasis on universal values as a unifying force is aspirational but may underestimate the challenge of reconciling diverse cultural and ideological perspectives. Stakeholder partnerships offer progress, but need scaling up.

4. Interconnections and the Systemic Nature of Turbulence

Such analysis reveals that the root causes and drivers of global turbulence are deeply interconnected, forming a "perfect storm" of crises. For instance:

- **Geopolitical Conflicts** (e.g., Ukraine) exacerbate environmental degradation through resource destruction and divert resources from climate action.
- **Environmental Crises**, such as climate-induced migration, fuel socioeconomic disparities and strain governance systems, leading to social unrest.
- **Governance Deficiencies**, e.g., the UN's & IFI's democratic deficits impede coordinated responses to security, environmental & socioeconomic challenges.
- **Ethical Lapses** in technology and business amplify risks across all domains, from biosecurity to outer space militarization.

This systemic interplay underscores the argument that addressing turbulence requires *holistic reforms that integrate security, sustainability, governance, and ethics*. The vision of "*one civilization*" based on universal values serves as a normative framework to unify these efforts, but the complexity of achieving consensus in an increasingly fragmented world

demands a global *prise de conscience*. To idle and await a catastrophic "Eureka!" may already be terminal, too late, and render the path to human extinction irreversible.

The current shift of many prominent OECD members away from ODA towards dramatically increasing investments in security and defence, i.e. in arms and warfare capability, reflects a gross failure of global political leadership and diplomacy to obviate risk and renew trust, but most of all, compromises the global goals of development, ecological sustainability, and human fulfilment, i.e. *it is a direct assault on human security and our existential survival not only as a global civilisation, but as a species*.

5. Implication

The author's "*Desperate Hope*" analysis identifies the root causes and deep drivers of global turbulence as a complex interplay of geopolitical and security failures, environmental and resource crises, governance and institutional deficiencies, and socioeconomic and ethical disparities. These drivers are rooted in systemic issues—*power rivalries, unsustainable economic models, resistance to reform, and moral disengagement*—that perpetuate a cycle of instability. A vision for addressing these challenges centres on revitalizing global governance, prioritizing universal values, and fostering inclusive partnerships. While ambitious, the essay's proposals face significant practical and political hurdles, necessitating further exploration of implementation strategies and grassroots engagement. Ultimately, this analysis endeavours to promote a compelling framework for understanding global turbulence and a hopeful, albeit challenging, pathway toward a sustainable future.

6. Meeting the Challenge

Hence, to address current global turbulence, a comprehensive strategy is needed, rooted in universal values, systemic reforms and international cooperation. Below is a structured breakdown of recommendations, incorporating UN reforms, tackling corruption and market concentration, and aligning with principles of the UN Charter, the Universal Declaration of Human Rights, and the Sustainable Development Goals (SDGs).

6.1. Uphold Universal Values and International Frameworks

Preserving foundational principles is essential for global stability.

- Reinforce Commitment to UN Frameworks: Fully implement the UN Charter, Universal Declaration of Human Rights, the Pact for the Future, and SDGs through actionable policies and sustained investments.
- Strengthen Partnerships: Foster collaboration among governments, international organizations, and civil society to ensure inclusive progress toward these goals, bolstering the role of women in particular.
- UN Reform: Expand representation—reform the UN General Assembly to better represent the global south, including enhanced voice for civil society (not just as ECOSOC-accredited NGOs), ensuring equitable decision-making and addressing disparities in the global commons. *Ditto* for the BWI/IFIs and other such bodies.

6.2. Strengthen Global Governance and the Rule of Law

Robust international law enforcement is critical to mitigate instability.

- UN Reform: Revitalize the Security Council—restructure it by limiting veto power and adding permanent seats for underrepresented regions, such as Africa and Latin America, to improve its effectiveness in addressing global conflicts.
- Law Reform: e.g., empower the International Criminal Court (ICC) and enhance the effectiveness of the International Court of Justice (ICJ): increase the ICC's jurisdiction and funding to hold rogue actors accountable, ensuring justice for violations that destabilize global peace; add penalties for non-compliance by any states with ICJ rulings on states' responsibilities.
- Enhance Legal Compliance: Advance the national constitutional and legislative reforms required to implement the UN Pact for the Future (and other treaty obligations), and monitor/support compliance by governments and their societies. Promote national reforms to align with international law, addressing violations through stronger enforcement mechanisms.

6.3. Tackle Corruption to Restore Trust and Equity

Corruption undermines stability and must be addressed systematically.

- Global Cooperation Against Corruption: Fully implement the United Nations Convention Against Corruption (UNCAC), with countries sharing resources to dismantle cross-border corrupt networks; strengthen the enforcement of criminal laws in order to punish and deter leaders who are corrupt and regularly violate human rights, and to create opportunities for the democratic process to replace them with leaders dedicated to serving their citizens.
- Create an International Anti-Corruption Court: As called for by the European Parliament, and led by Integrity Initiatives International (III), create an Anti-Corruption Taskforce—establish a dedicated UN body to monitor and combat global grand corruption in cooperation with Transparency International, providing technical assistance to nations and fostering accountability.
- Empower Civil Society: Establish independent oversight bodies, and support independent investigative media and grassroots movements to expose corruption and organised crime, fostering a culture of integrity and transparency.

6.4. Address Market Concentration to Promote Economic Fairness

Economic inequality, fuelled by monopolies, exacerbates global unrest.

- Strengthen Anti-trust Regulations: Enforce laws to prevent anti-competitive practices like price-fixing or predatory mergers, ensuring fair markets.
- Regulate Multinational Corporations: Develop a global treaty on global corporations; coordinate to close regulatory gaps exploited by global firms, enforce CSR, ensuring MNCs contribute to more equitable economic systems.

- Support Small Businesses: Promote social enterprise, and SMEs through tax incentives, access to credit, and market access programs to foster competition, innovation, green technology and resilience.
- UN Reform – Establish Economic Equity Mechanisms: Create a UN-led initiative to monitor market concentration in collaboration with Bretton Woods Institutions (WB, IMF, IFC) and advocate for policies that reduce wealth disparities, ensuring fair economic opportunities globally.

6.5. Foster Human Dignity Through Multilateralism and Solidarity

Collective action is key to overcoming global challenges.

- Restore Human Development: Growing disparities, exacerbated by automation and pandemics, demand social protection, empowerment, and debt relief. Consider catalytic boosters to increase national, regional and global HDI rates.
- Promote Multilateral Efforts: Support joint initiatives on climate, health, and inequality, such as the Paris Agreement and global vaccine distribution programs.
- Include Non-State Actors: Engage NGOs and grassroots movements in decision-making to ensure diverse perspectives in global governance.
- UN Reform – Enhance Multilateral Platforms: Strengthen UN bodies like the Economic and Social Council (ECOSOC) to better coordinate global responses to shared challenges, ensuring solidarity in action. Reform the Trusteeship Council.

6.6. Balance Rights with Responsibilities in a Globalized World

A balanced approach ensures rights are exercised responsibly.

- Codify Responsibilities: Establish clear responsibilities through law that duty-bearers fulfil obligations at international, institutional or personal level, ensuring rights' enjoyment does not enable harm, violence or spread disinformation.
- Promote Accountability: Use national laws and global agreements to hold countries, governments, corporations and individuals accountable for actions that undermine societal stability.
- UN Reform – Develop A Global Responsibilities Charter: Lead the creation of a UN-backed charter outlining responsibilities alongside rights, fostering a more harmonious global order, and based on the InterAction Council's "*Universal Declaration of Human Responsibilities.*"*

6.7. Transform Civic Education for a Global Civil Society

Education is vital for building a values-driven global community.

- Prioritize Global Citizenship: Integrate critical thinking, empathy, and cross-cultural understanding into curricula to foster a sense of shared humanity.

* "Universal Declaration of Human Responsibilities," InterAction Council, September 1, 1997 https://www.interactioncouncil.org/index.php/publications/universal-declaration-human-responsibilities

- Leverage Technology: Use social media and online platforms to facilitate global dialogue and raise awareness of universal values.
- UN Reform – Launch A Global Civic Empowerment Initiative: Establish a central monitoring system that integrates civic empowerment into strategic foresight, exploring systems and best practices to promote global conscience & solidarity.
- Empower UNESCO: To support countries by establishing better standards of civic education, enabling audits of curricula and a Global Culture for Peace.

7. Conclusion

In summary, to preserve planetary civilisation, global governance must uphold the UN Charter, Universal Declaration of Human Rights, and SDGs. This requires advancing international law, reforming institutions, and enforcing accountability to prevent violations of treaty obligations, global conventions, and fundamental freedoms. Economic growth must respect finite resources, addressing waste and pollution, to sustain ecosystems. The OECD-G20 Inclusive Framework's 15% minimum tax rate for multinationals should bolster public finances, fostering inclusion and human security.

Human dignity demands inclusive, transparent governance models that embrace diversity and foster ethical dialogue, prioritizing environmental stewardship, biodiversity, and climate action through partnerships across governments, civil society, and corporations. Civil society needs space to flourish, supported by transformed civic education and anti-corruption measures under the UN Convention Against Corruption. Transparent consultations, funding, and women's leadership can empower citizen engagement, amplified by social media, to drive political reform and accountability.

A global resilience network, under UN leadership, could convert military assets for disaster relief and civilian protection, managing displacement and humanitarian crises. Regulating global corporations through a legal convention would ensure competition, limit capital concentration, and curb speculative practices, enabling fair entrepreneurship. Digital governance must align with universal values, using Big Data to advance human rights and reduce digital divides, and enable strategic foresight along with early warning and crisis prevention, while regulating AI and social media to protect privacy and inclusion. Conflict resolution requires strengthened mediation and Track II diplomacy, led primarily by compassionate women leaders and civil society.

Ending impunity for crimes against humanity necessitates universal adoption of the ICC/Rome Statute and compliance with the International Court of Justice. UN reforms must accelerate, creating multi-stakeholder chambers for civil society and corporations, reforming the Security Council's veto and membership, and establishing authorities for global commons like outer space. These steps, building beyond the 1995 Commission on Global Governance, are critical for a meta-national UN to secure peace, disarmament, and sustainability this decade and beyond.

Apart from the beleaguered primacy of the United Nations, and the incremental participation of current national leaders-in-office in the *World Economic Forum* since 1974,

there are now several networks of former heads of state/government and other world leaders active in advocacy for global cooperation to deal with humanity's various challenges. Most notably, and in order of their creation, these include the *InterAction Council* (1983), the *Council of Women World Leaders* (1996), the *Club de Madrid* (2001), the *Global Leadership Foundation* (2004), the *Elders* (2007), and the *Nizami Ganjavi International Center* (2012).

With overlapping members and sometimes shared agendas, these represent a considerable vector of strategic influence for change, the more so when they combine with broad-based civil society movements, especially those representing the younger generations, and engage with the current powers-that-be. Working together, they could focus on advancing the following:

Low-hanging Fruits:

1. Empower civil society's ability to engage in global policy decisions.
2. Advance the role of women in all areas of human endeavour.
3. Implement and enforce the UN Convention against Corruption.
4. Ratify the Rome Statute of the *International Criminal Court*.
5. Build capacities for mediation, negotiation and conflict resolution.
6. Revive disarmament and conversion of military assets for peaceful use.
7. Shift stakeholder capitalism towards accelerated decarbonisation.
8. Through a global treaty, enforce standards on global corporations.
9. Adhere to the *Extractive Industries Transparency Initiative*.
10. Enforce treaties on the *Law of the Sea* and *Outer Space*.

UN Reforms:

1. Convene a General Conference to revise the UN Charter (Art. 109)
2. Move "We the Peoples" from state-holder to stake-holder governance
3. UNGA to adopt the *Universal Declaration on Human Responsibilities.*
4. Establish UN civil society and parliamentary chambers.
5. Reform the UN Security Council, the Trusteeship Council, etc.
6. Establish a Global Resilience or Human Security Council and network.
7. Increase UN funding and support to civil society.
8. Support the UN Futures Lab with a global collective intelligence system.

Overcoming global turbulence requires a holistic approach: upholding international frameworks, strengthening global governance, tackling corruption and market concentration, promoting solidarity, balancing rights with responsibilities, and transforming civic education, and advancing women's equal leadership against the revisionist cultivation of toxic patriarchy. UN reforms—such as expanding representation, empowering the ICC, restructuring the Security Council, and creating new initiatives for anti-corruption and economic and social

equity—are integral to this strategy. By implementing these recommendations, humanity can address the root causes of instability and build a more equitable, stable, and sustainable world order.

To these ends, world leaders should also be enjoined to *extoll the vision of a world based on human dignity and universal values, and upholding the highest standards of leadership, integrity and competence.* In this regard, mandates and action to promote women's equal participation *in all levels of leadership* will be most important, worldwide.

Whether seeking refuge or prosperity, by flight or adventure, for hundreds of thousands of years humans have left their past behind, and moved, sought new lives, and made new beginnings. Such migrations have incubated new peoples, forged new nations, and generated new cultures. Succeeding generations have passed on memory, myth or mystery, in heritage or hermeneutics, to guide their next travellers in their journeys through life. Today, the enjoyment of thought, expression, dialogue, community, with literature, art and music, through film, broadcast and social media have become new tools to escape confined personal realities, imagine better prospects, and broaden experience with wider frames of reference to interpret both past and present and enable more holistic aspirations in new pathways of human fulfilment. Our new travel, telecommunications and global networking have brought about a planetary civilization. Now, having filled our world and agreed on our universal values, it is more important than ever to find better ways of living together, with new openness, new learning, new engagement, new trust, new synergies, and new or reformed institutions.

Part of this must be to rein in the currently unbridled power of mega-corporations and the über-rich, reducing rising disparities in wealth and power, and enabling civil society, and government, judiciary, and legislature to withstand and curtail the influence of capital and its tendency to drive for state and regulatory capture. Civil society has led the way in the past to successfully take on the tobacco industry, big pharma, oil and extractive corporations, and food and agriculture. There is no reason why it should not now take on media concentration, the digital giants, and the arms and weapons industries.

In the tale of a healed broken femur 15,000 years ago, Margaret Mead is said to have mused that it was a sign of civilisation: *Helping someone else through difficulty is where civilisation starts*:

> *Never doubt that a small group of thoughtful, committed citizens can change the world; for, indeed, that's all who ever have.*

It is time for us to realise that our conquest of this planet has placed all life in the greatest peril of mass extinction, as we also face the destruction of human civilisation. But it is also the dawn of our first truly global civilisation, a time of our greatest capability and promise, and an enormous moral obligation to guarantee inter-generational equity.

For some, it is half-full, for others, half-empty. Unless we mend its cracks, we will never fulfil it, but hold a broken chalice in our hands, beyond redemption.

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CADMUS, Volume 5, No.4, July 2025, 52-61

The Peace Offensive:
A New Strategic Framework for Conflict Resolution

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Abstract

"The Peace Offensive: A New Strategic Framework for Conflict Resolution" presents a transformative approach to conflict resolution that emphasizes the vital role of social dynamics alongside governmental negotiations. This article expands on the author's earlier work published in Cadmus with the intent to promote further contributions on this theme.[*] The Peace Offensive is based on proactive measures to de-escalate global conflicts, prioritize trust-building initiatives, and support innovative educational programs leveraging artificial intelligence and social networks to enhance peacebuilding efforts. This article reconsiders traditional peace-making approaches while advocating for a holistic understanding of cultural contexts and the subjective realities shaping conflicts. By promoting collaboration among diverse actors and emphasizing local ownership, the Peace Offensive aims to redefine perceptions and decision-making processes, ultimately converting intractable crises into pathways for sustainable peace. The initiative seeks to empower communities, fostering conditions where peace can organically thrive. The present objective is the definition of a shared approach and of a comprehensive strategy for future Peace Offensive endeavours.

1. Human-Centric Peacebuilding

"There are certain things that only governments can do: negotiating binding agreements; but there are other things only citizens can do: change human relations." This observation by Harold Saunders, a master of shuttle diplomacy instrumental in the Camp David Accords, underscores the pivotal role of social dynamics in achieving non-violent conflict resolution and fostering positive peace.

The inherent connection between human security, in all its multifaceted dimensions, and core societal values is undeniable.[†] The root causes of open conflict frequently originate in inequalities, grievances, unresolved inter-group tensions, ethnic disparities, conflicting aspirations and perceptions, and the pervasive challenges of poverty and underdevelopment. These causes are further compounded by a number of intersecting dimensions that contribute to social exclusion such as youth, gender identity, disability, and different forms of marginalization.

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* Donato Kiniger-Passigli, "Time for a Peace Offensive," *Cadmus Journal* 5, no. 3 (2024) https://www.cadmusjournal.org/article/volume-5-issue-3-p2/time-peace-offensive

† "Peace & Human Security", World Academy of Art and Science, March 7, 2025 https://worldacademy.org/human-security/;

HS4A https://humansecurity.world/ WAAS devised the Human Security for All (HS4A) campaign in partnership with the United Nations Trust Fund for Human Security (UNTFHS). Human Security encompasses 7+ dimensions: Economic, Food, Health, Environmental, Personal, Community, Political, and Technological..

Consequently, establishing open dialogue among involved parties and representatives of civil society is paramount, whether the objective is conflict prevention or de-escalation of existing violence. Based on this standpoint, the World Academy of Art and Science (WAAS) and the European Academy of Sciences and Arts (EASA) jointly unveiled a vision statement for the "Global Peace Offensive" in Maribor on October 21, 2024.* This initiative articulates a comprehensive three-pronged strategy encompassing different sets of activities, with variable intensity, according to context-specific needs and available resources.

The Peace Offensive fundamentally seeks to redefine our approach to conflict, transforming seemingly intractable crises into opportunities for building durable peace.

- Strategic openings and proactive measures to de-escalate conflicts globally through a phased approach. Initial confidence-building measures include pre-negotiation pioneering, symbolic gestures and gradual tension-reduction measures to initiate dialogue and build trust. This involves localized initiatives leveraging cultural, scientific, economic, educational, and environmental diplomacy, in concert with robust engagement within political, economic, and media systems. The focus is on incremental progress and sustainable solutions.
- Trust-building initiatives that assess the needs and claims of all conflict parties. These initiatives prioritize giving voice to all stakeholders and promoting international cultural exchange and collaborative partnerships to build a foundation for lasting peace. The overarching objective is to enhance cooperation for human security, including increased adherence to the Sustainable Development Goals. Collaborative responses to interconnected challenges through people-to-people initiatives, based on identified needs and opportunities, are essential.
- Lasting peace through cultural, scientific, and educational diplomacy, supported by traditional diplomatic channels, parliamentary diplomacy, and peace education. Through this track of activities, innovative educational programs that harness the potential of artificial intelligence (AI) and the reach of social networks will impact political decisions and the trajectory of global peace. This involves fostering a digitally literate population equipped to engage effectively with peacebuilding initiatives.

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* "Vision Statement for a Global Peace Offensive", WAAS https://worldacademy.org/wp-content/uploads/2024/10/WAAS_peace_offensive_vision_oct212024.pdf;

The Global Peace Offensive initiative was officially launched in July at 16th edition of the Conference of Rectors from Black Sea Region in Istanbul, 11-12 July 2024. It was reinstated at a meeting of WAAS and EASA in Maribor, 21 October 2024. Follow-up discussions in the context of the Peace Offensive between WAAS and AMEU – EASA took place January 6-7, 2025, in Florence, Italy. Ongoing discussions between the Club of Rome and WAAS aim at refining the approach further for subsequent implementation. For more information, see:

- Global Peace Offensive https://worldacademy.org/global-peace-offensive/
- BSUN Congress 2024 https://worldacademy.org/conference-page/bsun-congress-2024/
- WAAS and EASA Meeting, Maribor 2024 https://en.almamater.si/historic-meeting-of-the-two-largest-academies-of-arts-and-sciences-n1484
- WAAS and EASA Meeting, Florence 2025 https://worldacademy.org/world-academy-of-art-and-science-and-european-academy-of-sciences-and-arts-launch-global-peace-offensive/

The Global Peace Offensive strategic approach is designed to facilitate open dialogue and constructive interaction between parties embroiled in conflict. The goal is to build bridges among different stakeholders, promoting understanding and fostering an environment conducive to reconciliation and sustainable peace.

Because peace is a phenomenon that must be cultivated organically from within, rather than imposed externally, particular attention to the societal context is vital when addressing crises or potential conflicts.

The overarching objective is to refine decision-making processes, enhance analytical capabilities, and reshape narratives by deploying groundbreaking conflict resolution strategies.

The Peace Offensive fundamentally seeks to redefine our approach to conflict, transforming seemingly intractable crises into opportunities for building durable peace. This transformative process prioritizes conflict prevention and ensures that peace-making initiatives are firmly grounded in the specific needs and perspectives of local communities. It demands a direct and uncompromising confrontation with the underlying root causes of conflict, whether they stem from resource scarcity, deep-seated ethnic tensions, religious divisions, and social exclusion.

2. The Limits of Conventional Peace-making

The persistent elusiveness of peace worldwide should not serve as a justification for inaction, a retreat from the political sphere, or a neglect of pressing human security challenges. The current eruption of multifaceted crises, born from tensions simmering for over two decades, starkly reveals the inadequacy of traditional political approaches to sustaining peace. This inadequacy is further amplified by the resurgence of political and ideological polarization, a phenomenon vividly described by Peter Mair in "Ruling the Void" as stemming from the withdrawal and estrangement of citizens and elite from Western European politics.*

Traditional political systems, often rooted in a simplistic Manichean view of society, are increasingly giving way to a broader spectrum of actors—strategists, academics, think tank members, frontline activists, scientists, and others—who are actively engaged in promoting the common good and preserving peace. These individuals, representing diverse expressions of civil society, often demonstrate superior judgment and a capacity for fostering mutual understanding, provided they remain free from partisan bias and dogmatic adherence to rigid ideologies. Their efficacy, however, depends critically on their receptive attitudes and open-mindedness towards broader population concerns.

* "Review of Peter Mair's Ruling the Void," *Stir to Action*, accessed March 7, 2025, https://www.stirtoaction.com/articles/review-of-peter-mairs-ruling-the-void

Sustainable, long-term peacebuilding, a distinctly societal endeavour, can only be accomplished through the collective efforts of the people themselves. The illusion that external peace brokers or hastily deployed interventions can magically pacify entire regions has repeatedly proven unattainable. Because peace is a phenomenon that must be cultivated organically from within, rather than imposed externally, particular attention to the societal context is vital when addressing crises or potential conflicts. This helps prevent the damaging disconnect between subjective perceptions and objective reality. Countless examples highlight the grave consequences of this dissonance. Similarly, serious errors can arise from misunderstandings of the thoughts, reactions, and judgments of nations and peoples, particularly among adversaries whose cultural values and traditions differ significantly.

Significant distortions and misrepresentations can easily occur in any assessment of actions, reactions, and underlying motivations in any human interaction, particularly when the relationships that form the social fabric of a society are damaged by the rise of conflict. A structured methodology, such as the Peace Offensive provides a framework for addressing these multifaceted problems, regardless of their specific temporal or geographical contexts.

3. The Perils of Misperception in Peacebuilding

With the emergence of hybrid forms of peace-making and the expanding role of non-traditional peacebuilders, the academic and research communities must proactively engage with practitioners and counterparts—political, economic, local, national, and international actors—to gain a more nuanced understanding of the opposing forces at play.* This includes a thorough examination of their motives, on-the-ground realities, strengths, strategies, and potential points for breakthrough across the entire spectrum of stakeholders in the pursuit of sustainable peace. Achieving this requires developing an integrated, field-relevant approach for conducting comprehensive conflict analysis within all conflict theatres. The Peace Offensive represents a fundamentally proactive strategic analytical framework designed to actively promote peace.

In any mediation or negotiation setting, be it diplomatic or corporate, the concepts of "strategy" and "strategic thinking" are of paramount importance. Strategy, the outcome of deliberate, voluntary, and inherently challenging human actions, can be approached as both a science (emphasizing knowledge and methodology) and an art (emphasizing experience and creativity). Its essential function is to induce decisions, or a series of decisions, with conscious and calculated intent. Importantly, strategies can also serve as frameworks for aligning diverse actors towards shared long-term aspirations or ambitions, functioning like a roadmap. In this context, it is essential to recognize that multiple policies may coexist, and that goals should be regularly tested and questioned to ensure they remain relevant and effective.

A critical deficiency in most contexts and conflict theatres lies in the inadequate study and understanding of both the enablers and inhibitors of peace. These frequently relate to differing perceptions of reality; however, the current focus of international politics often

* Oliver P. Richmond, "Hybrid Forms of Peace, Peace Formation, and Counter-Peace," in *Peace: A Very Short Introduction* (Oxford: Oxford University Press, 2023)

prioritizes superficial appearances over genuine engagement with real-world dynamics. Rhetoric, loudspeaker pronouncements, threats, and coercive tactics are rarely conducive to progress in the pursuit of peace.

Security policy is intrinsically linked to assessments of the attitudes of adversaries or opposing forces, including potential enemies—where threat perception is crucial—and allies—where mutual understanding and a convergence of thought and action are equally vital. These observations apply to the realms of politics, diplomacy, and strategy, as well as to the actions of those designated as "peacebuilders". While often well-intentioned, these individuals or organizations may sometimes misinterpret their roles or the dynamics on the ground, leading to misguided interventions.

In interstate, inter-communal, and intercultural relations, we primarily navigate a landscape of reciprocal perceptions of reality. The reality itself, the arena of our thoughts and actions, remains only partially and imperfectly understood, often becoming clearer only with the benefit of hindsight—and even then, so-called "historical truths" are frequently open to debate. Beyond metaphysical arguments, what truly matters at the time of action is the crystallized perception of reality, as it forms the basis for decisions and subsequent actions. These perceptions go beyond mere facts and observations; they include the meanings that individuals or groups assign to specific situations, which shape what is seen as "real." To prevent conflicts from escalating, we must recognize and accept that these meanings can differ among stakeholders and can change over time.

Barbara Tuchman's "The Guns of August" vividly illustrates how Europe stumbled into World War I due to a cascade of mistaken perceptions. In the weeks leading up to the war, both the Allies and Central Powers found themselves entangled in a fateful sequence of events, inexorably leading to a devastating conflict fuelled by faulty assumptions and misconceptions surrounding the assassination of Archduke Ferdinand in Sarajevo—one misperception compounding another until, within six weeks, the world was plunged into global war.

The most tragic consequences of World War II were preceded by another ill-fated move, the "appeasement" policy that Chamberlain championed in an attempt to turn a blind eye to Hitler's revindications at the 1938 Munich Conference.

On a different scale, we could also recall Khrushchev's initial assessment of President Kennedy at their 1961 Vienna meeting, when he perceived Kennedy as a young, easily intimidated leader, a misjudgement that contributed to the heightened tensions of the Cuban Missile Crisis. Consider also the experiences of the United States, France, and Western Europe surrounding the Iranian Revolution of 1979. How did they perceive that revolution? What accounted for the significant dissonance between their subjective understanding and the objective reality on the ground? The lack of information was not the problem; it was the flawed interpretation of available facts that resulted in profound errors in judgment.

The 2003 US invasion of Iraq, predicated on an inaccurate assessment of Saddam Hussein's weapons of mass destruction capabilities, stands as a stark reminder of the

catastrophic consequences of misapprehension. Whether intentional or not, the conflict continues to reverberate through global affairs to this day.

The tragic failures of the UN in the former Yugoslavia, which ultimately paved the way for NATO's bombing and peace enforcement under its flag, further exemplify the perils of misconceptions and dubious mandates. Many more instances of catastrophic misjudgements could be cited. Historians would do well to explore how these distortions of reality can lead to a multiplication of errors and propel nations and people into otherwise avoidable tragedies.

Each nation, community, or region occupies its own unique cultural and historical context. It possesses a unique cultural heritage, a distinct social environment, and a specific set of values—the product of its profound historical experience and development, its folklore, artistic expressions, language, symbolic systems, patterns of thought, outlook on life, hopes, fears, anxieties, geographical coordinates, socio-economic structures, and the overall framework of values that govern its actions. On the other hand, globalization, while fostering coexistence, often creates pockets of exclusion and resentment.

This intricate network of cultural influences is further complicated by stereotypical views, conditioned reflexes, uncertainties, and misgivings about the intentions, objectives, and policies of neighbours or adversaries.

In our pursuit of peace, we must approach reality with an open mind, as honest mediators carrying our own value systems with us, much as one might view the external aspects of a building, mosque, or cathedral, assessing it based on subjective standards. However, this value system, essential for our own decision-making, can become a hindrance, leading to skewed perceptions. Viewing reality solely from an external perspective makes us vulnerable to misinterpretations, especially when we remain bound by our own value systems.

We need to allow the phenomenon under study to speak to us directly and transparently, free from the distortions imposed by our biases. This does not imply endorsement but rather a suspension of judgment, allowing impressions to reach us in a manner similar to how they would reach the inhabitants of that cathedral, mosque, or building—those who live, breathe, and experience that context as their own.

Their reality, often distinct from our own, is an independent entity. Physical reality itself can be perceived differently through the eyes of diverse cultures. These are not merely different interpretations but fundamentally distinct realities.

4. A Matter of Perspective: Understanding Cultural Differences

Even the perception of physical reality is heavily influenced by the cultural context in which it is observed. Every culture possesses a unique disposition that shapes its way of seeing things.

The groundbreaking introduction of perspective in Renaissance painting, attributed to Filippo Brunelleschi, represents a pivotal shift in Western perception. Prior to the 12th or 13th centuries, Western painting largely lacked any sense of spatial depth. Then, suddenly, perspective dramatically changed the way Western art depicted the world.

A profound sense of depth and spatial awareness emerged, coinciding with Western Europe's emergence from the Dark Ages and a growing fascination with space. This is evident in Renaissance art's pursuit of spatial depth, but it is also mirrored in the development of the orchestra (sound-filling space) and later in skyscrapers and humanity's ventures into space exploration.

This outward expansion of the Western consciousness, this heightened awareness of spatial dimensions, is apparent in nearly every facet of human activity. In contrast, Eastern painting, even into the 19th century, often lacked perspective. Did this signify a difference in their perception of spatial relationships among objects? What kind of reality is reflected in their artistic representations?

When using perspective in painting or drawing, the observer implicitly claims a privileged position—a manifestation of Western self-consciousness, separating the artist from the subject rather than integrating with it. The artist is no longer simply stating, "This is how I see reality from this particular viewpoint," but rather asserts, "This is reality."

Other cultures—look at Chinese or Japanese paintings or Moghul miniatures from the Asian subcontinent—lack this privileged observer position; the observer does not claim any special status, nor does the artist separate themselves from the scene being depicted.

It is imperative that, when studying any self-contained cultural system, we approach it with a phenomenological mindset—seeking to understand, not judge.* The first act is perception; only then comes conceptualization. We could label this approach as "conflict sensitivity," including at community and grassroots levels, but a label would risk oversimplification and reduction to technical jargon.

When supporting local and community dialogue, it is crucial to revisit what we have learned through the lens of our own value systems, using those values as benchmarks for action, but with a deeper, more informed understanding. We return to these values to guide action based on less distorted perceptions.

5. Scales of Value and the Perils of Dissonance

Descartes' writings laid the groundwork for modern science and technology. His method of inquiry involved a distinct separation of subject from object (Cartesian dualism), thereby paving the way for modern science's emphasis on experimental investigation of the external world. In separating subject and object, Descartes found the certainty he sought—self-awareness.

This very act of separation—the assertion of humanity's dominance over nature—marks the birth of the modern scientific method and the entire system of thought that underpins science and technology. The key takeaway is that judging other cultural contexts from the framework of our own values exacerbates perceptual distortions. This is particularly prevalent

* For further insight into the phenomenological approach, see Edmund Husserl, *Ideas: General Introduction to Pure Phenomenology* (London: George Allen & Unwin, 1931)

in Western thought, given its intellectual tradition, which assumes a formal division between external reality and the self that seeks to interpret it.

This separation has influenced international relations and diplomatic interactions. It is vital to recognize and counteract these tendencies in today's increasingly multipolar world.

Another critical observation is that the preceding two centuries provide misleading guidance for contemporary affairs. The period from 1850 to 1914 witnessed the Pax Britannica, a unipolar system. Subsequently, from 1945 to 1970, the Pax Americana saw the United States thrust into a leadership role it did not necessarily desire. During this period, the dominance of the United States tended to suppress the multipolar realities that have historically been the norm. This aberration eventually yielded to a transition from bipolarity to a multipolar order.

The post-Cold War era ushered in a clear shift toward multipolarity. The dissolution of the Soviet Union resulted in the development of new diplomatic strategies and the emergence of diverse actors, such as the European Union and various regional organizations. This era also highlighted the increasing complexity of managing ethnic conflicts, erupting in regions such as the Balkans, where the international community's response involved a mixture of diplomatic pressure, economic sanctions, and peacekeeping (UN) or peace enforcement (NATO) operations, often with questionable mandates and limited success.

This era also marked the beginning of a new approach to conflict analysis, focusing on addressing root causes rather than merely symptoms. In the 21st century, the global conflict landscape continues to evolve, significantly shaped by the rise of various non-state actors, including non-governmental organizations (NGOs) that provide humanitarian assistance and advocacy; multinational corporations that influence economic and political dynamics; and terrorist organizations that exploit societal grievances. The interplay between these actors complicates the conflict landscape, highlighting the need for comprehensive analysis and tailored strategies for conflict resolution and peacebuilding.

The current multipolar landscape features numerous centres of power that transcend traditional state entities to include corporations and oligarchs. These entities have challenged traditional geopolitical strategies, introducing both new obstacles and opportunities for mediation and peacebuilding. Hybrid peace processes integrate conventional diplomatic tactics with public dialogue, innovative technological solutions, and science diplomacy.

By combining traditional methodologies with modern technologies and direct community engagement, hybrid models such as the Peace Offensive aspire to foster more inclusive and enduring outcomes. In an era defined by exploding communications and increasing interdependence among diverse centres of power, mutual understanding is of paramount importance.

This effort at comprehension must be conducted along the lines previously suggested, allowing us to guard against potential errors. An excessively ethnocentric viewpoint, in strategy or diplomacy, is as misplaced as the geocentric view of the universe that was prevalent before the Copernican Revolution.

The belief that the sun and the universe revolved around the Earth—considered the fixed point at the centre of the universe—was shattered by Copernicus. Earth was relegated to its true status: just another planet orbiting a star. This overturned not only the astronomical order but also the prevailing spiritual hierarchy. Inductive reasoning, at the heart of the scientific method, rose to prominence, while the deductive method was gradually eclipsed.

The success of the Peace Offensive hinges on the sustainability of initiatives that cultivate a sense of local ownership and empower communities to become the architects of their own peaceful futures.

While a guiding value system is indispensable for action, viewing reality solely through this lens can distort its true form.

Many conflict analysis methods employed by multilateral agencies often lack this profound understanding of the contextual nuances of reality and tend to replicate the error of prejudging reality with preconceived theories. Reducing the potential for errors is critical, especially in our currently volatile and dangerous world, where hotbeds of tension persist and could ignite into major crises.

The imperative to liberate ourselves from ethnocentric approaches is equally crucial for diplomats, strategists, and policymakers. Recognizing that each party's perceptions create distinct realities is paramount. Otherwise, the strategic environment will be misjudged, and our efforts inevitably misplaced.

However, an antidote exists to these fatal errors arising from distorted perceptions. This corrective is the Peace Offensive, a proactive strategic approach that gradually expands its attention along with its mutual understanding and peace dividends. These inclusive steps must take advantage of potential windows of opportunity, particularly in post-conflict settings or during periods of political transition.

Through the custodianship of WAAS, the Peace Offensive is not merely a set of cookie-cutter tools applied by outside consultants. Instead, it is founded on the premise that positive change is possible when parties to conflict recognize the legitimacy of reciprocal initiatives for compromise. This approach emphasizes that gradual processes of change and mediation should be co-owned by a wide network of actors.

Regardless of the ultimate conclusions of this process, our analytical strategy is built on context-specific determinants. This conflict analysis transitions to a second phase which explores variables, friction points, and uncertainties to achieve a comprehensive and systematic understanding. The proposed methodology minimizes the unknown. It reduces dissonance of perceptions and aligns people and groups around small, yet achievable, positive steps towards resolution, while fostering collaboration among all involved stakeholders.

6. The Peace Offensive: Concept and Application

The success of the Peace Offensive hinges on the sustainability of initiatives that cultivate a sense of local ownership and empower communities to become the architects of their own peaceful futures. The initiative will draw upon the expertise of like-minded organizations and individuals to reinforce existing peace efforts, with WAAS playing a key role in integrating the concept of human security into the project.

Through our approach, we strive to define priorities and objectives. An initial concept document—an interim result of our team's research—would provide mediators and skilled diplomats with a working blueprint for action, highlighting possible zones of compromise and potential entry points for negotiation.

These key findings should be shared as widely as security considerations permit. Experience has shown that excessive secrecy undermines trust among the parties involved.

This approach, formulated with consideration for the multifaceted opportunities for peace promotion (scientific, cultural, and environmental), is intended for application across a wide range of crisis situations, particularly in the early stages, to effectively defuse tension.

The utilization of intelligence gathering, AI-driven analysis, and the participation of a diverse range of stakeholders, including networks of young mediators and peacebuilders, are considered valuable assets in the pursuit of sustainable peace.

A coalition of civil society networks, providing support for peace processes, especially at the local level, would be an especially effective tool for the implementation of the Peace Offensive. The academic world and the media can also contribute decisively to conflict prevention and peace education, with the support of social media in particular, potentially fostering cross-cultural understanding amongst younger generations even in remote areas underserved by traditional media.

At the time of this writing, the vision for a Global Peace Offensive, presented in Maribor in October 2024, is gaining momentum. Discussions are underway to further refine this approach and facilitate its joint implementation with regional academic networks and leading think tanks, all working toward identifying practical steps for de-escalating tensions and encouraging collaboration through multi-faceted peace efforts.

The Global Peace Offensive represents a coordinated endeavour to transform crises into opportunities for progress through strategic action, laying the foundation for a future of lasting peace and human security for all.

The impetus for peace must arise from the people themselves; peace can only blossom from within.

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CADMUS, Volume 5, No.4, July 2025, 62-71

A Call for a New Manifesto:
Defending Humanity in an Age of Rising Extremism

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Abstract

In a world besieged by rising extremism, social fragmentation, and environmental crises, this manifesto issues a clarion call to reclaim human dignity and solidarity. It identifies authoritarianism, inequality, and institutional failure as critical threats to democratic values and sustainable development. Anchored in universal human rights and the principles of human security, the document urges a global recommitment to justice, equity, and inclusion. It champions a people-centered approach to governance, capacity-building, and economic systems, grounded in participation, empathy, and contextual relevance. Emphasizing the interconnectedness of human rights, sustainability, and well-being, it outlines systemic reforms across political, economic, and cultural domains. The manifesto highlights the urgent need for civic empowerment and holistic education to counter populist narratives. It calls for a renaissance of humanism rooted in respect, responsibility, and cooperation. Drawing from interdisciplinary research and participatory action, it offers actionable strategies for transformation.

In an age marked by growing changes and uncertainty, where the rapid pace of technological advancements coexists with social and political upheaval, humanity finds itself at a critical juncture. The forces that threaten our shared values—human rights, human security, and sustainability—are more aggressive and potent than ever before. Across the globe, authoritarian movements mostly rooted in far-right ideologies are gaining strength, fueled by fears, prejudices, and an increasing sense of social and economic instability. These movements not only erode the foundations of democracy and inclusivity, but they also pose an existential threat to the very principles upon which our societies have been built: justice, equality, and the sanctity of human life.

It is at this moment in history that we need to create a **new manifesto**—a unified, global declaration of principles that affirms a commitment to human rights, human security, and sustainable development in the face of these rising challenges. This manifesto must serve as a call to all people, especially those who value human dignity, to speak up, act decisively, and

choose to be vocal in the fight for a world grounded in respect for individuals, communities and all the living life forms.

Now is the time to be courageous, to choose action over complacency, and to reclaim the future by prioritizing human-centered values in every facet of society.

It must be a clarion call to reject the passivity of remaining spectators in a world increasingly divided by ideologies of hate and division. Now is the time to be courageous, to choose action over complacency, and to reclaim the future by prioritizing human-centered values in every facet of society.

1. The Rise of Authoritarianism and the Threat to Human Rights

Across the globe, far-right movements are experiencing a resurgence. Nationalism, xenophobia, populist rhetoric and fake news are on the rise, threatening the stability of democratic institutions and the social fabric of societies that have long prided themselves on their inclusivity and commitment to human rights. This shift is not isolated to one country or region but is a global phenomenon, with far-right ideologies infiltrating both established democracies and emerging political movements alike. What was once considered fringe is now becoming mainstream, leading to increasingly polarized societies, where intolerance and division are normalized, and the rights of minorities and marginalized communities are under constant attack.

This rise of extremism is not merely a political shift—it is a fundamental threat to the values that underpin modern human civilization. Human rights, which have been painstakingly developed over the last century through the Universal Declaration of Human Rights and various other international agreements, are being eroded. Freedoms of expression, assembly, and association are increasingly under threat, as populist leaders use fear and divisiveness to consolidate power. The idea of human security, which emphasizes the need to protect individuals from threats to their safety, dignity, and well-being, is being undermined by these movements. Instead of striving for global peace, cooperation, and sustainability, the focus is on nationalism, militarization, and the creation of "us versus them" mentalities that breed violence, exclusion, and inequality.

Rising extremism is one of the many expressions of the atmosphere of global turbulence that has been rising in recent decades and reached unprecedented scope and intensity since 2020. The extremism thrives in the growing uncertainty and insecurity generated by the unprecedented speed of global social evolution, the failure of essential institutions to keep pace with the requirements for rapid change, the resistance generated by entrenched powers clinging to privilege and traditional values and beliefs threatened by the democratization of forces and efforts to realize the universal human rights enshrined in the Universal Declaration of Human Rights and endorsed by the commitment of 193 nations to implement the 17

Sustainable Development Goals of Agenda 2030. The rising levels of insecurity resulting from this multitude of forces provide fertile soil for retreat to the failed policies and practices of the past, rejected at the end of the Cold War. Insecurity creates vulnerability to the lure of fake news and false promises. Reaffirming the commitment to demand to uphold human rights and human security for all provides the only reliable foundation for reversing the retreat and relaunching transformative global social progress.

Human rights are not privileges granted by governments—they are the inherent, inalienable entitlements of every individual, regardless of background, identity, or circumstance.

The time has come for those who aspire to a return to the very promising positive momentum generated at the end of the Cold War to come together and reaffirm the universal values that offer the sole reliable pathway for transition to a peaceful and prosperous human community. We must reject the authoritarianism creeping across the globe and insist on a vision for the future that places people at the center, protecting and promoting their human rights, security and sustainability as the goals and common denominator of all our actions.

A leader is somebody who leads, but that does not automatically bring positive results (Lasswell 1977). Even democratically elected leaders can be mentally ill and commit evil; Adolf Hitler is an eloquent example who rose to power during the turbulent insecurity of the post-World War I period and the Great Depression. Many leaders in history have been famous for their destructivity, cruelty and psychopathology. Le Bon, Fromm, Adorno, Lasswell, Reich and many others studied the Psychopathology of toxic, destructive leaders and the circumstances in which they rise to power, while Maslow, Rogers, Gordon, Bugental and others did research on the personality traits of healthy and effective leaders. (Reich, 1933; Lasswell, 1977).

2. The Need for a New Manifesto

In light of these mounting challenges, there is an urgent need for a new manifesto—a document that can inspire and unify people around the world to act in defense of the values that sustain our common humanity. This manifesto must articulate a clear, compelling vision for a future in which the dignity and rights of every person are defended and promoted, and where human security is not a privilege for the few but a right for all.

The manifesto must call on all individuals and organizations everywhere in all walks of life—regardless of nationality, race, religion, or political affiliation—to make an existential choice. We cannot afford to be passive spectators as the world around us deteriorates. To remain silent is a choice that has dire consequences. Each one of us must decide whether he or she will stand by, silent and complacent, or whether we will actively defend the rights and security of all people. We must choose to be vocal in affirming the human-centered values that have long been the bedrock of progress and equality.

This manifesto will also serve as a reminder that our values—justice, equality, sustainability—are not just aspirational ideals but necessary pillars for a future that is worth living. As the world faces unprecedented challenges, from social injustice, to climate change and global health crises to increasing social and political polarization, we must reorient our collective efforts toward solutions that prioritize human well-being over corporate interests, military might, and the exploitation of vulnerable populations.

3. A Human-Centered Process: Reaffirming Human Rights, Human Security, and Sustainability

This manifesto must recognize and address both the personal, individual and the social/institutional that need to be addressed in order to promote a people-centered future. The social dimensions must take into account the political, economic, technological, cultural and environmental factors impacting on human rights, human security and sustainability.

The heart of this new manifesto must lie in its **commitment of individuals and the social collective to a person-centered approach to governance, policy, and societal development**. This approach recognizes that human rights, human security, sustainability and development are not separate or isolated concerns but are inherently interconnected. Protecting human dignity and promoting the well-being of individuals should guide all decision-making processes, with a bio-psycho-social frame of reference and applied intersectorially, addressing at the same time in the realm of politics, economics, or environmental policy (Eade 1997; Human Rights Watch 2022, 2023, 2024; Institute for Economics and Peace 2021, 2022; UNESCO 2021; UNICEF 2021; United Nations 2015, 2022; United Nations Development Programme 2021, 2022; Jacobs et al. 2021, 2023; Iqbal et al. 2019; Jennings 2004).

Human Rights: The manifesto must reiterate the importance of human rights as the foundation for a just, equitable and prosperous society. Human rights are not privileges granted by governments—they are the inherent, inalienable entitlements of every individual, regardless of background, identity, or circumstance. The manifesto must advocate for the full protection of civil and political rights, including freedoms of speech, assembly, and the press, while also ensuring economic, social, and cultural rights, such as access to healthcare, education, and housing. In a world where authoritarian regimes and far-right movements threaten these rights, the manifesto must call for a renewed commitment to the Universal Declaration of Human Rights and other international frameworks that safeguard individual freedoms and dignity (Human Rights Watch 2022, 2023, 2024; Huggel et al. 2022).

Human Security: The concept of human security, which emphasizes protection from threats such as violence, poverty, disease, and environmental degradation, must be central to the manifesto. Human security goes beyond the traditional notion of state security and focuses on the well-being of individuals. It requires addressing the root causes of insecurity, including inequality, corruption, and environmental destruction. This means creating systems of governance that are transparent, accountable, and responsive to the needs of all people, particularly those who are most vulnerable. It also means ensuring that people's voices are heard and their agency is respected, whether in the context of local governance or international relations. The year 2024 has been the hottest year on record with wildfires,

drought, and storms wreaking havoc on millions of people in Bangladesh, Libya, and Canada and United States.

Unemployment and Inequality: Extremism thrives during the period of rising inequality and unemployment of the 1930s that provided fuel for the most destructive war in human history. Today, rising levels of economic inequality around the world are fueling a harsh backlash against the rights of women and girls and minorities in many places and revoking the acquired rights of minorities. (Human Rights Watch 2022, 2023, 2024). Rising levels of unemployment and job insecurity are a major cause of the extremism. The insecurity is spurred by economic, technological and social factors. It is the result of reduction in manufacturing jobs in the West due to imports from developing countries, especially China. It is spurred by advances in technology leading to the replacement of workers with computers and robots. And it is aggravated by the record inflow of immigrants seeking political refuge due to war and persecution, economic refugees seeking jobs, and environmental refugees seeking safety from natural disasters. Research in the USA has documented that the cost to society associated with unemployment resulting from medical expenses, mental illness, drug, crime, imprisonment, social unrest and extremism far exceed the costs of public employment programs such as India's National Rural Employment Program. Extremism will persist unless and until employment is recognized as a fundamental human right protected and enforced by law, a practice applied temporarily in the USA during the Great Depression, which President Roosevelt wanted to make permanent after the war, but did not live long enough to secure it. Some combination of a fair minimum wage and other welfare programs, job guarantees—such as India's National Rural Employment Program—and/or basic income programs, which are now being tested in several countries, are the best remedy for reducing economic insecurity.

P**eople-centered Approaches:** People-centered approaches facilitate people-centered processes where the development of the potentialities of people and communities are facilitated and promoted via actions of empowerment and responsibilization. People's rights are prioritized with respect for the unique needs, preferences, and values of the individuals and communities, ensuring that they are actively involved in decision-making processes that affect their lives. This methodology is rooted in the belief that those directly impacted by decisions are best positioned to articulate their requirements and aspirations. There is a large body of research showing that it is more effective and cost/benefit effective than traditional approaches (United Nations 2015, 2022; United Nations Development Programme 2021, 2022; World Justice Project 2019; Zucconi and Rollè 2023).

In the realm of design and development, people-centered design involves immersing oneself in the experiences of specific user groups to co-create solutions that genuinely address their needs. Designers engage deeply with communities, tapping into their insights to identify real issues and develop appropriate interventions. This practice ensures that the end products or services are both relevant and effective for the intended users (United Nations 2015, 2019, 2022; UNDP 2021, 2022; World Justice Project 2019; WHO 2007, 2009, 2012, 2019, 2020; Sedra 2022; Kiniger-Passigli and Biondi 2015; Karlsrud 2015; Zucconi and Rollè 2023).

In the context of international development, people-centered development focuses on enhancing local communities' self-reliance, social justice, and participatory decision-making. It recognizes that economic growth alone does not inherently lead to human development and calls for changes in social, political, and environmental practices. This approach emphasizes local ownership, equitable distribution of resources, and the empowerment of communities to define and pursue their development goals.

The rise of far-right movements and authoritarian ideologies presents an existential threat to the values that have long sustained humanity's progress.

Overall, people-centered processes are characterized by a commitment to collaboration, respect, and empowerment, ensuring that interventions are tailored to the specific contexts and desires of the people and communities involved.

Sustainability: Finally, the manifesto must embrace the principle of sustainability as essential to the long-term survival and prosperity of humanity. This includes not only environmental sustainability but also social and economic sustainability. As we face the challenges of climate change, resource depletion, and environmental degradation, the manifesto must call for immediate and bold action to safeguard the planet for future generations. It must advocate for policies that prioritize renewable energy, biodiversity conservation, and sustainable agricultural practices. At the same time, sustainability must extend to the social and economic realms, ensuring that development is equitable, inclusive, and responsive to the needs of all people, especially those who have been historically marginalized.

4. People-Centered Capacity Building: A Holistic Approach to Sustainable Development

Capacity building is a crucial aspect of sustainable development, focusing on enhancing the skills, knowledge, and abilities of individuals, communities, and organizations. A people-centered approach to capacity building ensures that development efforts are tailored to the needs, aspirations, and unique circumstances of the individuals and communities they aim to serve. It is grounded in principles that prioritize human dignity, empowerment, participation, and sustainability. These principles ensure that capacity-building efforts are not only effective but also inclusive and sustainable over time:

- **Empowerment and Participation:** Individuals and communities should have active roles in shaping capacity-building initiatives. Their voices, experiences, and knowledge should be integral to the process (Chambers 1997).
- **Context-Specific Strategies:** Development strategies should be tailored to the cultural, economic, and social realities of the target community. One-size-fits-all approaches often fail to address unique local challenges (Sen 1999).

- **Sustainability and Long-Term Impact:** Capacity-building programs should focus on creating sustainable change by equipping people with the skills and resources necessary for long-term self-reliance rather than temporary solutions (UNDP 2009).

5. Significance of People-Centered Capacity Building

People-centered capacity building plays a vital role in promoting social and economic development. It strengthens individuals' ability to engage in decision-making processes, fosters local ownership of development initiatives, and enhances the resilience of communities to socio-economic and environmental challenges.

- **Strengthening Local Institutions:** Capacity building helps local organizations and institutions develop effective governance structures and policies, enabling them to better serve their communities (Eade 1997).
- **Enhancing Social Equity:** By prioritizing marginalized and vulnerable populations, people-centered capacity building contributes to social justice and equitable access to resources and opportunities (Nussbaum 2000).
- **Encouraging Innovation and Adaptability:** When individuals and communities are empowered, they can innovate and adapt to changing circumstances, making development efforts more effective and responsive to local needs (Kabeer 1999).

6. Methodologies of People-Centered Capacity Building

There are several effective methodologies for implementing people-centered capacity building:

- **Participatory Learning and Action (PLA):** Engaging communities through participatory methods such as focus groups, community mapping, and experiential learning to identify challenges and co-create solutions (Chambers 2008).
- **Training and Mentorship Programs:** Providing technical skills, leadership training, and mentorship opportunities to individuals and organizations fosters self-sufficiency and professional growth (UNESCO 2016).
- **Community-Led Development Initiatives:** Encouraging local communities to take the lead in development projects ensures that interventions align with their priorities and existing knowledge systems (Narayan 2002).

People-centered Capacity Building is a transformative approach that places individuals and communities at the heart of development. By focusing on empowerment, participation, and sustainability, this approach fosters resilience, innovation, and equitable growth. As global challenges continue to evolve, adopting people-centered strategies will be essential in building sustainable and inclusive societies.

7. Uniting for a Humanistic Renaissance

The manifesto must also serve as a call for a **new humanistic renaissance**—a period of intellectual, cultural, and social rebirth in which human dignity, creativity, and collaboration

facilitated by people-centered processes are celebrated as central to our collective future. This renaissance will not be born from the narrow, aggressive, exclusionary ideologies based on fake news of the far-right, but from the broad, inclusive ideals that affirm the interconnectedness of all people that are grounded in the science of sustainable human ecology. It will require the collective effort of individuals, organizations, communities, and nations to create a world in which justice, equality, and sustainability are not just aspirations but realized truths.

This humanistic renaissance is not a distant dream. It is a choice that each of us can make today and realize congruently in our daily lives. It is a call to unite—to work together across boundaries, borders, and differences to affirm our shared humanity grounded on effective relationships that combine respect, empathy and authenticity to realize personal and social health and wellbeing. Each person and organization has a role to play in this global movement. Whether through activism, education, advocacy, or simply by living according to these values in our daily lives, we can all contribute to social change and the creation of a world where human rights, human security, and sustainability are not just ideals, but a lived reality for all people (Jacobs et al. 2021, 2023; Institute for Economics & Peace 2022; Sedra, 2022).

8. The Time to Act is Now!

The rise of far-right movements and authoritarian ideologies presents an existential threat to the values that have long sustained humanity's progress. But it also presents an opportunity—an opportunity to unite in defense of those values, to reaffirm our commitment to human rights, security, and sustainability, and to create a future that is grounded in human dignity and respect (Force for Good Report 2025; Hansmeyer and Patel 2023, 2024; Jacobs et al. 2021, 2023; IEO, 2022; Human Rights Watch 2022, 2023, 2024; Huggel et al. 2022; Institute for Economics & Peace 2022; Sedra, 2022; Iqbal et al. 2019; Hughes et al. 2017; Karlsrud 2015).

Now is the time to stand together. Now is the time to choose action over complacency, unity over division. This new manifesto is not just a document—it is a movement, a call to all who believe in a better world to rise up, speak out, act and connect with others who share similar values and concerns.

Let us begin the process of creating a new humanistic renaissance, one that will affirm our shared humanity and ensure a future where all people can live in peace, dignity, and security.

- *Creating a People-Centered New Humanistic Renaissance Manifesto:* A scientific approach involves integrating the principles of the sociology of knowledge and employing participatory action research (PAR) to ensure the manifesto reflects the socially constructed realities of diverse communities and facilitates meaningful change.
- *Understanding the Social Construction of Reality:* Understanding the social and psychological roots of extremism is essential for effectively addressing its causes. The sociology of knowledge, as articulated by Berger and Luckmann in "The Social

Construction of Reality," posits that our understanding of reality is shaped through social interactions and shared experiences. This perspective suggests that concepts, beliefs, and knowledge are not inherent but are developed collectively within societies. Recognizing this framework is crucial for creating a manifesto that resonates across different cultural and social contexts (Berger and Luckmann 1966).

- *Understanding that hope is a scientifically sound reality:* Research in Trauma informed care shows ample evidence that from trauma people can grow existentially and develop resilience (Calhoun and Tedeschi 1999; Tedeschi and Calhoun 2004, Zucconi and Rollè 2023).
- *Realizing that the economic investment needed to build a people centered and sustainable future is possible and the feasibility has been carefully researched and demonstrated* (Force for Good 2022, 2023, 2024; Hansmeyer and Patel 2023, 2024).
- *Realizing that Catalytic Strategies for Conscious Social Transformation are available and have been carefully designed by eminent scientists*. (Jacobs et al. 2021, 2023).

9. Conclusion

By grounding the development of a People-Centered New Humanism Manifesto in the principles of the sociology of knowledge and the people/person-centered approaches, and employing participatory action research, this process becomes a collaborative and dynamic endeavor. This approach ensures that the manifesto is not only reflective of diverse social realities but also serves as a catalyst for meaningful, community-driven change on a global scale**.**

The World Academy of Art and Science (WAAS) being the main facilitator of this worldwide project assumes a role of serving the needs of humanity, this is congruent with and the principles of the Russell Einstein Manifesto of 1955 which led to the founding of WAAS in 1960.

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CADMUS, Volume 5, No.4, July 2025, 72-86

AI as the Catalyst of the New Paradigm of Science?

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Abstract

The rapid advancement of Artificial Intelligence (AI) is reshaping the landscape of scientific inquiry. This article examines the challenges confronting modern science, including knowledge fragmentation, diminishing returns of current paradigms, and the disconnect between science and society. It explores how AI offers solutions enhancing collaboration and integrating knowledge—as well as considers the possible "darker side" of using AI in research. However, the advent of AI in science not only enhances scientific research but also redefines the role of human researchers and fosters a new paradigm of human understanding. By embracing these transformations, a more cohesive and responsive scientific enterprise can emerge.

"*The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom.*"

– Isaac Asimov

1. The Evolution of Science: Where Are We Now?

The modern institution of science is largely a product of the Western Industrial Age. While systemic studies of nature and society have existed for millennia—leading to the astonishing achievements of Ancient Egypt, China, and the Islamic Golden Age—the concept of creating a specialized social institution dedicated solely to the accumulation of knowledge for human purposes is a Western European innovation. Beginning in the 17th century, intentional research conducted in universities across Europe helped advance the military and manufacturing superiority of European states and fueled colonial expansion.

Over the next two centuries, science became a government-supported activity that elevated national prestige and produced new tools, materials, and medicines. World War I, and even more so World War II, were massively shaped by scientific minds, as scientifically engineered mechanisms, explosives, and chemical agents dominated the battlefield—culminating in the detonation of atomic bombs over Hiroshima and Nagasaki, weapons of unprecedented destructive potential crafted through scientific endeavor (Doel & Harper 2023).

During the same period, however, science also increasingly started to play a role in creating knowledge for economic innovation. High-tech companies like Bell Labs, Bayer, and IBM became synonymous with cutting-edge research and development (R&D), while universities accumulated capacity for applied research that led to a multitude of inventions becoming new commercial enterprises. Today's scientific research is strongly coupled with economic development and is seen as a primary source of national economic competitiveness—and the

ongoing research "race" between the US and China in AI, brain research, biotechnology, and energy technologies underscores this trend (Atkinson & Foote 2019).

However, the future of science as a social institution is clouded by mounting systemic challenges. Three critical and interconnected issues stand out: the fragmentation of scientific knowledge, diminishing returns of scientific research productivity, and the potential decline of scientific knowledge creation.

1.1. Fragmentation of Scientific Knowledge

Today, the vast accumulation of knowledge surpasses individual comprehension. For example, reading the 170 million volumes in the Library of Congress would require approximately 3,200 lifetimes. With over 2.5 million new scientific papers published each year across more than 30,000 journals, scientists struggle to stay updated even within their narrow specialties (Johnson et al. 2018). This situation leads to fragmentation, where research becomes siloed, and interdisciplinary integration diminishes. Despite multiple calls for interdisciplinary approaches to address complex global challenges, actual integration occurs infrequently—one can even say that interdisciplinary studies become isolated as their own field, without truly integrating the fields they derive from (Ledford 2015). The barriers include differing terminologies, methodologies, and evaluation criteria across disciplines.

Additionally, not all scientific information is accurate or reliable. The proliferation of predatory journals that prioritize quantity over quality undermines the integrity of scientific literature (Beall 2016). Fields like psychology and biomedicine have faced replication crises, where many studies' results cannot be reproduced, calling into question the validity of significant portions of research (Open Science Collaboration 2015). Where results can be replicated, they are subject to a "half-life" of facts, with new findings overturning established understandings (Arbesman 2012).

The exponential accumulation of knowledge has led to a situation where no single individual can comprehend or integrate the vast breadth of information available. Stanisław Lem (2013) indicated that this accumulation of knowledge that nobody can fully assimilate leads to a "crisis of representation" or "the rupture of the conceptual frontline." There is no single entity that can truly represent the full body of human knowledge—and the ideal of the Enlightenment, where science can provide a holistic and non-controversial worldview, has collapsed.

1.2. Diminishing Returns of Research Productivity

There are also growing societal concerns about the efficiency of research, as people outside academia frequently do not share its idea that "the meaning of life is the pursuit of knowledge." The principle of "knowledge bang for the buck," suggested by Charles Sanders Peirce, posits that the value of knowledge should be weighed against the resources expended to obtain it (Peirce 1879). In science's early days, much was yet to be discovered, and the cost of inquiry was relatively low with exceptionally high benefits. For instance, Benjamin Franklin's simple kite experiment led to the invention of the lightning rod, which has since saved countless structures. In recent decades, however, evidence suggests that despite

increased investment in R&D, the rate of groundbreaking discoveries and productivity has diminished.

Bloom et al. (2020) demonstrated that research productivity has declined across various fields, including agriculture, medicine, and semiconductors. For instance, Moore's Law—the doubling of transistors on integrated circuits approximately every two years—has been sustained, but the number of researchers required to achieve this has increased exponentially, indicating a steep decline in productivity per researcher.

In biomedical research, Scannell et al. (2012) observed an "Eroom's Law" (Moore's Law spelled backward), where the number of new drugs approved per billion U.S. dollars spent on R&D has halved approximately every nine years since 1950. Similarly, in physics, the discovery of fundamental particles requires enormous investments in large-scale facilities like the Large Hadron Collider, with diminishing probabilities of finding new particles (Hossenfelder 2018). Each additional increment of knowledge demands greater resources, time, and collaboration, often with less impactful results.

1.3. "Limits to Growth" of Science

Science, as a social institution, is expected to produce results that benefit society. Our prevailing civilizational paradigm rests on the concept of progress—the belief that the continuous accumulation of knowledge will invariably yield new technologies to enhance human welfare. Progressivist thought hinges on the notion that science will perpetually provide fresh solutions as long as research persists. But could this cornucopia of solutions be finite? Is scientific knowledge creation itself facing limitations?

As argued above, the cost of new knowledge creation grows, and its benefits become less immediately apparent to the public. Scientific productivity appears to be slowing; even in well-funded fields, impactful publications decline yearly as the field's size impedes new ideas (Chu & Evans, 2021). In some areas like physics, the development of fundamental science has been stalled since the 1980s (Baez 2023).

Nobel laureate Steven Weinberg (2012) argued that, with research becoming more specialized and frequently unreliable, scientific knowledge creation risks decoupling from the needs of the economy and society, and innovations may remain confined within academic circles without translating into practical applications or informing policy decisions. Society, corporations, and nations might challenge the future funding of expensive research projects, suggesting resources could be diverted to more practical needs. Scientists' remuneration could decline, careers in science might lose allure, and the number of researchers could decrease significantly.

Historical precedents illustrate how societal shifts can impact scientific progress. After the collapse of the Soviet Union, the funding of fundamental and applied science in Russia, Ukraine, Armenia, and other post-Soviet countries was massively reduced, and scientific activity waned. Companies that emerged in the territory preferred to procure Western technologies instead of investing in their own R&D, and governments attached little importance to scientific activities. Many researchers emigrated, and the renowned scientific

community dwindled within two decades—with the evident erosion of the ability to generate intricate knowledge (Graham & Dezhina 2008).

AI can act as an 'artificial Aristotle,' capable of synthesizing vast amounts of knowledge across fields into a consistent 'knowledge tapestry'.

This phenomenon resembles Joseph Tainter's concept of societal collapse due to diminishing returns on complexity, where established institutions become counterproductive, leading to a "reset" in societal complexity (Tainter 1988). While these possible limitations to scientific and technological progress still lie ahead, signs suggest a potential saturation point determined not only by the capacity to advance but also by society's willingness to support these endeavors—or even due to cultural shifts such as the ones that occurred in Hellenistic Alexandria in the early Christian age when religious fundamentalists repressed scientific debates and research (Freeman 2003). In early 2025, one can clearly see how the influence of populist or anti-scientific worldviews can significantly disrupt scientific advancement—as demonstrated by the first decisions of the new Trump administration in the US, where skepticism about climate science and public health led to critical research lines being defunded or dismissed. We should not take continued scientific development for granted, as it hinges upon a sustained ability of science to produce results that are valued by society.

2. AI: Deus Ex Machina (or Not)?

The rise of Artificial Intelligence (AI) has taken over the front pages and the minds of academics and decision-makers. The quest for automating knowledge production is hardly new—as early as the 13th century, philosopher and theologian Ramon Llull envisioned a logical device to discover truth through mechanical means. In 1945, Vannevar Bush proposed the concept of the "memex," a hypothetical machine that would organize and retrieve information through associative links, laying the groundwork for future information systems and the Internet (Bush 1945).

Machine learning has brought these concepts to an entirely new level. Analytical capabilities of Large Language Models (LLMs) like GPT-4 and Google's Gemini already match or outperform the capacity of an average PhD graduate on complex reasoning benchmark tests (Nori et al. 2023). LLMs show the capacity to formulate hypotheses, suggest investigative questions, and bridge ideas from distinct knowledge fields (Kumar et al. 2024). However, AI models are not limited by human memory volume, attention span, communication capacity, or the need for regular rest, so their evolution will continue.

Can AI address the unfolding crisis of science, overcoming knowledge fragmentation and enhancing research work to mitigate the current trend of declining research productivity? Let us consider some possibilities of how AI will influence science in the foreseeable future, even before the hypothetical Artificial General Intelligence could arise.

2.1. AI-Assisted Synthesis of Science

In the past, the fragmentation of knowledge across specialized disciplines required human synthesizers such as Aristotle or the 18th-century French Encyclopédistes. AI can act as an "artificial Aristotle," capable of synthesizing vast amounts of knowledge across fields into a consistent "knowledge tapestry." Already now, AI-driven platforms can automate the aggregation of relevant literature, saving researchers time and reducing information overload (Fortunato et al. 2018). As AI capabilities evolve, further integration can be achieved in several ways:

- **Mapping Knowledge Fields**: AI systems can create knowledge maps that locate existing bodies of knowledge in semantic space, connect disparate research findings, highlight missing links, and facilitate transdisciplinary integration. Tools like semantic knowledge graphs and AI-driven literature analysis platforms enable researchers to visualize relationships between concepts, publications, and researchers.
- **Discovering Knowledge Gaps**: AI algorithms can detect patterns and correlations that might elude human researchers due to the sheer volume of data. Moreover, AI can assist in identifying gaps in knowledge, suggesting areas where further research is needed. As a recent example, the self-organizing knowledge networks can be produced by agentic deep graph reasoning, allowing for AI-driven autonomous hypothesis generation and scientific inquiry (Buehler 2025). This capability is crucial for strategic planning in research funding and policy-making. By providing a holistic view of the scientific landscape, AI helps overcome the silos that impede the integration of knowledge—and even overcome the biases and constraints that often arise in the setting of scientific priorities by like-minded communities.
- **Design of Scientific Explorations**: By "connecting the dots," AI can serve as a facilitator of collaboration and a builder of teams or networks. Systems like Microsoft's Academic Graph and Semantic Scholar utilize AI to process millions of papers, helping identify emerging trends and potential collaborations. Recommendation systems can match researchers with complementary expertise, fostering interdisciplinary projects—or even bring disagreeing scientists into "adversarial collaborations" which can produce "intense intellectual competition designed to winnow false claims" (Clark et al. 2022).

2.2. Enhancing Research Work

One of the largest problems of modern science is the constantly increasing cost of experimentation. AI-enhanced tools like virtual laboratories allow researchers to conduct simulated experiments "in silico," reducing the need for "in vitro" and "in vivo" experiments. These virtual labs help simulate complex systems, enabling scientists to test theories and observe outcomes rapidly and at lower costs. For instance, in drug discovery, AI models predict molecular interactions, accelerating the identification of potential therapeutics (Chen et al. 2018)—and more recently, also model how specific drugs impact patients, even in the absence of clinical studies, such as in the Enchant system. In materials science, AI algorithms design new materials with desired properties by exploring vast chemical spaces (Butler et al. 2018).

Moreover, AI assists in automating routine tasks such as data collection, processing, and initial analysis, freeing researchers to focus on interpretation and innovation. Advanced AI systems can analyze complex datasets, identify patterns, and recognize anomalies that might indicate new phenomena (Aldoseri et al. 2023). Furthermore, AI can even help generate plausible explanations for these irregularities, serving as a collaborator in hypothesizing and conceptual design.

In the future, the evolution of AI can bring about the 'Fifth Paradigm,' in which data-driven science will enter loops of self-accelerated learning driven by AI.

What is more important is that these processes occur not through human-like reasoning but through sheer data processing. In the words of Rich Sutton (2019), "the biggest lesson from 70 years of AI research is that general methods that leverage computation are ultimately the most effective," while "the human-knowledge approach tends to complicate methods in ways that make them less suited to taking advantage of general methods leveraging computation." The machine does not "understand" reality; it simply "grasps" patterns in the set of observations—and this is not how humans understand reality, even though AI models initially aimed to reproduce the way the human brain operates. For some reason, however, in the end, this strategy proves to be a better way of actually "understanding" the reality—called by AI researchers "the unreasonable effectiveness of data" (Halevy et al. 2009).

What we see is that AI is transforming the paradigm of knowledge creation, moving from classical hypothesis-driven approaches to data-driven science. Jim Gray called this shift the "Fourth Paradigm" of science—data-intensive scientific discovery (Hey, Tansley, & Tolle 2009) (the previous three being experiment-driven, theory-driven, and computation-driven paradigms of research). An example of data-intense research is the Nobel-prize-winning DeepMind's AlphaFold, which predicted the structures of over 200 million proteins (virtually all known protein sequences), reducing the time required for determining protein structures from months or years (using traditional experimental methods like X-ray crystallography) to mere minutes. This accelerated progress has lowered barriers to drug discovery, disease research, and biotechnology innovation, catalyzing breakthroughs that would otherwise have taken decades of experimental research (Service 2024).

In the future, the evolution of AI can bring about the "Fifth Paradigm," in which data-driven science will enter loops of self-accelerated learning driven by AI. Within this paradigm, AI systems would not only analyze data but also independently generate hypotheses, design experiments, and conduct them in virtual labs ("in silico") or in Internet-of-Things-assisted physical environments, and iteratively refine their understanding based on outcomes, continuously improving scientific insight.

2.3. Integrating Science into Decision-Making

The traditional separation between knowledge creation and knowledge utilization is

diminishing. As data science becomes integral to various aspects of society, AI models are increasingly embedded within governance and decision-making processes. Governments and organizations are adopting digital twins—complex models of reality that simulate physical systems—to inform policy and operational decisions (Tao et al. 2019). For example, urban planners use AI-driven "digital twin" models to optimize transportation networks, energy consumption, and emergency responses (Batty 2018).

Predictive modeling, powered by AI, enables decision-makers to forecast outcomes and assess the potential impacts of policies or interventions. In public health, AI models predict disease outbreaks and evaluate the effectiveness of containment strategies (Ferguson et al. 2020)—for instance, an AI model for Rio de Janeiro predicted the 2024 dengue fever spikes months before traditional models would (Rockefeller Foundation, 2024). In environmental management, AI assists in monitoring climate change indicators and modeling ecological scenarios (Reichstein et al. 2019).

By integrating science directly into decision-making frameworks, AI bridges the gap between research and application. This integration ensures that policies are informed by the most current and comprehensive data available, enhancing their effectiveness and responsiveness. The convergence of AI, data science, and governance signifies a shift toward evidence-based decision-making, where the division between knowledge creation and utilization becomes increasingly blurred (Provost & Fawcett 2013). Science becomes an active component of societal development rather than an isolated institution.

This process mitigates the concern that science would ever become "irrelevant" to society, which may want to prioritize other forms of activities over knowledge creation. In a world where every organization and household uses AI systems and digital twins, knowledge creation will become part of everything. On the other hand, it will also clearly mean the end to the "science as we know it"—the disappearance of many existing organizational forms and roles within the social institution of science. What new forms of knowledge creation and ways of knowing will be adopted by human societies in this case is a question worth exploring.

3. Curb Your Enthusiasm: The Darker Side of AI

While AI holds great promise for transforming science, it should be recognized that it has a multitude of existing and potential limitations as a vehicle for scientific development.

3.1. Biases and Blind Spots

Nora Bateson emphasizes that data collection is not observer-neutral; "cold" data always emerges from a "warm" system of relationships and contexts (Bateson 2016). AI models are trained on existing data, which may contain inherent biases. For example, IBM's Watson for Oncology faced criticism for providing treatment recommendations based on training data primarily from well-respected cancer centers, which may not represent diverse patient populations (Ross & Swetlitz 2017). Similarly, AI algorithms used in hiring have exhibited gender and racial biases due to being trained on historical hiring data that reflects societal prejudices (Raub 2018). In scientific research, AI-enhanced tools could potentially cement

existing biases within the literature and datasets. There is evidence that AI systems may reinforce prevailing paradigms and underrepresent minority viewpoints or novel hypotheses (Bender et al. 2021).

Additionally, these biases make AI systems susceptible to blind spots present in prior literature and datasets. AI, at least in its current form, tends to align with consensual knowledge and may struggle to formulate paradigm-shifting ideas based solely on existing evidence. This limitation could hinder scientific innovation if AI tools overly influence research directions without critical human oversight.

3.2. Vehicle for Undermining Academic Integrity and Promoting Untruth

AI's capabilities also present risks to academic integrity. The ease of generating convincing but fabricated content can lead to the spread of misinformation and the erosion of trust in scientific literature. Generative AI models can produce plausible-sounding but incorrect or entirely fabricated research articles, data, and citations (van Dis et al. 2023). AI-generated texts may include "hallucinations," where the model produces false information presented as factual, including nonexistent references or fabricated research findings that can deceive readers and reviewers not deeply familiar with the subject matter (Marcus & Davis 2019).

Moreover, malicious actors might deliberately use AI to create fraudulent studies or data to mislead competitors, sway public opinion, or secure funding unethically. The case of the fictitious researcher "Ike Antkare," whose fabricated publications were used to highlight vulnerabilities in academic metrics, exemplifies how easily the system can be manipulated (Labbé & Labbé 2013).

The proliferation of AI-generated misinformation can lead to a "triumph of ignorance," where falsehoods spread more rapidly than verifiable truths, undermining the foundation of scientific knowledge (Vosoughi, Roy, & Aral 2018). Addressing this issue requires developing robust verification tools, including AI-generated content detection protocols, fostering a culture of critical evaluation, and adapting academic standards to account for AI's influence.

3.3. Devaluing Human Reasoning Capacity

The long-term effect of AI in science could be detrimental if AI is positioned as an alternative rather than an enhancement to human research. Overreliance on AI may lead to several concerns:

- **Erosion of Critical Thinking Skills**: Dependence on AI for analysis and decision-making could diminish researchers' abilities to critically assess data and methodologies, leading to intellectual complacency.
- **Loss of Creativity and Intuition**: Human intuition and creativity are vital for scientific breakthroughs. AI lacks the experiential and emotional components that drive human innovation. Overemphasis on AI might stifle these human qualities (Floridi & Cowls 2019).

- **Reduction in Skill Development**: Future scientists may become less proficient in fundamental research skills if they rely heavily on AI tools, potentially leading to a workforce ill-equipped to advance science independently (Susskind & Susskind 2015).

The risks of overreliance on AI are increasingly recognized, particularly regarding its potential impact on critical thinking and creativity among students and emerging scholars (O'Connor 2025). To mitigate these risks, it is essential to maintain a balance where AI serves as a tool to augment human capabilities rather than replace them.

4. The Role of Human Researchers in the Age of AI

As AI actively permeates the field of knowledge creation—and especially as the "Fifth Paradigm" of knowledge creation becomes fully realized—the role of human researchers and collectives in the coming decades warrants careful examination. Will humans be reduced to mere "sensors" and "effectors" within AI-governed systems, or is there a unique and indispensable role for human collectives in the future of science?

Firstly, it is important to acknowledge that this question is not merely hypothetical but increasingly relevant. The role of AI in human research will continue to expand, and for the foreseeable future, this integration will be highly beneficial. Human researchers and collectives will incorporate AI at various levels—from literature review and knowledge mapping to AI-assisted data analysis, hypothesis formulation, and the creation of project reports and academic articles. As individual researchers and teams learn to effectively utilize AI, those who do not adopt these tools are likely to become increasingly marginalized. Their work may be conducted and disseminated more slowly, be less integrative, miss critical hypotheses and opportunities, and require higher compensation due to inefficiencies.

As knowledge continues to grow in complexity, diversity, and compartmentalization, integrating it into human endeavors becomes a critical challenge. The classical division between theoretical (fundamental) and practical (applied) knowledge creation is unlikely to be maintained in the era of data-driven science. With significant amounts of new knowledge produced by hybrid human-AI systems, there will be a rising demand for "facilitators of knowledge-creating dialogues" or "knowledge weavers"—roles previously filled by educators, consultants, and interdisciplinary researchers. These facilitators will bridge the gap between specialized knowledge and practical application, ensuring that new insights are effectively integrated into societal progress.

Researchers and collectives will increasingly become "human-AI centaurs," enhanced by AI and digital solutions. These high-performance teams will be facilitated by algorithms that enable dynamic team assembly with complementary talents, leveraging the potential of hybrid intelligence—collaborative human-machine systems combining individual perception, collective co-creation, and machine learning (Dellermann et al. 2019). In such hybrid intelligence groups, humans will lead in goal setting, decision making, and creativity, while AI assists with data processing, routine tasks, and enhancing group performance. AI can also be used to foster consensus between the diverse perspectives, as exemplified by

the experiments with "Habermas Machine", an AI mediation tool that was able to foster consensus during democratic debates on politically divisive issues involving over 5000 UK citizens (Tessler et al. 2024).

Human researchers and collectives are not destined to become obsolete in the age of AI but will increasingly focus on roles emphasizing the unique human capacities for wisdom, ethical judgment, creativity, and the ability to navigate complex social and moral landscapes.

According to physicist Dirk Helbing (2019), within complex environments, collective intelligence systems are able to strategically outperform Artificial Intelligence over time, particularly in addressing challenges faced by human societies and the planet. Helbing argues that while AI excels in processing information and optimizing specific tasks, human collectives possess adaptability, creativity, and ethical reasoning that are crucial in navigating complex, dynamic systems. Therefore, the enhancement—not replacement—of human collective intelligence seems the most plausible and efficient way of deploying AI in science.

Moreover, there is a crucial distinction between human collectives and AI systems in terms of tackling complex challenges and finding effective solutions. Humans possess **wisdom**—the ability to utilize knowledge and reasoning coupled with insight and ethical judgment gained through life experience and reflection. Collective wisdom, manifested in various forms such as councils, think tanks, and interdisciplinary collaborations, has been a vehicle for the evolutionary success of humankind. In the future, it will be even more critical, as it enables ethical decision-making with an understanding of the long-term consequences of actions, offers a holistic view of the future that considers the well-being of future generations, and provides resilient and integrative perspectives in the face of complexity.

The concept of **collective hybrid wisdom** involves combining human insights with AI capabilities to promote deeper understanding and empathy. Frameworks for such integration are emerging, including inclusive deliberation platforms, ethics-aware AI, and wisdom-ranking mechanisms. For instance, AI can facilitate large-scale deliberations by organizing and summarizing inputs from diverse participants, ensuring that multiple perspectives are considered in decision-making processes.

Through the synergy of collective hybrid wisdom communities, enduring forms of collective consciousness can arise—what the author calls in his work the "Forest of Consciousness." Visionaries such as Kevin Kelly, Valentin Turchin, Peter Russell, and Sri Aurobindo have suggested that this sustained collective consciousness marks the anticipated next step in the evolution of Earth's living matter. Collaboration among hybrid wisdom-driven collectives working in knowledge creation could be the first step in that direction.

Human researchers and collectives are not destined to become obsolete in the age of AI but will increasingly focus on roles emphasizing the unique human capacities for wisdom, ethical judgment, creativity, and the ability to navigate complex social and moral landscapes.

5. Evolution of Worldviews

Embracing collective hybrid wisdom leads us to a critical reflection on the specialization of humans in an era dominated by data-driven knowledge and AI-enhanced agents. If machines excel at processing information and identifying patterns, what distinct roles will humans play? The answer lies in developing new ways of knowing—cultivating holistic perspectives, embracing complexity, and fostering wisdom that integrates emotional, ethical, and experiential dimensions. As indicated above, AI will probably serve more convergent rather than divergent ways of comprehending the world. If we recognize that the majority of global challenges—from social injustice to climate and biodiversity crises—are produced by the way we understand reality (Freinacht 2017), then the only way to proceed is to evolve the existing paradigm.

AI can assist us in this endeavor but cannot do it for us. What is needed is a paradigm shift in how we perceive knowledge—moving beyond traditional scientific cognition to a more integrated, human-centric approach that values intuition, creativity, and ethical considerations. It is in this area that we can form a different context for AI cognition systems to operate—the very "shell" of "warm data" that Nora Bateson talks about: new ways of looking at things so that the knowledge generated works toward the goal of long-term human flourishing in harmony with the world.

A new paradigm can be derived from the premise of discovering the unique human contribution to the evolution of our species, the biosphere, the planet, and the universe (Laszlo 2023). Should we continue seeing ourselves from an anthropocentric perspective, assuming that we are on a constant quest to conquer material forms and expand our presence in the universe? Or does the age of artificial intelligence give us an opportunity to discover that we are surrounded by a multitude of non-human intelligences, including perhaps the super-intelligence of planet Earth, as Adam Frank and his colleagues suggest (Frank et al. 2022)?

We may discover that this perspective is not novel—and remains common knowledge in indigenous communities across the world. While many such communities may not, on the surface, have superior ways of material production, they are considerably more efficient in regulating their socio-emotional life, embracing the creativity of their members, enriching their daily lives, and serving their collective well-being (Mackean et al. 2022). They are also notably more efficient in harmonizing their relationships with natural environments; for example, research by Julia Watson (2019) shows that some of the most sustainable solutions in construction can be provided within "traditional ecological knowledge," successfully tested and refined over countless generations.

The objective is not simply to "plug" ancient knowledge into our modern context—but to embrace a holistic view that positions scientific, pre-scientific, and post-scientific thinking as essential components of a comprehensive framework. The relationship between different

forms of knowledge is symbiotic; each mode of thought represents a valuable "piece of the jigsaw puzzle" that enables us to establish a profound and meaningful connection with the intricate and living world around us. This integrative perspective encourages us to recognize collective wisdom, embrace multidimensional learning, foster cross-disciplinary dialogue, and cultivate intellectual humility by exploring alternative forms of knowledge.

Evolving beyond current paradigms calls for a transition to "post-scientific thinking" or "Science 2.0," as conceptualized by Otto Scharmer (2018). This approach views the researcher as part of the observing system; accordingly, it demands self-awareness and a deep understanding of one's role within the broader context of the world, including understanding the purpose and impact of research (which inevitably becomes action-oriented). In this "embedded science," the researcher is invited to engage in a profound journey of self-discovery and discovery of others, recognizing that personal awareness and transformation are integral to the process of knowledge creation. Ultimately, Science 2.0 transcends the boundaries of traditional science to integrate personal growth, community engagement, and experiential learning into the process of knowledge creation. This paradigm shifts from a narrow focus on theoretical knowledge to a holistic integration of thinking, feeling, and doing—where the separation between these aspects is dissolved, and they are seen as interconnected dimensions of human experience.

Integrating AI with new and traditional ways of knowing opens up the long-term potential for what the author calls "a meta-language of living complexity" (Luksha 2023)—an integrative approach where AI tools can help the humanity move towards complexity-embracing perspective grounded in the organic, interconnected nature of reality itself. AI real-time "digital twin" modeling could help manage the delicate interplay between ecological dynamics, technological infrastructure, and human needs—to help establish "techno-anthropo-bio-cenoses", harmonious and regenerative communities in which humans, technology, and biological organisms coexist. Importantly, in techno-anthropo-bio-cenoses, the decision-making power is not handed to AI; instead, AI facilitates the co-design and co-governance by human and non-human stakeholders alike, including technology and various forms of life.

As Audre Lorde once said, "The master's tools will never dismantle the master's house," highlighting that existing socio-economic and political structures are largely maintained by dominant worldviews. If the new knowledge paradigm is to become a conduit for a new socio-cultural reality—one that can help us overcome the unfolding planetary crisis—it must diverge from existing norms and perspectives. Profound transitions depend on shifting the foundations of our thinking and communication patterns. This new paradigm recognizes intrinsic complexity and adopts a holistic, organic, transdisciplinary worldview. Creating this is primarily the role of humans, not thinking machines.

6. Conclusion

With the rapid ascent of AI, we are experiencing one of the most radical revolutions in the means of intellectual work—perhaps even more dramatic in its impact than the Gutenberg press, and happening at a rate unseen in human history. The arrival of this technology in the

realm of science presents us with both unparalleled opportunities and profound challenges. AI offers remarkable tools to enhance research, synthesize knowledge, and integrate scientific insights into decision-making. Yet, without careful stewardship, we risk entrenching biases, eroding academic integrity, and devaluing the very human capacities—creativity, intuition, and ethical reasoning—that have driven scientific progress for centuries. If left unchecked, the proliferation of AI could exacerbate the very problems we hope it might solve.

As new AI-supported research methods become more widespread, the organization of science, the role of researchers, and even our conception of what constitutes "good knowledge" will change. This pivotal moment calls for a paradigm shift—a reevaluation of what it means to know, understand, and innovate. We must move beyond the confines of traditional scientific paradigms and embrace a more holistic, transdisciplinary approach that values emotional intelligence, ethical considerations, and experiential wisdom alongside data and analytics. The cultivation of collective hybrid wisdom, in all its varied forms, and setting pathways towards the emergence of "techno-anthropo-bio-cenoses" with the use of AI is not a luxury but a necessity if we are to navigate the intricate web of global challenges that defy simple solutions.

With AI permeating every facet of society, the role of human researchers becomes more critical, not less. It is up to us to ensure that AI serves as a catalyst for deeper insight rather than a substitute for critical thinking. We must foster environments where human creativity and ethical judgment are amplified by AI's capabilities, not overshadowed by them. The future of science—and indeed, the future of humanity—hinges on our ability to consciously integrate AI into the fabric of our knowledge systems while preserving the essence of what makes us uniquely human. This demands intentional action: redefining educational models, reshaping research institutions, and cultivating a culture that prioritizes wisdom over mere information accumulation. Policymakers, educators, researchers, and global organizations must collaborate to shape an AI-empowered scientific enterprise that not only advances knowledge but also enhances societal and planetary well-being.

The question is not whether AI will change science—it already is—but whether we will guide this change toward the collective good. The time for reflection and action is now.

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CADMUS, Volume 5, No.4, July 2025, 87-95

From Citizen Science to Human Security:
A tool to facilitate Members of Parliaments' engagement with constituents

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Abstract

Citizen science tools can demonstrate the transformative potential of citizen engagement as a catalyst for structural change and democratisation within society. This paper examines the application of citizen science tools in facilitating Members of Parliament (MPs) to engage directly with constituents by incorporating the principles of human security. The concept of human security is built around protecting individuals from critical threats while also empowering them. It aligns with the goals of citizen science by advocating for inclusive and participatory methods. The paper focuses on how parliamentarians, parliamentary institutions, committees, and secretariats can enhance the reach and effectiveness of these initiatives through citizen science engagement tools. It also addresses the challenges of traditional top-down approaches to public engagement and proposes interactive, two-way conversational deliberation as a solution. By adapting citizen science engagement tools, this approach aims to promote the democratisation of policy development, helping to bridge the gap between parliament and its citizens while encouraging innovative solutions for complex policy challenges.

Citizen engagement is recognised as a cornerstone of democratic governance, yet many public participation methods fail to foster meaningful dialogue and promote inclusive decision-making.

1. Introduction

Citizen engagement is recognised as a cornerstone of democratic governance, yet many public participation methods fail to foster meaningful dialogue and promote inclusive decision-making. This paper addresses the critical issue of enhancing the engagement of Members of Parliament (MPs) with their constituents through the innovative application of citizen science tools. By integrating the principles of human security, which emphasize the protection and empowerment of individuals, this approach seeks to transform the traditional top-down engagement model into a more interactive and participatory process. The potential

of citizen science tools to revolutionise these models is a cause for optimism, bridging the disengagement between parliament and society, making policy development more inclusive and igniting community innovation in addressing complex societal challenges.

Human security, which emphasises the importance of protecting individuals from critical and pervasive threats while empowering them to pursue meaningful lives, exercise their agency, and contribute to society beyond mere survival, is a key aspect of this paper.

2. Citizen Science

Citizen science encompasses a broad spectrum of activities and practices involving public participation in scientific research, ranging from data collection to hypothesis-driven research. It integrates diverse scientific disciplines, including the natural sciences, social sciences, and humanities, aiming to foster shared understanding and collaboration among different stakeholders. Although interpretations may vary, citizen science fundamentally values transparency, inclusivity, and adherence to established scientific principles (European Citizen Science Association, 2020). With their transformative potential, publicly orientated citizen science engagement projects can serve as powerful catalysts for structural change and democratisation within society (Cerrato and Balli, 2024). This two-way process of collaborative and meaningful public engagement as espoused by citizen science principles (Cerrato and Balli, 2024) can facilitate human security-focused outputs through policy-society dialogues, user-centred engagement tools, participatory strategies, community engagement, and co-creation processes.

3. Incorporating Human Security Principles

Human security, which emphasises the importance of protecting individuals from critical and pervasive threats while empowering them to pursue meaningful lives, exercise their agency, and contribute to society beyond mere survival, is a key aspect of this paper. This approach aligns well with the goals of citizen science by advocating for inclusive and participatory methods that ensure the voices of all constituents are heard and valued. The Inter-Parliamentary Union (IPU) underscores the importance of addressing human security concerns through representation within the parliamentary processes, highlighting that MPs should be at the forefront of such initiatives (IPU, 2025).

To enhance the reach and effectiveness of these initiatives, it is crucial to involve various parliamentary institutions beyond just MPs. For instance, parliamentary committees and sub-committees can be pivotal in scrutinising and shaping policies through research and public consultations. Often comprising experts, stakeholders, and civil society members,

these bodies can facilitate more in-depth analysis and diverse perspectives on human security issues, thereby enriching the policy development process.

Further, the role of parliamentary secretariats and research departments can be expanded to include developing and disseminating engagement tools and participatory strategies. These institutional arms can ensure that the information and tools provided are of high quality, accessible, and tailored to the needs of different constituencies.

While the "open interplay of opinion and policy is the distinguishing mark of popular rule" (Lasswell, 1941), this traditionally has been facilitated through town meetings, which were an "iconic form of direct citizen democracy" (Field, 2019) that consisted of propositions, deliberations and votes. However, this approach has now morphed into town hall meetings, which is the established tool of engagement with constituents and the public, where Field argues "those in power unilaterally convey information to their constituents" involving "announcements and questions about foregone conclusions".

This top-down approach can deter engagement from constituents, except those with already polarised opinions, that is, those already committed supporters of the politician or proposal participating in such engagements (Field, 2019) or those opposed to the politician or proposal. Furthermore, the personal abuse and stress politicians face, exacerbated by social media (RTE, 2024), discourage public town hall-type meetings.

4. Interactive and Inclusive Engagement

Politicians are now more open to "interactive, two-way conversational deliberation" (Schooler, 2023) that facilitates dialogue, deliberation, and public engagement in an attempt to move away from this top-down approach. However, they remain wary of the potential for polarised opinions among participants. Neblo, Esterling, and Lazer (2019) emphasise the importance of public deliberation in revitalising democracy. They argue that engaging citizens in thoughtful and informed discussions can lead to better decision-making and more robust democratic processes. They outline several criteria essential for ensuring meaningful public involvement in democratic decision-making, including opportunities for participation from under-represented population cohorts, promoting trust, balanced information, and quality reasoning. Importantly, they stress the need for follow-through with outputs impacting subsequent policies or political approaches.

Parliamentary libraries and information services could be leveraged to provide and/or disseminate balanced and comprehensive information to citizens and parliamentarians. These services ensure that all stakeholders can access the necessary data and context for meaningful deliberations, fostering an environment where everyone feels informed and confident in the democratic process.

Parliamentary outreach programs can also be established to actively engage with diverse community groups, ensuring their voices are not just heard but actively included in the decision-making process. These programs can be instrumental in fostering trust and promoting civic education, empowering individuals to participate more effectively.

"By fostering two-way dialogue and empowering stakeholders, a human security-focused constituent dialogue process can become a powerful catalyst for bringing people together and harnessing collective knowledge to address complex societal challenges."

5. Empowering Individuals through Citizen Science Tools

Applying citizen science tools within the human security framework is a mechanism to achieve non-polarised engagement. Such a framework empowers individuals to contribute to the policy process in several ways (adapted from Cerrato and Balli, 2024):

- **Sharing Knowledge:** Individuals can contribute their expertise, including indigenous knowledge, to inform decision-making.
- **Shaping Policy:** Constituents can actively shape policy through advocacy and dialogue with parliamentarians and policymakers.
- **Raising Awareness:** Human security-focused constituent dialogue initiatives can raise public awareness about pressing issues and foster a sense of collective responsibility.
- **Taking Action:** Individuals can take concrete action to address societal challenges by participating in dialogue activities and advocacy efforts.

These tools can address current weaknesses in the town hall engagement process, making policy more democratic, inclusive, and accessible by involving a broader range of people and benefiting from diverse knowledge sources, thus reflecting the principle behind human security.

6. Fostering Open Dialogue and Collaboration

For such engagements to be effective, organisers, be they parliamentarians or parliament as an institution, must clearly define the main objectives behind the human security framework of dialogue without overpromising outcomes. While a human security framework is by its nature non-partisan (IPU, 2025), this does not negate the importance of political debate and divergent viewpoints in a functioning democracy, with parliament itself being a "Congress of Opinions" (Mill, 2004) where the application of the outputs from such dialogues needs to be debated and discussed. The key role played by parliament has been fundamental to the success of the Citizens' Assembly (2024) model in Ireland, where the outputs from the assembly process are analysed and debated in detail through the parliamentary committee system. Therefore, while the concept of human security should be the basis for the general direction of governance, how it is implemented needs to be debated and agreed upon politically.

7. Parliamentary Dialogue with Citizens

Whatever structure the engagement with the public takes (Appendix 1), it must foster an open dialogue, allowing individuals to share their perspectives, recount experiences, and raise relevant issues from diverse societal viewpoints. For such a method to be successful, parliamentarians must adopt a listening approach, transitioning from providing answers to actively listening to public concerns.

By fostering two-way dialogue and empowering stakeholders, a human security-focused constituent dialogue process can become a powerful catalyst for bringing people together and harnessing collective knowledge to address complex societal challenges. Providing various participation options, incorporating assistive technologies, including Artificial Intelligence (McKinney, 2024), and offering materials in multiple languages ensures inclusivity. Advanced training and support tailored to different experience levels empower participants to contribute meaningfully, as seen in Ireland's Citizens' Assembly (2024).

8. Managing Stakeholder Relationships

Managing relationships between stakeholders and constituents is vital, as interactions can be complex. Potential challenges include divergent viewpoints and collaboration conflicts. Project organisers must develop a clear picture of stakeholder relationships, understand roles and interests, and strategise on the dialogue process to facilitate productive communication and collaboration.

9. Maximising Impact Through Effective Communication

Maximizing effective communication is crucial throughout the project lifecycle (adapted from Cerrato and Balli, 2024):

- **Identifying policy questions**: Engaging diverse stakeholders can spark valuable insights and shape relevant research questions.
- **Designing the dialogue process**: Clear communication fosters collaboration and ensures understanding of goals and methodologies.
- **Implementing the dialogue process**: Consistent communication keeps participants informed and motivated.
- **Interpreting results**: Collaborative interpretation allows diverse perspectives to inform analysis.
- **Disseminating findings**: Effective communication ensures findings reach relevant audiences, maximising impact.

10. Building Trust and Reputation

The public image of members of parliament or the parliament itself significantly influences the effectiveness of the citizen or constituent dialogue process. A strong reputation fosters trust and increases participation. MPs should be mindful of their public image or that of their

party or parliament, integrate trust-building strategies, and prioritise transparency, openness, and accountability.

11. Unlocking the Power of Collective Intelligence

A human security framework of constituent dialogue can unlock the power of collective intelligence and empower individuals to participate actively in policy development. It serves as a tool for uniting diverse stakeholders to tackle societal challenges. By fostering dialogue and collaboration through such a framework, a constituent dialogue process can (adapted from Cerrato and Balli, 2024):

1. Build a more informed society: Provide citizen education that enhances understanding and critical thinking skills, focusing on civic education and human security, which are crucial today.
2. Empower communities: Give communities a voice and a sense of ownership over issues impacting their lives and, through the concept of human security, a greater understanding of the impact on other members of society.
3. Bridge the gap between parliament and society: Promote mutual understanding, trust, and cooperation by applying the concept of human security to enhance awareness of its impact on other members of society.
4. Democratising Policy Development: Enhance the transparency of the policy-making process, promote political literacy, and facilitate access to policy development through a more informed and educated population.
5. Igniting innovation: Foster novel ideas and approaches to addressing complex issues.

This approach transcends traditional policy development, contextualising policy within the community and allowing the public to relate it to everyday experiences.

12. Participatory Dialogue Processes

Table 1 provides a selection of the types of participatory processes where people engage in conversation, dialogue, deliberation, reflection, organisation development, group process, community renewal, collective intelligence, and democracy (Process Arts, 2024). Some processes or combinations might be more effective for policy engagement for parliamentarians, political parties, or parliaments. However, a broad suite of potential tools is available (Appendix 1), many of which effectively deliver a human security approach to solving critical policy issues at both community and national levels.

Artificial Intelligence applications can also significantly enhance the effectiveness of these processes across various stages, from recruitment and planning to follow-up. McKinney (2024) has outlined eleven potential applications but has cautioned that this requires balancing the potential enhancement of capacity with maintaining democratic quality. McKinney advises cautiously implementing hybrid approaches to help mitigate these issues, ensuring AI supports rather than undermines democratic processes.

Table 1: Selection of Participatory Processes

Technique	Practical Explanation
Bohm Dialogue	This form of dialogue emphasises open-ended conversation without predetermined outcomes, encouraging participants to explore and understand different perspectives. For example, in a community conflict over land use, Bohm Dialogue might help stakeholders explore underlying values and find common ground. https://www.bohmdialogue.org/
Community Asset Inventory	This tool involves mapping a community's assets and resources. Residents might identify local skills, businesses, and organisations that can support community development initiatives. https://resources.depaul.edu/abcd-institute/resources/Pages/default.aspx
Deliberative Dialogue	Deliberative dialogue is a structured discussion that encourages participants to consider different perspectives and engage in thoughtful reflection. For example, a community might use deliberative dialogue to discuss the pros and cons of various approaches to reducing crime. https://www.ncdd.org/
Fish Bowl	In a fishbowl, a small group of participants discusses an issue in the centre of a larger circle of observers. For example, a fishbowl discussion on education reform might involve teachers in the centre sharing their experiences while policymakers observe and listen. https://www.betterevaluation.org/methods-approaches/methods/fish-bowl-technique
Human Needs Analysis	Human needs analysis involves identifying and addressing individuals' fundamental needs. For example, it might help ensure housing project designs meet residents' physical, emotional, and social needs. https://www.simplypsychology.org/maslow.html
National Issues Forum	This forum allows citizens to discuss and deliberate on important national issues. For example, a National Issues Forum might focus on healthcare reform, with participants discussing different policy options and their implications. https://www.nifi.org/en/moderators
Photo Voice	Photo Voice is a participatory method where community members use photography to document and share their experiences. For example, residents might take photos of their neighbourhood to highlight issues like unsafe streets or a lack of green spaces. https://www.photovoice.org/

Talking Circle (aka Talking Stick Circle)	A talking circle is a method in which participants take turns speaking while holding a talking stick. It promotes respectful listening and sharing and might be used in a community meeting to discuss and resolve local issues collaboratively. https://www.globallearningpartners.com/blog/talking-circles-more-than-a-technique/
Visioning	Visioning is a process where participants create a shared vision for the future and develop strategies to achieve it. For example, a community might engage in visioning to establish a long-term plan for economic development and quality of life improvements. https://demonstration.engagementhq.com/79723/widgets/380825/documents/239397
World Cafe	World Cafe is a structured conversational process where participants discuss topics in small groups, rotating between tables and building on each other's ideas. For example, a community might use World Cafe to gather input on a new public policy initiative. https://www.theworldcafe.com

As the Process Arts (2024) source did not clearly explain each participatory process, Microsoft Copilot was explicitly requested to provide a simple explanation for each process, which is set out in Appendix 1.

13. Conclusion

In conclusion, integrating citizen science tools within a human security framework offers a promising pathway to revitalising democratic engagement between MPs and their constituents. This approach can address the limitations of traditional top-down engagement methods by fostering open dialogue, empowering individuals, and leveraging collective intelligence. The successful implementation of such initiatives requires the active involvement of parliamentary institutions, the development of high-quality engagement tools, and a commitment to inclusivity and transparency. Ultimately, this model has the potential to democratise policy development, enhance trust between parliament and society, and drive innovative solutions to pressing societal issues.

Please click here to read the full (updated) paper including appendix.

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CADMUS, Volume 5, No.4, July 2025, 96-106

Funding the Sustainable Development Goals is Not a Challenge of Sufficient Capital*

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Abstract

Achieving the Sustainable Development Goals (SDGs) by 2030 faces a substantial funding gap, now at US$14-17 trillion annually, fuelled by global crises including the pandemic, energy shocks, and inflation. While developing countries have been most impacted, global financial assets—totalling US$653 trillion with annual GDP at US$110 trillion—are theoretically sufficient to close this gap. The issue, however, is that most of these assets are either illiquid or deployed to maintain the living standards of the countries in which they are generated, to keep the lights on, or to achieve traditional profit-focused returns. Bridging this gap requires immediate and long-term capital strategies, such as deploying global wealth stocks for one-off investments and reengineering annual GDP flows to support the SDGs perpetually. Major asset holders, including households (US$534 trillion), governments (US$119 trillion), and corporations (US$179 trillion), noting some double counting, must be engaged, although much of their capital is illiquid or aligned to non-SDG objectives. Mobilizing these funds will depend on systemic changes in investment incentives, such as blended finance structures and impact investments that meet risk-adjusted returns. To generate the US$11-12 trillion annually needed by developing countries, a multi-stakeholder approach is essential, including policy reforms to encourage solutions and capital to flow to where they are most needed. Without a swift reallocation of resources, the cost of meeting the SDGs will continue to rise, risking the 2030 timeline. Addressing this alignment issue could unleash the necessary capital, enabling targeted investments in scalable, impactful solutions critical to achieving global sustainable development.

A series of crises, including economic shocks, conflicts, and environmental degradation, have deepened the world's sustainable development challenges. Only 16% of the 169 targets

* This paper draws on the Capital as a Force for Good report issued in September 2024, and is reprinted here with permission of the authors and Greater Pacific Capital.

underlying the SDGs are on track to be achieved by 2030. Half are moderately or severely off-track, and nearly one-third have regressed below 2015 levels. Moreover, the sustainable development challenge is a global one, with no country currently on track to fully meet the SDGs by their 2030 target date.[1]

The cost of meeting the goals continues to increase, with an annual funding gap estimated at US$14-17 trillion, implying a cumulative funding gap to achieve the goals by 2030 of US$112-136 trillion, an increase by up to c.10% over last year.

One of the key challenges facing the goals is funding. The barriers to mobilizing capital for the SDGs are significant. The past half-decade of economic turmoil from the global pandemic, energy shocks, wars, inflation, and in many cases currency depreciation has left many developing countries (and some developed ones too) poorer and more indebted than before, leaving them unable to afford the investments required for sustainable development.[2] Following nearly a decade of inadequate action, the cost of meeting the goals continues to increase, with an annual funding gap estimated at US$14-17 trillion, implying a cumulative funding gap to achieve the goals by 2030 of US$112-136 trillion, an increase by up to c.10% over last year (largely due to the cost of inaction and ongoing inflation).[3]

The good news is that the world has sufficient capital flows and stocks to fund the SDGs. Fundamentally, the world is richer today than at any point in history, with more capital, more billionaires, and more millionaires than ever before. Moreover, the world is continuing to generate new wealth at record rates.[4] With total global assets (liquid and illiquid) of US$653 trillion, and nearly US$110 trillion of annual economic activity (GDP), the world in principle has and generates more than enough wealth to fund the missing US$112-136 trillion to meet the SDGs by 2030, and the incremental US$14-17 annually thereafter.[5] However, this capital is currently deployed to something that it would need to be diverted away from, which may pose a challenge.

Crucially, the US$14-17 trillion annual SDG funding gap is not the annualized fraction of a one-time investment need required to achieve the SDGs by 2030, but the incremental annual spending required to achieve and maintain the goals indefinitely, implying that this funding needs to be mobilized in perpetuity, noting that the amount is likely to decline as breakthroughs are made that drive down costs, particularly in technology. This has two major implications for the sources of capital that need to be tapped to fund the gap.

- The amount and perpetual nature of the spending requirement mean that over the long-term, funding will need to be drawn from the world's flow of capital, requiring the reengineering of the world's US$110 trillion of GDP to provide the annual flows required.

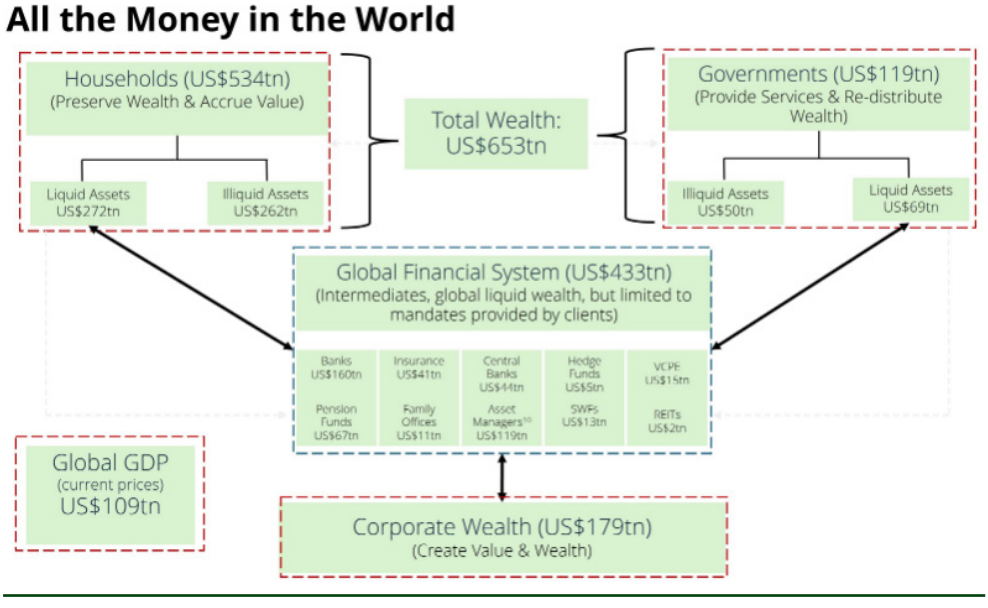
- The ever-shortening runway to the 2030 deadline for the goals, however, means that in the short term, the world will need to draw on the world's stock of wealth to make significant one-off investments in the SDGs, in parallel to the longer-term reengineering of the global economy for sustainability.

Mobilizing the capital needed to meet the SDGs will therefore require accessing both the stock and flow of the world's capital. The world has enough money, but the funding pathways to access it are not there. A key challenge to overcome is that most financial assets globally are not currently aligned with sustainable development priorities, but are aligned with other priorities which may not allow them to be utilised for the SDGs or be made SDG-consistent or compliant.

1. Mapping the World's Wealth

The world's stock of wealth is owned and controlled by a broad set of stakeholders, many of whose priorities, goals, and existing obligations do not lend themselves to funding the SDGs. Moreover, the allocation of capital, particularly for investments, happens in a system that in many cases requires the participation and alignment of several of these stakeholders. Unlocking the world's wealth for the goals will therefore require not just addressing the needs and challenges of ultimate capital owners, but also aligning the incentives within the world's financial system to allow capital to flow where it is needed.

Figure 1: All the Money in the World



Source: Capital as a Force for Good, Report 2024

> *The vast majority of SDG funding is not structured to generate the required risk-adjusted returns, nor is it packaged in traditional asset classes that match the mandates granted to the finance industry.*

The world's liquid and illiquid assets are owned by three distinct stakeholders, each of which has different priorities and objectives that drive how these assets are utilized. These asset owners include:

- Households, representing individual citizens, control most of the world's total wealth, or US$534 trillion, split roughly equally between liquid and illiquid assets. Although over two billion households globally will have vastly different priorities, in general, most households seek to preserve wealth and (passively) build value, investing their assets accordingly.
- Governments, representing the 193 sovereign states in the world, own US$119 trillion in assets, again split roughly evenly between liquid and illiquid assets. Governments' mandates typically focus on the provision of services to their citizens, with a focus on wealth redistribution.
- Corporations, overwhelmingly in the private sector, control a total of US$179 trillion in assets. With the vast majority of these corporations focused on economic/commercial activities, their priority is the generation of wealth in the form of profits, and they deploy their assets accordingly.

It is worth noting that corporations are not the ultimate owners of wealth, being themselves owned in turn by households or governments, implying that the total amount of wealth in the world is the sum of the assets owned by these two ultimate owners, totalling US$653 trillion.

2. The Global Financial System and Liquid Wealth

The majority of the world's liquid wealth, including cash, stocks, bonds, and other easily tradable financial instruments, irrespective of its proximate or ultimate owners, is held within the global financial system. The system consists of multiple layers of private and public financial institutions and intermediaries that administer, move, invest, monitor, and distribute capital across a wide range of asset classes and strategies. In addition to banks, pension funds, insurance companies, and asset managers the system includes central banks, development banks, sovereign wealth funds, investment banks, brokerages, and alternative asset managers, in addition to platforms like payment networks, stock exchanges, and credit card processors.

Critically, this system, which administers US$433 trillion in total assets, manages liquid wealth and is responsible for allocating capital within the constraints set by the mandates provided by each stakeholder, whether it's preserving wealth, funding services, or supporting the generation of profits. In almost all cases, these mandates require that assets generate an appropriate risk-adjusted return. However, the vast majority of SDG funding is not structured to generate such risk-adjusted returns, nor is it packaged in traditional asset classes that match the mandates granted to capital allocators like banks, pension funds, or other asset managers.

With 145 countries (out of the world's 193 countries in the world) having only 40% of global GDP, economic growth alone will not enable the world to fund the SDGs, and will require mobilizing the world's wealth in a meaningful way.

Unlocking the world's liquid wealth will require either the scaled creation of funding opportunities that meet owners' current capital requirements or a realignment of owners' and allocators' incentives to revalue sustainable development outcomes. Put simply, to meet the SDGs the world will need to change what it funds and this requires it to find ways to make funding SDGs attractive, and/or change the incentives for those capable of funding.

3. Illiquid Assets

Roughly half the world's wealth today is in the form of illiquid assets (or even fixed assets) that cannot be readily sold or redeployed. For instance, a household's illiquid wealth is often tied to real estate, while governments may have their illiquid assets in the form of hospitals, schools, and other public infrastructure. Corporations hold illiquid assets in the form of property, plant, equipment, and intangible assets like intellectual property (IP). The scope to leverage these illiquid assets for the SDGs is highly restricted. For one thing, these assets are typically fixed long-term assets that cannot be redeployed or repurposed (at least not easily). Further, most illiquid assets are already tied to specific and essential use cases, like providing homes to families, education to communities or transportation to local economies.

Illiquid assets however, can contribute to the SDGs to the extent that they can be made sustainable—buildings can be made 'energy efficient', schools can prioritize specific education targets of SDG4 as required and public transportation can be decarbonized. When they are replaced, they can be replaced sustainably too.

While such upgrading of illiquid assets for sustainability will clearly have a positive impact on the SDGs, there remains a fundamental geographic mismatch between illiquid (and immobile) assets and the world's sustainable development needs. The SDGs call for a baseline minimum level of development for the world. Most industrialized and middle-income countries have already exceeded this baseline in terms of fixed asset infrastructure, having more schools, more hospitals (and doctors), and more (and larger) housing than would

be needed to achieve the goals, while developing and least developed countries remain sorely lacking in all these things. Meeting the SDGs in developing countries will therefore require new investments, rather than the repurposing of existing assets, and this in turn will require drawing on the world's liquid wealth.

Assuming that all incremental government consumption and investment in the developing countries were to be SDG aligned, it would still take almost 20 years for domestic resources to fill the SDG funding gap, missing 2030 deadline by 12 years.

4. Unlocking Global Wealth for Sustainable Development

Over the long term, the answer to the world's sustainable funding gap must be one of economic development, creating sufficient economic activity and capital stock in each of the world's 193 countries to fund sustainable development activities. Indeed, at currently projected global growth rates, the world will generate the required annual incremental GDP of US$14-17 trillion by 2027.

However, only a fraction of this will, in practice, be available for sustainable development. US$3.5-4.5 trillion of economic activity will be in the form of fixed investments, and a further US$2-3 trillion in government consumption.[6] More importantly, there is a geographic mismatch in economic activity and SDG investment needs. The world's 145 developing countries represent c.75% of the total SDG funding gap (requiring c.US$11-12 trillion in annual spending to close the gap) while having only 40% of global GDP.[7] Economic growth alone, therefore, will not enable the world to fund, much less achieve, the SDGs, at least not on a timetable that aligns with global 2050 net zero commitments. Meeting the SDGs will therefore require mobilizing the world's current stock wealth in a meaningful way. This stock includes both domestic and international pools of capital.

5. Developing Country Domestic Capital Insufficient to Fund the Goals

The majority of SDG funding today comes from public sources, which is unsurprising given that over a third of SDGs' underlying targets are wholly reliant on public spending. In many rich, industrialized countries, the current level of public spending is likely sufficient to meet the SDGs, the question is one of the allocation of public wealth, not its quantum. Most of the SDG spending gap in industrialised countries relates to the incremental investments required to achieve Net Zero by 2050, where any shortfalls in public spending are increasingly being closed by private funding given the well-established business cases around renewables and electrification investments.

For the majority of the world's countries, however, public spending levels are wholly insufficient to meet the SDGs, even in principle.

Table 1: Public Spending by Region

Countries	Total GDP US$ tn	Public Fixed Capital Formation as a % of GDP	Public Consumption as % of GDP	Total Public Spending as % of GDP	Total Public Spending in US$ tn
Developed Economies	58.8	3.4%	17.6%	21.1%	12.4
Developing Economies	39.1	11.0%	14.9%	25.9%	10.1
Of which Least Developed Countries	1.5	5.8%	9.3%	15.1%	0.2
Of which Heavily Indebted Poor Countries	1.1	5.5%	11.4%	16.9%	0.2

Source: The World Bank, IMF

Assuming that all incremental government consumption and investment in the developing countries were to be SDG aligned, it would take almost 20 years (based on current public spending levels) at an average annual economic growth rate of 4.0% for public spending to rise to a level that fills the SDG funding gap, missing the goals' 2030 deadline by 12 years.[8] The mobilization of domestic private capital will be critical in shortening this runway.

Domestic savings are critical not just as an engine of economic development but also as a source of private investments. While a small number of developing and middle-income countries are accumulating domestic savings at a rate above the global average of 28% of GDP (e.g. China at 46%, Indonesia at 38%, and India at 29%), the world's 46 least-developed countries generate savings equal to only 18%, and Sub-Saharan Africa only 4%.[9] Against this backdrop, most developing countries are unlikely to increase private fixed investment rates over the near term, implying that private investment will grow in line only with overall economic growth.

Table 2: Private Fixed Investment by Region

Countries	Total GDP US$ tn	Private Fixed Capital Formation as a % of GDP	Private Fixed Capital Formation in US$ tn	Private Fixed Capital Formation plus Public Spending in US$tn
Developed Economies	58.8	18.0%	10.6	23.0
Developing Economies	39.1	23.4%	9.1	19.2
Of which Least Developed Countries	1.5	16.1%	0.2	0.5
Of which Heavily Indebted Poor Countries	1.1	13.6%	0.2	0.4

Source: The World Bank, IMF

However, given that the value of private fixed investment in the developing world exceeds that of public spending, aligning future incremental investments with the SDGs

would still significantly shorten the runway to the developing world being able to fund sustainable development. Including both incremental private fixed capital formation and government spending, developing economies will generate an additional US$11-12 trillion annually by 2035.

Measured against the US$433 trillion in global liquid assets, a c. US$10 trillion funding requirement appears to be manageable. Mobilising this however would require more than tenfold increase in FDI into developing countries.

This still leaves a decade of SDG spending shortfalls that cannot be met by domestic capital sources. Moreover, the above calculations are aggregate totals for developing countries as a whole. The world's 46 least developed countries are home to c.13% of the total population (c.900 million people), but only about 1.3% of global GDP.[10] At current private investment and public spending rates (and 4% GDP growth), it would take until 2060 for these countries to generate US$1.5 trillion in incremental annual capital (their pro-rata share of developing countries' SDG funding gap). These gaps will need to be closed by international capital.

6. International Capital Required to Bridge the Gap

In terms of external public capital, there are various current funding routes for sustainable development capital flows into the developing world. All of them share two features: firstly, they all rely on public funding sources, and secondly, they are all tiny in terms of capital mobilization relative to global wealth. These include official development assistance (ODA),crucial for supporting various SDG-related sectors such as health, education, and infrastructure, (US$223 billion annually) or multilateral aid agencies (e.g. the World Bank, the IMF, and regional development banks) which offer grants, concessional loans, and technical assistance to support SDG implementation, (c.US$100 billion annually) and other global initiatives and partnerships like the Global Environment Facility (GEF) or the Green Climate Fund (GCF), which provide targeted funding for specific SDG-related goals, (currently less than c.US$10 billion annually in the aggregate), and newer mechanisms like the climate loss and damage fund agreed at COP28.

Although these public funding pathways need to be scaled significantly as a matter of urgency, they cannot be increased 30-40-fold to close the US$11-12 trillion gap in developing countries, creating the need for the world to unlock significant private capital flows. G20 nations have already called on the MDBs to implement various measures to increase their capitalisation, and increase their lending headroom by c.US$360 billion over the next decades.[11] If the world were to achieve this across both multilateral mechanisms and ODA more broadly, this could increase annual SDG funding in developing countries by c.US$1 trillion, leaving an initial balance of US$10-11 trillion to be funded by private international capital.

Measured against the US$433 trillion of assets in the global financial system, or even against the US$272 trillion in liquid household wealth, the funding requirement appears to be manageable, at least at first glance. However, the annual figure to be mobilised implies a more than tenfold increase in FDI into developing countries, which currently stands at US$867 billion annually. Scaling cross-border capital flows to this level will require scaling numerous funding pathways into developing economies, and accessing multiple pools of international private capital. The key pools of private capital to be tapped include:

1. **Traditional Investment Capital (c.US$430 trillion)**. Private sector capital invested for profit (which represents the overwhelming majority of global liquid assets) will naturally flow into scaled and proven SDG solutions that can be deployed to generate attractive risk-adjusted returns, subject to target countries offering adequate implementation pathways.
2. **Impact Capital and Sustainable Finance (c.US$1 trillion)**. Impact development capital can finance opportunities with less attractive (but still viable) business cases. The capital pools are largely managed by sustainable and impact investors, who focus on generating positive, measurable social or environmental impact alongside a financial return, recognizing that the pool of impact capital represents only a fraction of the world's liquid assets.[12]
3. **Philanthropic Capital (US$1.5 trillion)**. Philanthropic capital represents the only private sector pool of capital to fund sustainable development projects that are not revenue-generating, despite creating significant value (e.g., natural conservation or biodiversity engagement). While annual philanthropic flows of aid to developing countries are currently around only US$60 billion, a new generation of international philanthropies is redefining the scope and scale of capital deployment to these regions.[13] The US$50 billion Gates Foundation for example, operates in more than 130 countries around the world, more than twice as many than tech giants like Amazon or Alphabet do.
4. **Blended Finance Solutions (c.US$1.5-5 trillion)**. SDG projects whose risk-adjusted returns fail to meet the hurdles to attract private sector capital can seek to employ blended finance solutions, using development capital to de-risk and rerate opportunities, including through structures like private-public partnerships or credit guarantees. The scale of this funding pathway is limited by the amount of global development capital available, with a dollar of development capital attracting on average between three to ten dollars of private capital, depending on the project and risk levels involved.

The quantum of capital pools demonstrates clearly how critical private investment pools are to meeting the SDGs. The stark difference in scale between traditional investment capital and the other pools highlights the challenge of mobilizing the initial US$10 trillion of annual funding into developing countries, namely that the overwhelming majority of this funding demands market rates of risk-adjusted returns.

7. Conclusion: Closing the SDG Gap is a Multistakeholder Effort

Closing the SDG gap requires more than just money it also requires projects that can deliver a material positive impact against the goals and their targets. Given the shortening runway to the 2030 target date for the goals' achievement, the world will need to prioritise solutions that are scalable, proven, and suitable for global deployment. Leveraging existing and economically viable solutions will result in capital flowing willingly to opportunities rather than developing countries needing to ask for capital to solve problems. The 2024 Capital as a Force for Good report identified nine 'Big Ideas' which give rise to solutions and initiatives that can materially progress the SDGs, but there are likely many others. Some of these solutions will be systemic, some strategic, some tactical, but cumulatively they can shift the world to a more stable and sustainable footing.

Every solution will require a (potentially) significant capital investment to deploy and in some cases to operate. Capital follows solutions, so this is a good starting point. For more commercially marginal decisions, unlocking this capital requires something to change that aligns interests with sustainable development priorities. This may well require new incentives to make SDG-related investments attractive to private capital. Entrepreneurs and innovators who roll out solutions have a key role to play in this regard, as do innovative funding structures that can transfer risk or increase returns to private investors.

But the target countries in which solutions are deployed are also critical. National governments need to be ready to partner with solution sponsors and funders, developing both financing and implementation pathways, to allow international solutions and capital to flow. On the policy front, this includes basic fundamentals like promoting economic and social stability and strengthening governance and institutions. But it also includes creating an attractive business climate, protecting investor rights and allowing for the repatriation of capital, and providing sufficient investment incentives, offering reasonable tax breaks, exemptions, and incentives to both foreign and domestic investors. Compromises will be required on the side of investors with capital and countries with needs to achieve the goals in the near term, which in the longer term will benefit all.

Despite spiralling costs following nearly a decade of inadequate action, the world has enough money to fund the SDGs. However, unlocking this capital in the near term will require a multistakeholder effort to align asset owners' and allocators' priorities with sustainable development and create funding pathways that access diverse pools of capital around the world and scale economically viable solutions globally.

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CADMUS, Volume 5, No.4, July 2025, 107-114

Securing the Future with Deep Tech, Quantum Information Science, and AI

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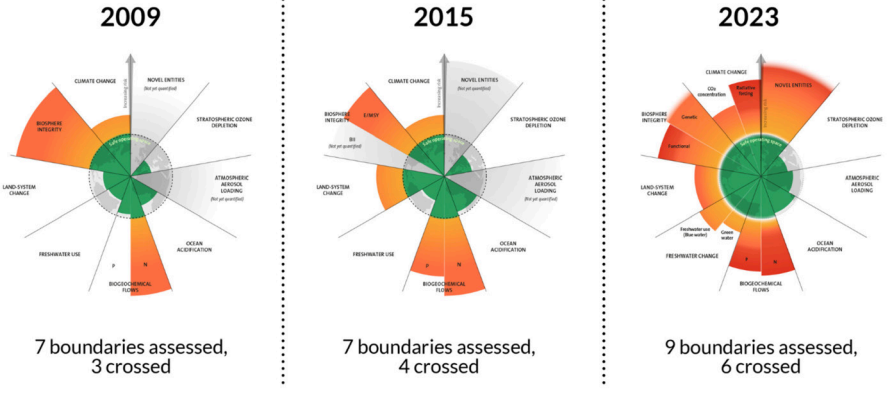
Abstract

This paper centers on the critical role of deep technologies, Quantum Information Science (QIS), and the often-overlooked potential of artificial intelligence (AI) in ensuring a sustainable future. While public sphere discussions often center on the downsides of artificial intelligence (AI) and the need for regulation, this chapter emphasizes how deep technologies, leveraging AI, are currently driving significant progress across essential sectors of the economy, including energy, food, and transportation. This chapter argues that by harnessing advanced innovations, we can effectively address current crises and disruptions. It makes a compelling case for prosperity rather than austerity and shows the transformative potential of these technologies in achieving net zero goals, positioning deep technologies and Quantum Information Science with AI as essential catalysts in the pursuit of a sustainable future.

1. No Retreat from Climate Change without Prosperity

Figure 1: The evolution of the planetary boundaries framework. Licenced under CC BY-NC-ND 3.0 (Credit: Azote for Stockholm Resilience Centre, Stockholm University. Based on Richardson et al. 2023, Steffen et al. 2015, and Rockström et al. 2009).



The stability of Earth relies on its operating system, specifically its nine Planetary Boundaries (PB) that regulate it and include biosphere integrity, freshwater availability, ocean acidification, biochemical flows, land-system change, ozone depletion, and climate change—please note that climate change is one out of many other planetary boundaries. Unfortunately, six of the nine boundaries have already been breached (Figure 1) and threaten life and human activity as we know them.[*]

Any transformation presupposes a change of mindset—reflecting the highly influential emotional, spiritual, psycho-social, and cultural factors—that must evolve to enable transformation toward sustainability.

Tessa Moeller et al. argue the risks associated with the tipping of safe planetary boundaries in response to overshoots, could be reduced *if* planetary warming is precipitously reversed by decreasing greenhouse gas emissions to net zero or below by 2100.[†] Moeller et al. join other scientists including the director of the Potsdam Institute, Johan Rockström et al., who agree if (1) *all* economic transactions begin to account for the *total cost* of planetary damage, (2) collective planning and global cooperation are increased, (3) cutting-edge technologies such as AI (and I would add Quantum Information Systems) are included, and (4) rapid acting, to name a few major activities.[‡]

It goes without saying that any transformation presupposes a change of *mindset*—reflecting the highly influential emotional, spiritual, psycho-social, and cultural factors—that must evolve to enable transformation toward sustainability.[§] RethinkX founders, Tony Seba and James Arbib view the "reductionist, narrow, linear mindsets" of current incumbents as the main reason that currently prevents transformation.[¶] Continuing to patch up "old systems through 'Band-Aids' solutions which address the symptom not the cause," (p. 56) will only accelerate the collapse they contend. Conventional frameworks, Seba and Arbib argue, are an "extraction-based system of production" driven by zero-sum game trade-offs that fail to appreciate the complex processes of change. Conventional frameworks often fall short to fully understand their own system dynamics leading to an underestimation of both the threat posed by unsafe planetary boundaries and the potential of technology to mitigate them. But there is tremendous hope.

[*] Planetary boundaries, https://www.stockholmresilience.org/research/planetary-boundaries.html

[†] Tessa Moeller, et al, "Achieving net zero greenhouse gas emissions critical to limit climate tipping risks," *Nature Communications* 15 (2024). [DOI: 10.1038/s41467-024-49863-0].

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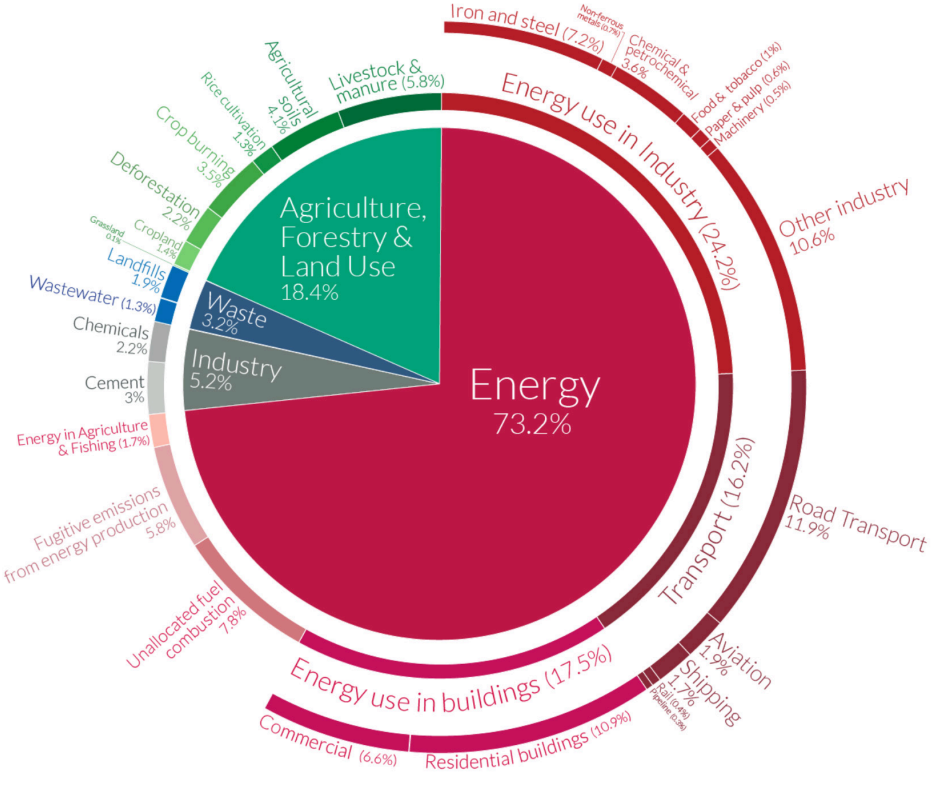
[§] Mariana Bozesan, "Turning Mindshifts into Transformation Leadership," in *Transformation Literacy*, eds. Petra Künkel and Kristín Vala Ragnarsdóttir (Cham: Springer, 2022), 235–253 https://doi.org/10.1007/978-3-030-93254-1_16

[¶] Tony Seba and James Arbib, *Rethinking Climate Change: How Humanity Can Choose to Reduce Emissions 90% by 2035 through the Disruption of Energy, Transportation, and Food with Existing Technologies* (RethinkX, 2021), 56 https://www.rethinkx.com/publications/rethinkingclimatechange2021.en

2. Net Zero is within Reach

More than 90% of greenhouse gas emissions come from three economic sectors, namely energy supply (57 %), food production (18.4 % from agriculture, forestry and land use) and the transport sector (16.2 % from road transport, aviation and shipping) (Figure 2).[1]

Figure 2: Global greenhouse emissions by sector in 2016 – Source: Climate Watch, the World Resources Institute (2020). Licenced under CC-BY by the author Hannah Ritchie (2020)[*]



The technologies required for transformation are already here or will be available before 2035. However, these are leading to massive disruption because they now offer superior capabilities at significantly lower costs compared to older technologies.[†]

In addition, AI today is perceived by many as a *seemingly* new phenomenon, especially since the emergence of Large Language Models (LLMs) such as ChatGPT in 2022. However,

* Hannah Ritchie, "Sector by Sector: Where Do Global Greenhouse Gas Emissions Come From?" *Our World in Data* (2020) https://ourworldindata.org/ghg-emissions-by-sector

† Seba and Arbib, *Rethinking Climate Change*

those of us with several decades of experience in this field know that AI has been developing continuously, but *exponentially*, for over 70 (!) years. Alan Turing's famous paper on the so-called imitation game, the "Turing Test", was published in 1950, and the Dartmouth AI Conference took place in 1956. The "sudden" appearance of LLMs is therefore the result of a long and ongoing development, and it represents only a small part of AI. This also means that we are only at the beginning of a new era that promises a wealth of opportunities if pursued in a sustainable way.

Without advanced tech, the pace of innovation towards net zero emissions in most sectors of the economy would be slower, less efficient, and potentially more expensive.

3. There is Hope

Deep tech and especially quantum information science (QIS), which we will discuss briefly later, are not yet on most people's radar but will play a key role in shaping our sustainable future. They aim to deliver technological solutions based on significant scientific and engineering challenges and not only provide the tools needed to innovate but dramatically accelerate the pace of development and transformation of critical infrastructures. Without advanced tech, the pace of innovation towards net zero emissions in most sectors of the economy would be slower, less efficient, and potentially more expensive. The level of automation, precision, and effectiveness that these technologies offer is crucial for critical infrastructure such as energy, transportation, and food, but also healthcare, medical technology, robotics, IoT/IoE sensor industry, global gigabit connectivity, high-bandwidth brain-computer interfaces (BCI), AR/VR, etc.

In his book *Brighter*, Adam Dorr argued:*

- The technologies to address climate change and reduce the 90% of Greenhouse gas emissions are available today. Technology "disruption is coming and cannot be stopped" (p. 154). Below, we will discuss in more detail what technologies and how they are being applied. They will also help withdraw excess carbon dioxide from the atmosphere to go below net zero and restore planetary boundaries and planetary damage.
- It can be done before 2040 and much faster than is generally believed.
- It is financially viable and can be achieved through prosperity and not austerity, which would condemn billions of people to poverty. In fact, Dorr argues against conventional thinking including that of climate emergence activists who propose degrowth to address climate change. In his view, the degrowth theory fails to understand the whole complexity of climate change and compares it with bloodletting in the Middle Ages before the existence of modern medicine.

* Adam Dorr, *Brighter: Optimism, Progress, and the Future of Environmentalism* (San Francisco: RethinkX, 2023)

> *Technology development is the apex of the human capacity to impact the world through collective intelligence and, despite its failures, it may be our only chance to address climate change in time.*

- It can be achieved within the current economic and market environment, but it must be done in a sustainable and focused manner, through a timely approach, and by keeping the cost down.
- The transition will not happen without massive disruptions in the major sectors of the economy namely energy, transportation, and food, which means people must brace for the negative impact of that transformation.

Technology development is the apex of the human capacity to impact the world through collective intelligence and, despite its failures, it may be our only chance to address climate change in time. Whereas biological evolution took 3.5 billion years to develop cells from the onset of the first life-form, it took technological evolution only 14 years to move from the invention of the first personal computer in 1975 to the World Wide Web when global collective intelligence began to come online. Tech development is a function of the *exponentially growing complexity*, a concept many find difficult to grasp due to our innate tendency to think *linearly*. Nevertheless, our future depends on our ability to understand complexity to shape our future, to adapt, and to act in a timely manner.

3.1. Transformation of the Energy Sector

The truth about the energy transition is simple: the old, fossil fuel-based technologies are less and less able to compete economically with the new ones. The transformation in the energy sector is being driven by the cost-effective use of solar panels, wind turbines, batteries, and their convergence, even if we continue to use energy from fossil fuels (coal, gas, oil) or nuclear energy in the transition phase. Despite initial challenges, sustainable technologies have seen significant price reductions since 2010: The cost of photovoltaics has fallen more than 20-fold, the cost of offshore wind capacity has fallen more than 3-fold and the cost of lithium-ion battery capacity has fallen almost 45-fold.* In the first half of 2024, wind and solar generated more energy than fossil fuels and have overtaken fossil fuels in the EU for the first time in a half year period according to think-tank Ember.† Wind and solar grew to an all-time high of 30% of the EU's electricity in the first half year of 2024 compared to 27% from fossil fuels that fell by 17% according to the same source.

Deep tech with the support of AI is contributing significantly to advances in the development of fusion reactors, which promise an almost unlimited and clean energy supply.

* Tony Seba and James Arbib, "Switching to Clean Technologies," *RethinkX*, https://www.rethinkx.com/faq-and-mythbusting/switching-to-clean-technologies

† E. Graham and N. Fulghum, "Wind and Solar Overtake EU Fossil Fuels in the first half of 2024" *Ember Climate*, July 30, 2024, https://ember-climate.org/latest-insights/eu-wind-and-solar-overtake-fossil-fuels/

They rely on advanced fields such as advanced materials science and plasma physics. These technologies are critical for optimizing plasma confinement in stellarators and tokamaks and are essential for maintaining stable fusion reactions. One deep tech investment example is Proxima Fusion, a Munich-based start-up developing the first generation of fusion reactors based on quasi-isodynamic stellarators with high-temperature superconductors to lead the world into a new era of clean energy. It is important to recognize that the use and especially the convergence of these new technologies heralds the end of the fossil fuel era. It is essential not to get caught up in the stranded assets of traditional energy sources.

3.2. Transformation of the Transportation Sector

Like energy, the transportation sector is complex but equally important in reaching net zero. Technological, economic, and social forces are creating feedback loops and destabilizing today's transportation sector, primarily for economic reasons. The transformation is being driven by advances in electric vehicles, improved batteries, autonomous driving, ride-sharing, and ride-hailing.

Autonomous vehicles (AV) and ride-hailing platforms, for example, represent the application of AI in transportation. Here, AI is used for various important functions such as image recognition, decision-making, and navigation. Similarly, ride-hailing platforms such as Uber and Lyft rely heavily on sophisticated AI algorithms. These platforms use AI to efficiently manage logistics, predict demand, introduce dynamic pricing, and optimize routes.

In particular, the convergence of these technologies is reshaping the new industry. "Transport as a Service" (TaaS) will eventually relieve the roads of parking spaces, the planet of unnecessary greenhouse gas emissions, and, especially, people of the cost and burden of unwanted car ownership.

3.3. Disruption and Transformation of the Food Sector

Imagine obtaining your food, especially proteins, without animal husbandry or slaughter, while significantly reducing greenhouse gas emissions during its production. And without antibiotics, pathogens, or parasites. Agriculture, forestry, and land use are responsible for 18.4% of global greenhouse gas emissions. The dynamic transformation currently taking place in the food sector will bring significant positive changes by 2030 and open exciting opportunities while significantly reducing greenhouse gases. This anticipated paradigm shift will be driven by the economic benefits of precision fermentation and cellular agriculture, ushering in a new era of innovation and sustainability.

Precision Fermentation (PF) and Cellular Agriculture (CA)

Fermentation has been part of human culture for centuries and is used in beer brewing, bread making, and food preservation. Since the early 1980s, precision fermentation has also played a key role in the pharmaceutical industry. It helps in the production of drugs such as human insulin, growth hormones, and vaccines. It makes it possible to genetically modify microorganisms such as bacteria, yeast, or algae using techniques such as CRISPR-Cas9 to produce desired molecules through fermentation. These are then purified and used for food production.

Like precision fermentation, cellular agriculture is revolutionizing food production by culturing animal cells outside the animal to produce meat or dairy products without livestock. This offers benefits for animal welfare, reduces environmental impact, and mimics conventional animal products, but still has challenges in production costs and scaling.

AI plays a key role in both these deep technologies to increase productivity and efficiency and ensure quality. In precision fermentation, AI analyzes sensor data such as temperature and growth rates to create optimal conditions, detect anomalies early on, and scale up production. In cellular agriculture, AI optimizes the control of bioprocesses and the development of cell lines. It also helps with the structural composition of cells to replicate the texture of conventional meat products. Both technologies are considered "deep tech" as they involve complex biological and technical processes based on advanced science.

Humanity is expected to experience the greatest change in food and agricultural production since the dawn of agriculture 10,000 years ago. This economically driven disruption is primarily focused on proteins. By 2030, modern proteins could cost five times less than animal proteins, and by 2035, ten times less—competing with sugar. These proteins will surpass traditional proteins in nutritional value, health benefits, taste, and variety. Cellular agriculture will further revolutionize the sector so that by 2030, modern foods will not only be of higher quality, but also over 50% cheaper to produce than animal products.

A significant environmental benefit of food production through precision fermentation and cellular agriculture is the drastic reduction in the amount of land required for animal husbandry. This change could lead to significant environmental benefits. The oceans will also benefit, as reduced commercial fishing and the availability of seafood from precision fermentation and cellular agriculture will allow marine ecosystems to recover.

4. Quantum Information Science (QIS)

Given the current preoccupation with AI, it would be easy to miss the extraordinary importance of Quantum Information Science (QIS), a cutting-edge field that combines the principles of quantum mechanics with information science, including AI, and is pioneering in several areas:

- *Quantum sensors* use quantum properties to measure physical quantities with extreme accuracy. The enhanced sensitivity of quantum sensors can lead to significant improvements in fields such as navigation, medical imaging, biomedical research, and geological surveying. Emerging prototype quantum sensors are diamond nitrogen-vacancy (NV) color sensors and optically pumped magnetometers (OPMs). They are shown to have improved stability, accuracy, precision, and ultra-sensitivity, and can be used at reduced costs compared to current methods using classical physics. Other encouraging technologies are quantum sensors based on entangled photonics. This light-based quantum technology could make communication networks and computers nearly unhackable, and can be produced entirely on a chip.
- *Quantum communication and quantum cryptography* use quantum states to enable extremely secure data transmission that protects against eavesdropping and cyber

threats. This ultra-secure method of encryption is crucial for protecting sensitive information in an increasingly digital world threatened by AI-driven cyber security attacks.

- *Quantum security* uses quantum algorithms and principles to better protect data against AI-based cyber threats.
- *Quantum algorithms* have been specially developed for quantum computers and enable calculations to be carried out at unprecedented speeds thanks to quantum superposition and entanglement. Notably, software-based products powered by quantum algorithms such as those developed for example by Kipu Quantum can significantly reduce the number of physical qubits required—by several orders of magnitude.* This makes it feasible to solve relevant problems much earlier in the quantum technology lifecycle. Starting from about 1,000 moderately noisy qubits, which characterize the current Noisy Intermediate-Scale Quantum (NISQ) era of hardware development, these algorithms can already achieve commercial usefulness for certain applications including the development of new materials, drug research, or protein folding.
- *Quantum computers*: Perhaps the best-known application of QIS: Quantum computers work with quantum bits (qubits) and can perform complex calculations at high speed, including in drug research, materials science and the modeling of complex systems.

At a time when exponential innovation in deep tech, amplified by AI is rapidly accelerating productivity, unprecedented opportunities are coming online that help address the great global challenges including climate change. Disruptions in critical infrastructure sectors such as energy, life sciences, transportation and food production are the key levers. Technologies such as quantum information science and AI are driving the transformation towards a sustainable economy and setting new benchmarks for the pace of progress. This should give us tremendous hope. Despite the major challenges, these technological breakthroughs offer us unique opportunities to shape a sustainable future for humanity. This marks the beginning of a new era of prosperity where integral sustainability is the key to making transformation to a sustainable future feasible.

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CADMUS, Volume 5, No.4, July 2025, 115-120

Valuable Lessons from the 20th Century Yet to Be Mastered

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Abstract

This article reflects on the enduring lessons of the 20th century, lessons we once believed had propelled us irreversibly beyond the old scourges of war, oppression, poverty, and environmental harm. The optimism that blossomed at the close of the Cold War remains unfulfilled, as resurgent nationalism, socioeconomic imbalances, and the threat of nuclear proliferation signal that we have yet to internalize the lessons that history tried to teach us. Drawing on pivotal moments from two World Wars and the Great Depression to the creation and partial dismantling of global governance structures, this discussion underscores the reality that progress, though significant, is neither guaranteed nor permanent. Much like the founders of WAAS, who labored to rein in the very nuclear weapons they had helped develop, humanity continues to grapple with the unintended consequences of unchecked technological and social change. Economic instability, environmental crises, and persistent inequalities all serve as stark reminders of how easily we can backtrack if our vigilance fades. Yet the same era that witnessed catastrophic wars and rampant colonialism also gave rise to groundbreaking initiatives in human rights, agricultural revolutions, and broader education, each demonstrating our collective power to transform adversity into opportunity. This paper argues that recognizing the past as an invaluable repository of both cautionary tales and inspirational successes is essential to forging a more secure, prosperous future. Ultimately, it urges us to harness our collective knowledge, to not merely learn from history but also to muster the foresight and moral courage necessary to steer our world toward sustainable peace and shared well-being for all.

Sri Aurobindo once wrote that "history teaches us nothing." Perhaps he was referring to the troubling pattern of recurring errors in human history and humanity's unwillingness or incapacity to learn from the valuable lessons of our collective past.

The progress of humanity after the end of the Cold War encouraged many to conclude that periods of violent warfare, social oppression, and poverty were nearing an end. It was believed that humanity had finally learned the essential lessons required to navigate

into a future characterized by international cooperation, peace, democratic freedoms, and prosperity for all. It is now evident that after the remarkable gains of the 1990s, critically important lessons had not yet been fully learned. No one had the foresight to anticipate the revival of financial instability, persistence of poverty, retreat from democracy, return of competitive nationalism, and weakening of multilateralism and acceleration of environmental degradation that are now in the process of reversing some of the most important gains of previous decades.

Scientists and policymakers need to think through the implications and accept responsibility before technological innovations are deployed when there is still time to consider alternatives and establish effective global governance mechanisms.

Sri Aurobindo once wrote that "history teaches us nothing." Perhaps he was referring to the troubling pattern of recurring errors in human history and humanity's unwillingness or incapacity to learn from the valuable lessons of our collective past. Looking back, we find that the 20th century offers profound lessons for those willing to learn from it. As rational beings, we are expected to avoid repeating past mistakes. As we navigate the 21st century, it is crucial to reflect on these lessons to prevent further historical missteps from recurring. This article explores some of the most valuable lessons that the 20th century offers.

1. World Wars and Nuclear Threats

The 20th century was marred by two catastrophic World Wars, resulting in the loss of tens of millions of lives and massive global upheaval. The specter of nuclear warfare once again looms large in the 21st century, with stockpiles of nuclear weapons continuing to pose a grave threat to global security. The Cold War era saw the proliferation of nuclear weapons. The end of the Cold War brought a substantial reduction in the number of warheads and the potential threat of their use, but recently the risk of nuclear conflict has once again risen to Cold War levels. These developments underscore the necessity for renewed disarmament efforts and more robust international diplomacy.

WAAS was founded by several scientists who played a seminal role in the development of nuclear weapons and by others who joined them in actively trying to stop proliferation and banning their use. Eight decades later, we are still struggling to put the genie back in the bottle and are unsure how to do it. The lesson implied is that scientists and policymakers need to think through the implications and accept responsibility before technological innovations are deployed when there is still time to consider alternatives and establish effective global governance mechanisms. Today, the same challenges confront scientists, organizations, and governments with respect to AI and AGI.

2. Imperialism, Nationalism, and Global Governance

The early 20th century was characterized by aggressive nationalism and imperialism, culminating in World War I. The failure of the League of Nations to prevent a repetition of World War highlighted the need for a more effective international organization. The United Nations aimed to address this gap but has proven incapable of preventing the repetition of wars within and between nations. Reforms to enhance the UN's effectiveness, such as expanding the Security Council's membership, abolishing the veto power, and promoting complete nuclear disarmament, are essential for maintaining global peace and security but are as difficult to achieve as any time since the UN's founding.

Over the past eight decades, multilateral institutions have played a very important role in preserving and restoring peace, addressing poverty, advancing healthcare, increasing food production and availability, promoting international trade, financing development, regulating international financial institutions, establishing effective legal frameworks and institutions to promote world business, fostering and regulating global education, supporting the development and dissemination of scientific research, advancing global telecommunications and transportation, and a host of other essential services. Yet, national governments and their electorates remain reluctant to concede the authority and provide the essential resources required for multilateral institutions to effectively address the complex, interdependent challenges confronting humanity today. Too many policymakers and citizens have yet to recognize the indispensable role of international institutions in ensuring a secure and sustainable future for all humanity.

3. Economic Lessons from the Great Depression

The Great Depression revealed the vulnerabilities of an unregulated financial system and the dangers of speculative investments. The 1930s were a period of unprecedented economic turmoil that began in the US and extended to affect many other countries. The global economy contracted sharply, with World GDP shrinking by approximately 15%.* The New Deal, introduced by President Franklin D. Roosevelt, played a critical role in alleviating the crisis. The introduction of financial regulations and the establishment of the Securities and Exchange Commission (SEC) were pivotal in restoring financial stability and sustaining a vibrant financial system in the US for the following six decades. The Glass-Steagall Act of 1933 imposed important restrictions to separate commercial banking from investment banking. This measure, and related actions, stopped the US banking crisis which had already led to the failure of more than 6,000 banks. It also served as the foundation for a stable and flourishing US financial system for the next 60 years.

In 1999, key provisions of the Glass-Steagall Act were repealed, giving rise once again to growing financial instability. The 2008 financial crisis, driven by housing market speculation and inadequate banking regulation, reinforced the importance of ongoing vigilance and regulatory financial oversight. This time, it cost the global economy more than 10 trillion dollars in government spending, rising levels of unemployment and inequality, and huge

* World Bank, *World Development Indicators: GDP (Current US$)* (World Bank, 2020) https://data.worldbank.org/indicator/NY.GDP.MKTP.CD

losses in global GDP. Effective financial regulations, international cooperation, and robust economic policies are crucial for preventing future economic crises. Even today, there is little evidence that either theorists or policymakers are willing to concede the huge costs of the neoliberal economic system to human security and sustainable development.

No matter how grave our present challenges may appear, no matter how severe the forecasts of science and statistics, and no matter how many errors we have made, we possess the capacity to rewrite our future if only we harness all the collective knowledge we possess and act now to change our course.

4. Environmental Challenges and Sustainability

The 20th century saw unprecedented environmental degradation due to industrialization, deforestation, and the burning of fossil fuels. The consequences—air pollution, climate change, and biodiversity loss—became increasingly evident during the latter half of the century when economic modernization and liberalization spread around the world. The 1992 Earth Summit in Rio de Janeiro and the subsequent Paris Agreement of 2015 marked significant global efforts to address these issues.* The transition to renewable energy sources, such as wind, solar, and hydroelectric power, is crucial for mitigating climate change. Initiatives such as the Paris Agreement aim to limit global temperature rise and promote sustainable development. Countries that have successfully implemented green policies—such as Sweden and Denmark, Bhutan's commitment to carbon neutrality, and Germany's Energiewende (energy transition)—provide valuable lessons in achieving environmental sustainability and serve as models for global environmental policy.

Yet, recent events reconfirm the need for far more serious and rapid reforms around the world. The acceleration of climate change, biodiversity loss, and pollution represents unprecedented threats to the future of humanity and underscores the need for strengthening and empowering multilateral institutions to effectuate radical changes in economic practices. Despite the alarm raised by scientists and the public actions of an ever-increasing global environmental movement, governments, energy producers, and consumers respond far too slowly and inadequately to the greatest security challenge ever presented to human beings. What will it take to wake us up and compel our leaders to act for the welfare of world civilization?

5. Economic Development and Aspiration

India's Green Revolution in the 1960s and the White Revolution in the 1970s were transformative. The Green Revolution, driven by advancements in agricultural technology

* United Nations Framework Convention on Climate Change, *Paris Agreement* (2015), https://unfccc.int/sites/default/files/english_paris_agreement.pdf

and practices, doubled India's foodgrain production within a decade. From heavy dependence on imported food aid, India became a net food exporter. India's White Revolution made a similar transition by transforming India's dairy industry into the largest milk producer in the world. These revolutions illustrate the potential of targeted policy interventions and investments in agricultural and dairy sectors to drive economic growth and improve livelihoods. The persistence of widespread child malnutrition in India, despite its continued growth and emergence as a major economic player, underscores the importance of sustaining these developmental strategies.

6. Advancements in Human Rights

The extension of freedom and equal rights has been arguably the most powerful civilizing force of the 20th century. More than ever before, societies discovered that the protection of the rights of individuals was the single most effective instrument for strengthening the stability, security, welfare, and well-being of the collective. During that period, and most especially beginning from the adoption of the Universal Declaration of Human Rights in 1948, humanity made dramatic strides in extending recognition, protection, and enforcement of a wide range of human rights. Its achievements include the end of racial segregation in the U.S., the dissolution of colonial empires after WWII, the abolition of untouchability in India, protection for religious and ethnic minorities, and the establishment of the State of Israel. The global movement for gender equality also gained momentum, with women's suffrage becoming a norm in most countries.

Despite these advances, challenges remain severe: religious intolerance is on the rise, and restrictions on the rights of women and persecution of the LGBTQ+ community persist in many countries. The ongoing struggle for the equal rights of marginalized communities highlights the need for continued advocacy and reform in human rights. Recognition of the importance of the individual is still a work in progress and remains incomplete. Development of the full potential of every person on earth is the optimal strategy for fostering the security, welfare, and well-being of humanity now and in the future.

7. Conclusion

The 20th century offers valuable lessons that can guide our actions in the 21st century. From preventing the repetition of catastrophic wars to eradicating poverty, reversing the rise of economic inequality, reaffirming the value of democracy and human rights, stopping environmental degradation, and halting global warming, there is both an urgent need and unprecedented opportunity for us to draw on the precious lessons of the past to build a more equitable, sustainable, and peaceful world for all. Learning from the past and applying these lessons, we can create a future that honors the progress achieved and addresses the challenges that lie ahead.

Looking backward, history can indeed teach us invaluable lessons. At the same time, it is important to remember that our collective capacity to foresee the future is even more limited than our capacity to learn from the past. No matter how grave our present challenges may

appear, no matter how severe the forecasts of science and statistics, and no matter how many errors we have made, we possess the capacity to rewrite our future if only we harness all the collective knowledge we possess and act now to change our course.

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CADMUS, Volume 5, No.4, July 2025, 121-133

China's Export-Led Growth Model:
Structure, Impact, and Strategic Implications for the Global Economy

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Abstract

The analysis explores how China's policies have both benefited and destabilized the U.S. economy, from consumer price deflation to deindustrialization and financial dependency. The paper situates these developments within the framework of international economics and interrogates their implications for Modern Monetary Theory (MMT), highlighting the paradoxes of fiscal sovereignty under global capital interdependence. It further examines the U.S. policy response, including tariff escalation and strategic decoupling, and extends the discussion to include military and geopolitical dimensions—most notably, tensions surrounding Taiwan and the South China Sea. The paper concludes that both nations face structural transitions that demand strategic recalibration. For the United States, this includes industrial revitalization and policy coherence; for China, a shift toward consumption-led, innovation-driven growth. Absent mutual accommodation, the risk of economic disruption and unintended conflict remains significant. The paper ultimately advocates for a more balanced, resilient, and cooperative global trading framework capable of addressing economic, technological, and security challenges in a multipolar world.

1. Introduction

Since 1978, China has undergone a historic economic transformation. At the heart of its rise as a global economic power lies a deliberate strategy to industrialize through export-led growth. This strategy has relied on an undervalued currency, strict capital controls, labor cost suppression, and state-guided industrial policy. While this model succeeded in rapidly expanding China's productive capacity and lifting hundreds of millions out of poverty, it also introduced significant structural imbalances—both domestically and internationally.

A foundational principle of international economics, Ricardo's law of comparative advantage, offers a framework for understanding the mutual benefits of global trade—even when such trade leads to painful domestic adjustments like deindustrialization. The law posits that even if one country can produce all goods more efficiently than another, both countries can still benefit by specializing in the production of goods where they hold a relative productivity advantage and trading for the rest.

In the U.S.-China context, the United States ceded much of its low-cost manufacturing base to China, whose comparative advantage derived from abundant labor and extensive state-supported industrial infrastructure. In exchange, the United States deepened its specialization in high-value services, intellectual property, and innovation. This kind of

specialization theoretically maximizes global productivity and improves living standards in both countries—provided the gains from trade are shared equitably within each.

However, the United States has argued that distortions in Chinese markets have undermined the mutual benefits of trade. In response, Washington has adopted an increasingly aggressive trade posture, including the imposition of broad tariffs.

2. Structural Pillars of China's Export-Led Growth Model

2.1. Currency Management

China has systematically intervened in currency markets to maintain an undervalued renminbi (RMB), thereby enhancing the competitiveness of its exports. Through the large-scale accumulation of foreign exchange reserves—primarily U.S. dollars—Beijing has suppressed the natural appreciation of its currency, supporting persistent trade surpluses. This intervention acts as an indirect subsidy for global consumers by lowering the cost of Chinese exports.[1]

2.2. Capital Controls

To maintain monetary independence and exchange rate stability, China has imposed capital controls that limit the free flow of capital across its borders. These controls shield domestic financial institutions from speculative pressures, help manage inflation, and insulate the financial system from volatility. However, they also hinder the efficient allocation of capital and limit the convertibility of the RMB.[2]

2.3. Wage Suppression and Full Employment Emphasis

Although nominally a communist state, China has adopted a hybrid system that blends capitalist market mechanisms with centralized political control. This model, officially termed a "Socialist Market Economy," has prioritized full employment over wage growth. The Chinese Communist Party (CCP) has utilized policies that promote rural-to-urban migration, discourage unionization, and maintain weak labor protections to support a large, low-wage workforce. This approach has helped contain production costs, but it has also limited domestic consumption and entrenched inequality.

2.4. State-Led Industrial Policy and Export Subsidies

Beijing has promoted targeted export sectors through a combination of preferential financing, tax incentives, subsidized land, and public infrastructure investment. This interventionist strategy has led to overcapacity in sectors such as steel, cement, solar panels, and consumer electronics. As a result, Chinese firms have exported products at prices well below global norms, triggering accusations of dumping and trade disputes with major economies.

2.5. Belt and Road Initiative (BRI)

Introduced in 2013, the BRI is a global infrastructure strategy designed to externalize China's industrial overcapacity by financing large-scale projects in developing countries. These projects are frequently built by Chinese firms using Chinese labor and financed by

Chinese banks. The BRI enhances China's geopolitical influence and deepens the integration of other economies into Chinese supply chains.[3]

2.6. U.S. Treasury Purchases and the Dollar Feedback Loop

To manage its exchange rate and recycle trade surpluses, China has heavily invested in U.S. Treasury securities. This demand increases the value of the dollar relative to the RMB, thereby reducing U.S. interest rates and further strengthening China's export position. A strong dollar makes Chinese goods more affordable for American consumers while making U.S. exports less competitive abroad, reinforcing trade imbalances.[4]

3. Impacts on the United States

3.1. Consumer Benefits and Retail Price Deflation

One of the most immediate benefits of U.S.-China trade has been lower consumer prices in the United States. American retailers—including Walmart, Amazon, and Target—have leveraged Chinese supply chains to minimize input costs and offer inexpensive products to U.S. consumers. For lower- and middle-income households, these savings have materially increased purchasing power. A product that costs $10 to produce in China might retail for $15, whereas a similar U.S.-made product could cost $37.50—a 150% price premium.[5]

Walmart's sourcing strategy is a case in point. As of the mid-2010s, an estimated 80% of Walmart's suppliers were based in China.[6] This approach enabled Walmart and similar retailers to deliver consumer goods—such as electronics, clothing, and household items—at substantially lower prices than domestic alternatives. For families earning under $50,000 per year, these savings amounted to hundreds or even thousands of dollars annually, helping to offset stagnant wages and shrinking employment benefits across large segments of the American labor force.

This deflationary effect extended beyond retail. By reducing costs for essential goods, Chinese imports freed up U.S. household income for healthcare, education, and digital consumption. As many American workers exited traditional manufacturing, they moved into logistics, customer service, and eventually high-skilled services. This shift was not accidental but rather a strategic response by firms to global labor arbitrage: China produced goods; the United States captured margins in branding, distribution, and intellectual property. Despite uneven distribution of benefits, the U.S. emerged as the dominant global services economy.

The U.S.-China tariff war of 2018–2020 was launched with the aim of rebalancing trade and encouraging domestic production. Yet the costs were disproportionately borne by U.S. consumers and businesses. Tariffs on Chinese goods, deeply embedded in global supply chains, functioned effectively as taxes on American importers and distributors. Companies either absorbed these costs—reducing profit margins—or passed them on to consumers in the form of higher prices.

Although China agreed in the 2020 Phase One deal to increase purchases of U.S. agricultural and industrial goods, it failed to meet these targets. In fact, Chinese purchases declined further in subsequent years, setting the stage for renewed tariff measures by 2025.[7]

Retailers like Walmart, Home Depot, and Target, having optimized logistics around Chinese imports, were forced to reconfigure their supply chains or raise prices. Importers across sectors—including electronics, tools, toys, and home furnishings—faced renegotiations, delays, and rising costs. Some turned to Vietnam, Mexico, and other countries, but none could match China's scale, infrastructure, and reliability in the short term.

> *Monetary sovereignty, in theory, may be absolute—but in practice, it is conditioned by the structure of international finance.*

Ultimately, the tariffs disrupted price stability and supply planning without meaningfully reducing the U.S. trade deficit. For low-income households, higher prices functioned as a regressive tax. Moreover, tariffs created economic inefficiencies—"deadweight losses"—in which the potential gains from trade were forfeited. Although tariffs may serve as temporary leverage or signaling mechanisms, they proved too blunt for meaningful structural change. Deployed without a targeted industrial policy, they often delayed adaptation rather than encouraging it.

Most economists across the political spectrum have criticized broad-based tariffs as inefficient and self-defeating. From a classical perspective, tariffs distort market signals, suppress consumption, and provoke retaliation, all while reducing overall economic welfare.[8] Without a corresponding currency depreciation—an unlikely event given current international monetary dynamics—tariff costs inevitably reach the American consumer.

3.2. Deindustrialization and Wage Pressure

China's rise as a global manufacturing hub has contributed to the deindustrialization of many U.S. and European regions. Multinational corporations, lured by China's labor cost advantages and export subsidies, offshored production, accelerating the decline of traditional manufacturing sectors. The American Midwest, once home to thriving industrial cities, experienced significant job losses, wage stagnation, and long-term community decline.

Displaced workers often found employment in lower-wage service jobs, typically lacking comparable benefits or long-term security. These changes helped fuel economic resentment and political polarization. As trade-linked economic dislocation persisted, so too did skepticism toward globalization, especially among working-class voters.[9]

4. Sustainability Challenges

4.1. Challenges for China

China's export-led growth model is increasingly under strain. Demographically, the nation is aging rapidly. The working-age population began to shrink in recent years, reducing the labor surplus that once underpinned its manufacturing cost advantage. At the same time, wages have risen, eroding China's competitiveness in low-end manufacturing.

Decades of aggressive investment have also led to chronic overcapacity in key sectors, including housing, infrastructure, and heavy industry. Massive state-directed capital flows, while instrumental in scaling industrial output, have yielded diminishing returns and fueled asset bubbles. Meanwhile, inequality has widened, and household consumption remains a relatively small share of GDP compared to other major economies.

China's political structure adds another layer of complexity. The central government's emphasis on control and top-down planning may inhibit the innovation and decentralized decision-making needed to transition to a services and knowledge-based economy. Without reform, the very tools that once enabled China's ascent could become obstacles to its next phase of growth.

4.2. Challenges for the United States

For the United States, the sustainability problem lies not in overcapacity but in financial dependency. The trade imbalance with China has resulted in a sustained inflow of Chinese capital into U.S. financial markets, particularly in the form of Treasury bond purchases. This has fueled a financial feedback loop: capital inflows depress U.S. interest rates, which in turn boost asset prices, strengthen the dollar, and make Chinese goods even more competitive.[10]

This dynamic places American producers at a disadvantage while fueling wealth inequality at home. Gains from Chinese capital inflows are disproportionately captured by holders of real estate and financial assets, rather than being reinvested in domestic production or infrastructure.

Moreover, the heavy reliance on foreign demand for U.S. debt introduces geopolitical risk. Should China reduce its Treasury holdings for strategic or economic reasons, the United States could face rising interest rates and financial instability. This dependence complicates domestic monetary policy and limits the flexibility of U.S. fiscal planning.

5. Long Term Strategic Responses and Transition Pathways

5.1. Strategic Options for the United States

To address the vulnerabilities exposed by China's export-led growth model, the United States—and the broader West—must adopt a coordinated, strategic response. This requires moving beyond reactive measures like tariffs toward a proactive agenda that revitalizes domestic capacity and enhances resilience. Key components of such a strategy include:

- **Rebuilding Industrial Capacity**: Through public investment, tax incentives, and public-private partnerships, the United States can reestablish domestic production in critical sectors. Reshoring manufacturing not only reduces strategic dependencies but also stimulates job creation and innovation.
- **Modernizing Trade Policy**: Future trade agreements should incorporate enforceable labor, environmental, and carbon standards. Anti-dumping enforcement and currency manipulation provisions are essential to counter unfair practices and level the playing field.

- **Investing in Workforce Development**: Expanding vocational training, apprenticeships, and STEM education will help align workforce skills with the needs of modern industry. Upskilling labor is key to increasing productivity and wage growth.
- **Diversifying and Reshoring Supply Chains**: Reducing overreliance on Chinese inputs—particularly in areas like semiconductors, pharmaceuticals, and rare earths—requires both geographic diversification and domestic production capacity.
- **Stimulating Innovation**: Federal support for research and development, strong intellectual property protections, and commercialization incentives are needed to maintain leadership in emerging technologies.
- **Developing a Unified Strategy**: Trade, energy, climate, and national security policy must be coordinated under a coherent industrial policy framework. Fragmented responses have limited effectiveness; strategic alignment is essential.
- **Enhancing Productivity**: Targeting higher-value sectors and embracing automation can help the United States remain competitive while preserving high-wage employment.

5.2. Transition Imperatives for China

China must also undertake structural reforms to sustain growth and global relevance. Its current model, heavily dependent on external demand and infrastructure investment, is no longer viable in the long term. Key areas for reform include:

- **Expanding Domestic Consumption**: Strengthening the social safety net through improved healthcare, pensions, and education can increase household security and encourage consumption.
- **Encouraging Private Sector Growth**: Easing bureaucratic constraints, protecting property rights, and promoting entrepreneurship would foster a more dynamic, innovation-driven economy.
- **Committing to Environmental Reform**: As the world's largest emitter, China has a pivotal role in the clean energy transition. Reducing reliance on coal, investing in renewables, and enforcing environmental regulations are critical steps.
- **Liberalizing Finance**: Building transparent and efficient capital markets aligned with global standards would allow for more productive allocation of resources and attract foreign investment.

These reforms are essential if China is to transition from a producer-centric to a consumer-driven economy—one that sustains growth through internal dynamism rather than external demand.

6. Implications for Monetary Sovereignty and Modern Monetary Theory

China's export-driven strategy has had a profound impact on global capital flows—particularly through its systematic recycling of U.S. dollars into Treasury securities. This

practice has helped strengthen the U.S. dollar and suppress long-term interest rates in the United States, enabling successive American administrations to finance large fiscal deficits at relatively low cost.

This arrangement has also lent real-world validation to key tenets of Modern Monetary Theory (MMT), a heterodox economic framework rooted in Post-Keynesian thought. MMT holds that countries that issue their own fiat currency—such as the United States—can sustain large government expenditures without the risk of insolvency or excessive inflation, so long as real economic capacity is underutilized. This theory is very seductive for politicians as it removes deficit-spending constraints. According to MMT, budgetary constraints are politically imposed rather than economically necessary, and inflation, not debt accumulation, is the true limit on government spending.

China's large-scale purchases of U.S. Treasury bonds effectively subsidize American fiscal policy by ensuring continued demand for U.S. debt and by exerting downward pressure on borrowing costs. In this sense, China has functioned as a critical enabler of the U.S. fiscal position, creating the conditions that have made MMT's assumptions around deficits appear plausible in practice. A strong dollar, supported by Chinese capital inflows, also benefits Chinese exporters by preserving price competitiveness in international markets.

However, this alignment is both contingent and fragile. The COVID-19 pandemic tested the limits of unchecked deficit spending. Emergency stimulus measures, while averting economic collapse, contributed to inflationary pressures that challenged MMT's core premise of inflation control through fiscal policy alone.

Moreover, MMT presumes a sovereign monetary authority operating independently of external constraints. Yet the United States' dependence on foreign demand for its debt—especially from geopolitical competitors like China—compromises that independence. Should China strategically reduce its holdings of U.S. Treasuries, the consequences could include rising interest rates, financial instability, and diminished policy flexibility.

Thus, while China's capital policy has facilitated the application of MMT in the United States, it also reveals MMT's geopolitical vulnerability. **China's investment has enabled some MMT-style outcomes**, but ironically, it does so by **contradicting** MMT's core principle of sovereign monetary independence. That creates a paradox: MMT's strongest period of performance may have been enabled by a structure it philosophically rejects. Monetary sovereignty, in theory, may be absolute—but in practice, it is conditioned by the structure of international finance. The realization that China, rather than central banks alone, plays a pivotal role in sustaining U.S. borrowing capacity is prompting a reassessment of the risks embedded in America's fiscal strategy.

7. The Evolving U.S. Trade Posture: From Simmering Tensions to Tactical Confrontation

Since the Trump administration's first term, the United States has shifted from passive engagement to active confrontation in its trade relationship with China. What began as targeted tariffs on steel, aluminum, and specific high-tech imports has evolved into a broader,

more entrenched trade war—punctuated by retaliatory measures, shifting alliances, and prolonged uncertainty.

Tariffs, traditionally seen as instruments of economic policy, have in recent years evolved into tools of strategic coercion.

Unlike traditional protectionism, the primary objective of this policy is not the permanent insulation of domestic industries, but rather the use of tariffs as a negotiating tool. The U.S. approach centers on economic coercion: by imposing punitive tariffs, the administration seeks to create pain points for trading partners—especially those with significant surpluses or asymmetric access to U.S. markets. This includes China, but also longstanding allies whose trade practices are perceived as misaligned with American interests.

The logic is tactical rather than ideological. Rather than retreating from globalization, the United States is attempting to redefine the rules of global commerce in ways that favor greater reciprocity and transparency. Key American priorities include improved market access for its exports in advanced manufacturing, pharmaceuticals, digital services, agriculture, and energy.

Observers have questioned why the United States would target allied economies—Europe, Canada, South Korea—alongside China. However, this strategy becomes more intelligible when viewed through the lens of negotiation misdirection. By casting the tariffs as part of a broad restructuring of trade norms, rather than a singular anti-China policy, the U.S. preserves a pathway for Chinese officials to engage in negotiation without appearing to capitulate. This helps China maintain face domestically and internationally while increasing U.S. leverage at the bargaining table.

Nevertheless, this strategy carries considerable risk. It threatens to strain alliances, fragment global trade networks, and accelerate the emergence of competing economic blocs such as BRICS+. Prolonged uncertainty may also discourage investment and innovation, as companies delay decision-making in the face of regulatory instability. Moreover, there is no guarantee that this approach will not embolden rather than placate the Chinese negotiators.

The Trump administration's apparent readiness to weaponize market volatility further complicates the picture. Companies that depend on Chinese imports—including many U.S. multinationals—have faced a chaotic policy environment with abrupt announcements, reversals, and unpredictable enforcement. Markets have swung sharply on presidential tweets, tariff pronouncements, and rumors of trade talks.

Yet this turbulence may be by design. Trump's negotiating style has relied on calculated unpredictability to create urgency. By keeping adversaries—and sometimes allies—off balance, the administration aims to extract greater concessions. The stock market's reactions are closely monitored and often managed through well-timed communications. A sudden easing of tensions, paired with a favorable deal, could trigger a market rally that bolsters the administration's political capital.

In this context, tariffs are not an end, but a means—a pressure tactic meant to catalyze renegotiation of the global trade architecture. If successful, the outcome may include reduced tariffs, rebalanced market access, and a new consensus on fair trade practices. If unsuccessful, the result could be further fragmentation and systemic instability.

8. Tariffs as a Weapon of Economic Warfare

Tariffs, traditionally seen as instruments of economic policy, have in recent years evolved into tools of strategic coercion. They offer short-term relief to industries challenged by foreign competition but often at the cost of higher consumer prices, reduced global efficiency, and international friction. The Trump administration has rebranded tariffs not merely as protectionist measures but as levers of geopolitical influence—akin to sanctions or embargoes.

The United States is not currently positioned to replace the vast volume of consumer goods it imports from China. Domestic production of equivalent goods would entail significantly higher costs, due to both labor and regulatory burdens. As tariffs raise import costs, these higher prices ripple through the U.S. economy, disproportionately affecting working- and middle-class consumers. In this way, tariffs act as a regressive tax.

This economic strain is not just theoretical—it has political consequences. As consumers feel the pinch of higher prices on everyday goods, public support for protectionist policies may wane. Upcoming elections could become a referendum on the long-term costs and benefits of tariffs, especially if inflation and supply chain bottlenecks persist.

Trump has referred to the imposition of tariffs as "Liberation Day"—a symbolic rejection of decades of trade policy shaped by multilateralism and comparative advantage. Yet both the Chinese and U.S. economies rest on precarious fiscal foundations. As of 2024, both countries are running budget deficits exceeding 6% of GDP. China's deficit, essentially balanced in 2014, is projected to rise to 8% in 2025. In both nations, the pace of deficit growth now exceeds GDP growth, raising red flags about long-term fiscal sustainability.

These twin deficits point to deeper structural weaknesses: in the United States, persistent trade and budget imbalances; in China, chronic underconsumption and overinvestment. The ongoing tariff confrontation is therefore more than a tactical dispute—it is a collision of two economic models under stress, each struggling to adapt to a post-globalization era.

In many ways, today's tariffs are the digital-age equivalent of 19th-century gunboat diplomacy. During that era, the United States used military intimidation to compel China to open its markets—most notably through the Treaty of Wanghia in 1844. Today, the weapons are tariffs, export controls, and tech bans. But the underlying message is the same: comply with new trade terms or face sustained economic pressure.

For China, the stakes are high. The CCP must balance its global ambitions with domestic economic stability. A sharp drop in exports could trigger unemployment and unrest. For the United States, the stakes are equally serious. Its industrial base has atrophied over decades, and many companies remain deeply reliant on Chinese inputs.

Despite public rhetoric, the Trump administration has signaled its ultimate goal to be a world of lower tariffs and more reciprocal trade agreements. The aggressive use of tariffs is ostensibly intended to push trading partners to the negotiating table—not to permanently sever economic ties. In this sense, tariffs are a temporary weapon—an uncomfortable but deliberate part of a broader strategy to reset global trade norms. However, many of the administrations stated objectives are mutually exclusive, particularly with respect to countering China's military expansion and blunting its military capability.

Until a clear outcome materializes, companies are operating in a high-risk, volatile environment. Some are accelerating efforts to diversify supply chains, a trend already underway due to the COVID-19 pandemic and rising geopolitical tensions. While certain high-tech industries may reshore to the United States, most displaced production is likely to shift to Vietnam, India**,** Indonesia, and Mexico—countries offering low labor costs, growing infrastructure, and greater geopolitical alignment. Companies will bear significant cost burdens through higher costs and lower demand, or both and expect business casualties at the margins of many industries, including heightened economic insecurity at the individual level.

Yet cost is no longer the only concern. Companies are evaluating political risk, environmental standards, and logistical reliability when choosing new manufacturing hubs. In the years ahead, the most successful firms will be those that proactively manage supply chain risk while maintaining flexibility in pricing, sourcing, and distribution.

9. Strategic and Non-Economic Dimensions of the Tariff Dispute

While tariffs may lack broad economic justification, they acquire greater coherence when viewed through a geopolitical and military lens. The United States is not merely confronting trade imbalances with China; it is facing the emergence of a near-peer rival with military ambitions and stark ideological divergence. Against this backdrop, both parties are restricting the other's access to strategic material: China to rare earth minerals, and the United States to advanced semiconductors and related technologies. Meanwhile, both countries are curtailing the other's leading tech companies in their domestic markets out of security concerns. This escalating contest over strategic issues reflects a broader rivalry in which conventional economic logic is often subordinated to security imperatives—a dynamic that increases the risk of miscalculation, economic disruption, and unintended conflict with consequences for both nations and the wider world.

China's economic ascent has not only elevated its global influence but has also dramatically enhanced its military capacity. With a naval fleet that has grown more than tenfold in recent decades, China now possesses the world's largest navy—one that exceeds the U.S. fleet in the sheer number of battle force ships.[11] Its military expansion includes a modernized strategic nuclear arsenal, robust cyber and space warfare capabilities, and assertive activity in contested regions like the South China Sea. China has also expanded its capabilities in the Western Pacific and Indian Ocean. President Xi has instructed the military to be prepared for engagement by 2027, the 100th anniversary of the PLA. These developments have raised alarms within the U.S. defense establishment, particularly in relation to Taiwan—a democratic and economically vital territory whose assimilation Beijing has asserted is inevitable.[12]

The Taiwan issue underscores the intersection of economics and national security. Taiwan is home to TSMC, the world's most advanced semiconductor manufacturer, making it both a geopolitical flashpoint and a critical node in the global supply chain. A Chinese takeover of Taiwan would not only alter the regional military balance but could also disrupt the global technology sector. It is in this context that the U.S. Navy's mission to keep sea lanes open in the South China Sea—a region through which one-third of global trade flows—takes on heightened significance. To China, this presence is seen as a provocation; to the United States and its allies, it is a vital safeguard.

Ironically, the United States played a key role in China's rise. Since the late 1970s, U.S. policy facilitated China's integration into global markets, assuming that economic liberalization would encourage political moderation. Instead, China used its economic gains to underwrite a rapid military expansion and to assert a more confrontational posture in global affairs. Today's tariffs, while economically disruptive, are in part an attempt to recalibrate that original policy and contain a trajectory that now appears threatening.

Yet while U.S. concerns are not unfounded, its current approach raises critical questions. Can China truly be "contained" within its own region any more than Europe could contain the United States in the Western Hemisphere during its rise? Is economic decoupling viable or even desirable in a globalized world where the fortunes of the two superpowers are deeply intertwined? And do unilateral tariffs and coercive economic measures risk provoking not compliance, but retaliation and escalation?

The risk of **unintended consequences** is real and growing. Economic confrontation could spiral into open conflict—whether through miscalculation in the Taiwan Strait, cyberwarfare escalation, or an incident in the South China Sea. Such a conflict would devastate not only China and the United States, but the entire global economy, disrupting trade, fracturing financial markets, and stalling growth for a generation. Even short of war, prolonged tension could damage asset valuations, depress consumer confidence, and fuel nationalist sentiment on both sides—making compromise politically toxic and de-escalation increasingly elusive.

10. Conclusion

China's export-led growth model has profoundly reshaped the global economy. Over four decades, it elevated hundreds of millions out of poverty, transformed China into the world's leading manufacturing powerhouse, and helped drive a new era of globalization. Yet the model is now approaching its limits. Rising costs, a shrinking workforce, environmental degradation, and mounting geopolitical backlash—most notably, tariff-based responses from the United States—signal the need for a fundamental shift.

For China, long-term success hinges on a strategic pivot: transitioning from investment-led to consumption-driven growth, reducing dependence on low-margin exports, and embracing innovation and sustainability. Failure to evolve risks stagnation and internal instability, threatening the very gains that propelled China's rise.

For the United States and its allies, the challenge is no less urgent: to rebuild domestic industrial resilience without retreating into isolationism or zero-sum protectionism. The goal

is not to reverse globalization but to restructure, creating what it envisions as fairer, more reciprocal relationships that prioritize long-term stability, competitiveness, and shared prosperity. Strategic investment in infrastructure, human capital, and advanced manufacturing will be critical to this effort.

History offers no ready-made solutions—but it warns of the costs of inaction.

The geopolitical tensions relating to Taiwan's sovereignty and control of the South China Sea add a military dimension to tariff policies. Rather than pursue punitive tactics in isolation, the United States must weigh whether its actions are strengthening its long-term position or inadvertently catalyzing the very threats it seeks to prevent. Likewise, China must decide whether military intimidation and economic coercion will earn its respect or condemnation. The future of U.S.-China relations—and of the liberal international order—may hinge less on who dominates the tariff battlefield and more on who responds most wisely to the disagreements over Taiwan.

Importantly, this is not a zero-sum game. With strategic foresight and mutual recognition of legitimate interests, the U.S. and China could jointly steer globalization into a more equitable and resilient phase. Trading partners worldwide would benefit from expanded access to U.S. services and innovation, while the United States would gain diversified supply chains and reduced strategic exposure.

This recalibration of trade is occurring amid a broader global inflection point. What once appeared to be a straightforward issue of mutual economic benefit is now entangled in strategic rivalry and institutional fragility. Climate change, digital disruption, inequality, and geopolitical instability are converging to form a complex, interdependent set of global challenges. Our global systems—trade, diplomacy, security—are under strain and insufficient to meet the scale of the moment. Trade policy, while just one domain, intersects with all of them. What is needed is a new framework: one that integrates national interests with global responsibilities, reinforces the limits of coercive behavior, and embeds enforceable guardrails against unwarranted aggression.

History offers no ready-made solutions—but it warns of the costs of inaction. Ultimately, meeting these challenges requires more than economic calculus. It demands purposeful principled leadership, collaborative governance, and a renewed commitment to human security in all its dimensions.

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CADMUS, Volume 5, No.4, July 2025, 134-141

European Contribution to Global Sustainable Development

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Abstract

Global sustainable development is an open process that depends on a variety of global transformative strategies underpinned by social movements. Several global regions are developing initiatives for sustainability, and Europe has also launched the European Green Deal. Europe, as one of several global poles, is developing innovative strategies to reduce real capital inputs, increase human capital through education, and increase global competitiveness. In parallel, the European financial system is increasing high financial investments to support European sustainable development with an export surplus. The author offers crucial insights into how Europe can benefit by shifting from high trade to direct investment in its less developed global regions. Europe can become a global leader by increasing its efforts towards European sustainability, and simultaneously contributing to socio-economic equality and global sustainable development. We neglect most bottom-up initiatives and concentrate on macro-sociological development.

1. Introduction

Global sustainable development is an interdependent process, resulting from highly diverse leadership.

Global sustainable development is an interdependent process, resulting from highly diverse leadership (Jacobs et al., 2020). Globally, the Millennium Development Goals (MDGs) were expanded into Sustainable Development Goals (SDGs) anchored in human rights and democracy, codified in the European Constitution (2003). The current 27 Member States anticipate enlargement with the extension of light membership to countries across the geographical continent. The present organizational structure of the EU questions globalization as a "flat world" (Friedman, 2005) and global sustainable development results from interactive poles with different wealth distribution and organization. Some poles are organized as nation states, like USA and China, and Europe is a unique pole with an integrated mixture of national and EU policies. The EU set its own goals in alignment with the SDGs accepted by all states.

European policies are developed in close coordination with Member States. Since the introduction of the Single Market and the Currency Union (1999), the Lisbon Strategy, in the first decade of this century, aimed to make Europe "the most competitive economy of the world" through better policies for the information society, modernized European

society model and adequate macro-economic policy. In the second decade, EU policy turned into a smart, sustainable, and inclusive economy delivering high levels of employment, productivity, and social cohesion. Both strategies were hampered by the 2008 financial crisis and in the following third decade, Europe faced COVID-19 and the Russian-Ukrainian War. The European Green Deal (EGD) represents a deep transformation of all European policies, aiming to establish Europe as a global leader.

The EGD is a new growth strategy that aims to transform the EU into a fair and prosperous society with a modern, resource-efficient and competitive economy.

During the current legislation period, the EU is extending the Single Market for capital, banks, mobility, and energy (Letta, 2024). By reducing national governance of banks and making the movement of capital easier, it can facilitate financing of public budgets and the real productive sector. The European mobility system for travel and trade should be open for all countries with investment in trans-border infrastructure. A European single market for all kinds of energy should reduce reliance on foreign sources. For the reduction of socio-economic inequality in Europe the EGD extend existing Structural Funds through a new Just Transition Mechanism (JTM). The extension of the European Single Market and Structural Funds aims to increase competitiveness within Europe and globally.

During short-term transition, the increase in competitiveness will increase growth, and in longer term, the reduction of real capital inputs through innovation and education will require further financial resources for sustainable development. For given financial capital resources, declining real capital inputs and higher human capital need an increase of financial capital for higher sustainable growth. European competitiveness policy concentrates primarily on changes in real capital, less on human capital, and views the relation between real and financial capital as decisive. Higher flexibility of financial capital compared to real capital becomes the driver for sustainable development, both in Europe and globally. Increasing European financial means will increase the contribution of Europe to global sustainable development not through export surplus, but through direct investments in countries with trade deficits. European sustainable development contributes to more global socio-economic equality and global sustainability.

European sustainable development can be derived from the SDGs and bottom-up processes, but we refer to European documents mainly based on structural and macro-economic approaches. We give a brief outline of the EGD, the strategies for reducing real capital, increasing human capital, the role of the European financial system, and some interactions between the European and global sustainable development.

2. Structure of the European Green Deal

The EGD is a new growth strategy that aims to transform the EU into a fair and prosperous society with a modern, resource-efficient and competitive economy. The EU considers itself

to have the collective ability to transform its economy and society toward a more sustainable development path by 2050. In cooperation with its neighbors, the EU-Commission regards the EGD as an integral part of the United Nations' 2030 Agenda and Sustainable Development Goals (SDGs) serve as guidelines for EU policy-making and economic policy for the well-being of all citizens (European Commission, 2019).

The EU-Commission intends to transform the EU toward a sustainable future through eight deep transformative policies: (1) Increasing the EU's climate ambition for 2030 and 2050, (2) Supplying clean, affordable and secure energy, (3) Mobilizing industry for a clean and circular economy, (4) Building and renovating in an energy and resource efficient way, (5) Accelerating the shift to sustainable and smart mobility, (6) From farm to fork: Designing a fair, healthy and environmental-friendly food system, (7) Preserving and restoring ecosystems and biodiversity and (8) Zero pollution ambition for a toxic-free environment. All these policies are highly interdependent, and most of them are in accordance with the SDGs.

These policies are integrated in all EU policies: (1) Pursuing green finance and investment ensuring the transition: EU Commission proposes a Sustainable Investment Plan and a Just Transition Mechanism, (2) Greening national budgets and right price signals: National budgets play a key role, including tax reform. (3) Mobilizing research and fostering innovation: Horizon Europe promotes sustainable technologies and (4) Activating education and training: Educational institutions will reskill with a focus on sustainability.

The EU wants to become a global leader with EGD programs and by mobilizing all bilateral and multilateral diplomatic channels, including the UN, G7, G20, WTO and other relevant fora. Based on the Paris Agreement and the following conferences, the EU is intensifying cooperation with neighbors, especially Africa and the Middle East. The EU as the world's largest single market can set standards across global value chains and the EU should encourage international investors to shape the financial system to support the global sustainable development.

The European Climate Pact will accelerate involvement and commitment of the public and all stakeholders in three ways: (1) Widespread information and dialog with all citizens, (2) Creation of real and virtual spaces for individuals and collectives to express innovative ideas and enhance creativity and (3) Integrating grassroots initiatives and diverse NGOs in the debate on future of Europe. A new monitoring system will inform about factual implementation of EGD measures and whether they are on track or deviating, and all Member States will inform the UN about their SDG implementation.

3. Changes in the European Productive System

The overall target of the EGD is to transform the European productive system into a fair and resilient evolution across Member States and the European Union as a whole. For the next decade, the implementation will be financed through (1) the EU budget and associated instruments, (2) the creation of a framework for private and public sector investments, and (3) public administrations and promoters of sustainable projects. Within these funds is the Just Transition Fund (JTF) which supports the highest carbon-intensive regions, addresses social challenges, job losses, and aids Member States with low investment capacity.

Directly related to the EGD is "A System Change Compass" (SYSTEMIQ and Club of Rome, 2020), which primarily focuses on the productive sector. Four defined ecosystems address social needs (Healthy Food, Built Environment, Intermodal Mobility, and Consumer Goods), and four supporting ecosystems (Nature Based, Energy, Circular Material, Information and Processing). For all ecosystems, 10 regulating principles are proposed, that redefine the traditional criteria for economic development (Prosperity, Nature Use, Progress, Metrics, Competitiveness, Incentives, Consumption, Finance, Governance, and Leadership). These criteria applied to economy and society promote resilient economic, social, and environmental sustainability and suggest a considerable reduction in real capital, supported by the reoriented European innovation program.

European sustainable transformation may reduce economic growth through innovation and increase human capital through widespread future-oriented education.

The transformative innovation program **Horizon Europe** tackles climate change and boosts EU competitiveness with new elements: The European Innovation Council, Mission Areas (Climate, Smart Cities, Health, Soil and Food), Open Science Policy, and New Partnerships. The structure contains three pillars: (1) Excellent Science (European Research Council/ERC, Marie Curie and Research Infrastructure), (2) Global Challenges (Health, Culture, Civil Society, Digitalization, Climate, Bio-economy and Non-Nuclear Energy) and (3) Innovative Europe (European Innovation Council/EIC, Innovative Ecosystems and European Institute for Innovation and Technology/EIT). These subjects clearly show that they cover the eight deeply transformative EGD policies, the ecosystems of the System Change Compass, and the 17 SDGs and their sub-targets. Horizon Europe is largely aligned with global research and innovation programs, which focus on real productive capital, including natural capital.

The EGD largely neglects both the financial system and macro-economic effects. Traditional macro-economic investigations show that in the short term, the transformation needs higher economic growth, but changes in consumerism and new styles of public governance increase prosperity without growth (Jackson, 2009). A more detailed study finds seven drivers for short-term higher growth, but institutional changes and engagement of new partners for socio-economic transformation are projected to markedly reduce growth by 2050 (Aiginger, 2016). The System Change Compass and Horizon Europe also address a relative decline in the real productive system and emphasize the importance of human capital development and reorientation.

4. Education and Human Capital

Education empowers humans as individuals and collectives supported by human-centered education technology. In general, education is a crucial instrument for societal

transformation (Jacobs et al., 2021), and increasing human capital will facilitate the transition toward sustainable development by simultaneously reducing the emphasis on real capital accumulation and increasing human-centered education. The implementation of EGD focuses mainly on socio-economic orientation and neglects the essential personal and cultural dimensions of sustainable development.

Over the past few decades, the EU has developed into a Knowledge Society through innovation and educational programs. The educational program ERASMUS, mainly financed by Member States, embraces five lifelong educational stages. The EGD focuses on the European Competence Framework with proactive reskilling for sustainable transition, including several European and worldwide networks. Participation of learners, parents, and the wider community in schools, training institutions, and universities help to deepen their socio-ecological orientation. Financing from EU level primarily from European Investment Bank (EIB), and Structural funds are directed toward employability skills. However, employability for the EGD remains primarily capital-centered and neglects far-reaching new socio-ecological values and modern educational technology.

Acceleration of sustainability needs to begin with education for the 21st century (Serageldin, 2024). A new paradigm of knowledge, beyond what is sketched in EGD, must move from print to digital imaging, and use machine learning, investigate complexity by applying computer science, embrace an interdisciplinary approach, and shift from teaching to learning. Education goes beyond skills to building character through imagination and creativity to invent the future. We need to foster respectful and ethical minds through continuous lifelong learning in schools and universities with distance learning opportunities, participation from all social groups, and the development of healthy lifestyles within the family and as active citizens.

European sustainable transformation may reduce economic growth through innovation and increase human capital through widespread future-oriented education. In the short term, financing human capital is far behind real capital investment and economic growth. In the longer term, human capital will relatively increase and macro-economic dynamics will change bottom-up and top-down structures beyond markets and government frameworks. In the short term, human capital investment is mainly influenced by the European financial system, which depends on the global financial system.

5. European Financial System

The governance of global poles, like USA and China, with national governance structures, relate directly to IMF, WB, and WTO (Hoedl, 2024). Emerging global poles, like NAFTA, Mercosur, and ASEAN are mainly governed through a variety of national policies. The European mixture of national and European policies is strongly influenced by the European Central Bank (ECB) and the European Stability Pact (ESP) managed by the European Stability Mechanism (ESM). The formal limits for ESP are 60% of GNP and 3% yearly increase of public budget. Some Member States surpass the 60% limit to approximately 140% of GNP and the 3% limit to 8% yearly increase of public budget, which indicates high indebtedness of the EU as a whole.

Within the European Financial System, ESM corresponds approximately to the IMF, the European Investment Bank (EIB) to the World Bank (WB), and the European Single Market to the WTO. The extension of the Single Market to capital, banks, mobility, and energy increases European competitiveness and reduces the European gap between the real and financial systems. EMS exerts only a limited influence on the global financial system, but it can more readily channel financing toward Europe's productive sector. Financially enforced high public and private debts promote a sustainable real productive system, through innovation and education, which in the short term increases growth but in the longer term decreases growth due to sectoral and regional changes.

EMS channelizes private savings to real investment, expands the European Single Market, and the EIB subsidies and credits enhance the transformation of the European economy, including regional and local policies. Several regions have established project-oriented public-private partnerships which helps increase finance for public pension funds, implement local currencies, and create local commons. Local projects contribute to resilient regional and local economy framed by the European Regional Agency in cooperation with all Structural Funds. The deeply sustainable reorientation and decentralized bottom-up policies (Reuter, 2024) increase public acceptance and contribute to the strength of the real productive system.

The enlargement of the European Single Market fosters competitiveness and, in the long term, requires relatively fewer financial resources. However, European security expenses are increasing to 2% of GNP and a new demand program (Draghi, 2024) will increase EU debts considerably. Some Member States established non-formal budgets for COVID-19 and the Russian-Ukrainian War. Europe can partly compensate for debts through its positive trade balance. Increasing competitiveness and the demand program will further increase export surplus. The increased quantity of money goes partly into the European financial system where European financialization can promote real production and global trade. The role of Europe within globalization depends primarily not on the supply of real production, but on the demand of higher financial capital.

6. European Contribution to Global Sustainability

Global sustainable development results from diverse open sectoral strategies and the implementation of SDGs takes place under different socio-economic circumstances. Europe, as a global pole, contributes through real production processes, i.e. interaction of real productive and human capital and accelerates sustainability through financial capital, which indicates that the financial system is the promoter for sustainable changes with real production following financing. Europe's contribution to global sustainability is also influenced by the global financial system and shaped by its competition and cooperation with other emerging sustainable global poles, primarily through international trade.

The EGD concentrates on global political activities and largely neglects the transfer of real capital to weaker countries. Since the trade inversion between USA and Europe (1961), USA transferred real investment to Europe, and contributed, through technological transfer, to increase European global exports. For more than a decade, China has significantly increased high real investment in Africa and Europe contributing to the competitiveness of

the receiving countries. Countries with trade deficits require more than increased product exports and financial aid, but crucially require direct real investment (Davidson, 2011).

European sustainable production of trade commodities and production equipment reduces, through innovation, relative real capital inputs and contributes to the competitiveness of weaker countries and simultaneously to global sustainable development and global equality. The future role of Europe needs, also to reduce migration, a shift from trade to direct investment.

Global sustainable development is largely under the umbrella of the global financial system and overlapped by the handling of finance within global poles. The European financial system managed the disturbances in the last two decades and financialized the real productive system. Most of the expanded quantity of money was invested in repairing crises, and part of it was invested in sustainable transition. The interrelation of real, human, and financial capital within the EGD is similar to the Marshall Plan. The USA raised financial capital, increased European real capital and created European human capital through active employment. The EGD requires substantial funding from both global and European financial systems. In the longer term, innovation will enable a transition toward less reliance on real capital. European sustainable development will gradually substitute real capital with human capital, and the transformation will need more financial capital.

Global sustainable development intends to create more equal global wealth distribution and more equal well-being for all. A critical component of achieving this is the expansion of global financial resources. Implementation of SDGs needs enormous money from offshore and more important from artificial money (Brunnhuber, 2021). During its transition toward sustainability, Europe has maintained an export surplus and improved its competitiveness, positioning it to co-finance the SDGs.

Implementing SDGs results in an open global sustainable development, which saves natural and productive capital through innovation and education. The role of Europe within global sustainable development is to turn toward less global trade and increase direct real investment in weaker countries. Such a reorientation of global development reduces global inequality and simultaneously increases global sustainable development, which is a powerful socio-economic open process.

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CADMUS, Volume 5, No.4, July 2025, 142-149

Post-Schumpeterian Innovation Paradigm: A Dual-Wheel Drive of Technology and Regulation for Green Transformation

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Abstract

The post-Schumpeterian era has constructed a green innovation paradigm that balances profit-making and environmental goals through a dual-wheel drive of technology and regulation to achieve green transformation. Under this innovation paradigm, two issues need to be addressed. First, the immature green technologies and product markets cannot generate sufficient profit incentives for enterprises to pursue sustainable development. Therefore, government regulation and policies must play a role, following a path of "social initiative—regulatory constraints—policy incentives—policy withdrawal", transitioning from government regulation to corporate voluntary action. Second, without the leverage of market mechanisms, green technologies themselves lack the motivation and capacity for sustainable development. Therefore, it is necessary to rely on market forces, following a path of "technological breakthrough—technology diffusion—market expansion—profit acquisition", to organically integrate the goals of green transformation and corporate profitability. In the growth period of green innovation, regulatory constraints and policy incentives play an especially important role. In the mature period, the market will become the dominant force driving green transformation.

Schumpeter's innovation theory emerged during the era of capitalist industrialization, primarily focusing on the entrepreneur's profit-driven recombination of production factors. As humanity entered the 21st century, scientists and government organizations timely proposed the goal of sustainable development, ushering in a new innovation paradigm that balances profit and environmental objectives. We refer to this as the "post-Schumpeterian" innovation paradigm. This paper systematically explores the evolution of Schumpeter's innovation paradigm and the new characteristics of the new paradigm, attempting to answer two critical questions: How does government regulation become corporate action? And how can green technologies leverage market forces? Based on these, we propose a new perspective of dual-wheel driven green transformation, powered by both technology and regulation.

1. Post-Schumpeterian Era: Characteristics of Green Innovation

Economist Paul Sweezy once said, "Modern orthodox economists, in their systematic theoretical analyses, never attempt to analyze the evolutionary process [of capitalism]. This may be said to be axiomatic. But there is one important exception, and that is Schumpeter, whose *Theory of Economic Development* stands out as a notable departure from traditional

standards in this respect."[1] In the early 20th century, the United States experienced a revolutionary transformation in communication, transportation, and industry due to the widespread use of telephones, electric motors, and electric locomotives. Technological innovation and the renewal of machinery stimulated production development, and the U.S. economy experienced the "Roaring Twenties." Against this backdrop, Schumpeter not only analyzed the evolutionary process of capitalism but also proposed a theory that "economic change originates in innovation." He defined innovation as a new combination of production factors, and entrepreneurs as the primary organizers and drivers of "new combinations" and "economic development." Schumpeter's innovation was aimed at obtaining "entrepreneurial profits," and the characteristic of this innovation paradigm was that it was driven by "economic interests" to motivate entrepreneurs to pursue new combinations of production factors.

When market forces are working against efficiency, a well-designed government policy can sometimes move society closer to an efficient outcome by altering the use of society's resources.

In the subsequent development of innovation theory, the "neo-Schumpeterian paradigm" and the "post-Schumpeterian paradigm" emerged successively. After the 1950s, based on the systematic progress of Western economies and technologies, neo-Schumpeterianism emerged in the economics community. It expanded Schumpeter's innovation theory in two aspects: the economics of technological innovation, which focuses on technological change; and the economics of institutional innovation, which focuses on institutional change. The characteristic of this neo-Schumpeterian paradigm is that it began to pay attention to the role of government regulation, thus developing the national innovation system theory developed by Christopher Freeman and Richard Nelson and constructing a model of innovation driven by technology and institutions.[2] Since the 1970s, the depletion of natural resources and environmental degradation have become the focus of attention of economists and policymakers, objectively requiring the inclusion of "sustainable development" or "green transformation" into Schumpeter's innovation theory, thus forming the "post-Schumpeterian" innovation paradigm. The characteristics of this paradigm are: firstly, it emphasizes the important role of non-producer factors in the occurrence of innovation activities, including the roles of government, social organizations, and consumers; secondly, it emphasizes the implementation of green-oriented technological innovation, especially the effective guidance of innovation towards the field of green technology through public policy.[3]

Looking back at the evolution of Schumpeter's innovation theory, it presents a development landscape composed of three innovation paradigms. The expansion mainly follows two paths: first, the evolution of the meaning of innovation, from the simple pursuit of profit and economic interests to the balance of economic interests and social interests, especially the inclusion of the goal of "sustainable development" and the focus on the green transformation of technological progress; second, the evolution of the organization of innovation, from innovation organized solely by entrepreneurs to the national innovation

system composed of entrepreneurs, government, etc., especially emphasizing the positive impact of government regulation and public policy on innovation, including the positive role of green-oriented policies.

Table 1: Evolution of Schumpeterian Innovation Paradigm

Main types	Schumpeterian Paradigm	Neo-Schumpeterian Paradigm	Post-Schumpeterian Paradigm
Core Ideas	New combinations of factors of production	The guiding role of government regulation	Incorporation of sustainable development goals
Application Ideas	Entrepreneurial spirit	Synergy between government and market	Dual-wheel drive for green transformation
Representative Figures	Joseph Schumpeter	Christopher Freeman	Philippe Aghion

2. How Government Regulation Becomes Corporate Action

In the realm of sustainable development and green transformation, "market failure" is a common phenomenon, necessitating government regulation to fill the void. Particularly during the industrialization period, Adam Smith's "invisible hand" proved inadequate in guiding the economy toward green transformation and green technological innovation. The nascent green technology and product markets lacked the necessary incentives to drive enterprises toward pursuing economic and social sustainability. In other words, innovation solely driven by profit would not spontaneously lead to green transformation. "Market failure" refers to the inability of market mechanisms to achieve optimal resource allocation and maximize social welfare due to the existence of public goods, externalities, and economies of scale. As Krugman stated, "When markets fail to produce efficient outcomes, government intervention can improve social welfare. That is, when market forces are working against efficiency, a well-designed government policy can sometimes move society closer to an efficient outcome by altering the use of society's resources."[4] Aghion argued that such a problem indeed exists in the realm of green innovation: "If technological change is to be directed towards green innovations and environmental disasters are to be avoided, government intervention is indispensable. In the absence of government intervention, firms will not spontaneously choose to undertake polluting technological innovations, and this tendency will become increasingly pronounced under path dependence."[5] This corporate behavior can be rationally explained by several theories: (1) The logic of the tragedy of the commons, where the green governance commons is a domain that every member of society enjoys the right to use and where it is impossible to prevent others from using common resources, leading to a lack of motivation for enterprises to develop green technologies.[6] (2) The logic of collective action, where in the public domain of green governance, maximizing individual behavior does not ensure the maximization of collective action benefits, and enterprises' attempts to "free

ride" are unlikely to produce rational collective or social outcomes.[7] (3) The logic of path dependence, where the more achievements a company has in traditional technologies, the more likely it is to continue technological innovation in that area, rather than spontaneously shifting to green technology innovation.[8]

The fundamental solution lies in harnessing market forces to organically integrate the goals of green transformation and corporate profitability.

Due to the "market failure" in the field of green technology, green transformation has undergone a long process and has been driven by international society and governments. Environmental disasters have promoted the emergence of a new environmentalist concept: sustainability or sustainable development. In 1987, the Brundtland Commission published a report titled "Our Common Future," defining sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs."[9] The 1992 United Nations Conference on Environment and Development identified climate change and biodiversity loss as the most urgent global problems; the 1997 Kyoto Protocol became the first binding international treaty to reduce global emissions; and the 2015 Paris Agreement began to seek binding policies to halt global warming and included developing countries. While international organizations have been making efforts, governments around the world have also been taking active measures: first, formulating a series of regulations for ecological and environmental protection; and second, introducing a series of fiscal policies to protect the ecological environment. There are some successful cases in this regard: (1) In the late 1970s, the U.S. government committed to solar and wind power generation, first introducing the Energy Tax Act, which provided a 30% tax credit for residential users and a 10% tax credit for commercial users, and then the Public Utility Regulatory Policies Act, which required utilities to purchase electricity from renewable energy power plants, thereby promoting the advancement of new energy technologies. (2) In 2012, Japan accelerated the development of low-carbon and energy-saving technologies, first by the Ministry of Economy, Trade and Industry launching the "Clean Energy Vehicle Import Subsidy" directly to consumers, and appropriately reducing the acquisition tax and vehicle tonnage tax for new cars based on energy-saving levels, and then by the central government issuing the "Green Growth Strategy" to limit harmful gas emissions. (3) In recent years, China has significantly increased its support for new energy vehicle technology innovation, with national ministries and commissions issuing government green procurement documents, requiring the electrification of public vehicles, relaxing restrictions on new energy vehicle purchases and exempting passenger car purchase taxes, and local governments also adopting corresponding preferential policies to promote the rapid development of new energy vehicles.

Clearly, the development of green transformation and green innovation requires the role of government regulation and policy to gradually transform it into corporate action. The specific path and mechanism are as follows: the first step is to propose the concept

of green development and green technology through social initiatives, creating a good social atmosphere and cultural environment; the second step is to adopt a "carrot and stick" approach, while introducing regulations to restrict high-energy-consuming technologies and industries, also introducing preferential policies to encourage the development of green technologies and industries; the third step is to implement policy withdrawal, allowing the green technologies and industries that have been supported to enter the track of normal development, transitioning from government regulation and incentives to corporate voluntary action.

Table 2: Green Transformation Roadmap 1

Regulatory Types	Social Initiatives	Regulatory Constraints	Policy Incentives	Policy Withdrawal
Regulatory Functions	Proposing green concepts	Restricting corporate behaviors	Incentivizing corporate transformation	Fostering corporate habits
Corporate States	Observance or response	Passive acceptance of constraints	Active implementation of transformation	Voluntary corporate action

3. How Green Technologies Leverage Market Forces

While the role of government and regulation is undoubtedly important, green technologies themselves lack the sustainable momentum and capacity for development without leveraging market mechanisms and forces. Therefore, the fundamental solution lies in harnessing market forces to organically integrate the goals of green transformation and corporate profitability. Elkington proposed the concept of "green capitalism," advocating for a triple bottom line of profitability, environmental quality, and social justice.[10] Hawken introduced the concept of "natural capitalism," a new business model that seeks to generate commercial profits while protecting natural resources.[11] These scholars attempt to address the connection between green transformation and profit generation. Since businesses cannot abandon their profit-making function, they ultimately rely on market mechanisms and forces.

However, in commercial practice, the profitability of green technologies often weakens. Since the emergence of new environmentalism, green entrepreneurs have been working to create new markets. Creating new markets requires answering two questions for consumers and customers: First, do green products truly possess superior performance compared to traditional products? For example, do electric vehicles have superior functions compared to traditional vehicles? Second, why should consumers pay a higher price for green products and related services? For example, why should consumers pay a higher price for organic food? To answer these questions, enterprises need to make efforts in promoting green concepts, innovating green technologies, and improving marketing methods, thereby exploring a path to drive green transformation through market forces. For example, before the 1980s, organic

food was sold poorly due to its high price. To address this, green entrepreneurs did three things: first, they relied on technological advancements to improve the performance of organic food; second, they built a supply chain system consisting of wholesalers and retailers; and third, they reduced the premium of organic food. Since the 1980s, the organic food market has grown rapidly and has expanded from developed country markets to emerging markets.

The development of green transformation and green innovation requires the role of government regulation and policy to gradually transform it into corporate action.

For instance, since the beginning of the 21st century, China has been committed to developing the new energy industry, focusing on the photovoltaic and new energy vehicle industries. (1) The photovoltaic industry, from polysilicon, silicon wafers, and cells to modules, has rapidly developed under the impetus of the international market and government support. Significant breakthroughs have been made in battery conversion efficiency and packaging technology. In 2024, the growth of domestic photovoltaic manufacturing and exports reached 30%, and the international market share of photovoltaic modules, cells, and silicon wafers reached 25%, 80%, and 95%, respectively. However, significant overcapacity has led to declining prices and profits, necessitating the elimination of relatively backward enterprises through technological upgrades and market competition to achieve market and price equilibrium. (2) Electric vehicle manufacturing has grown rapidly in recent years due to technological advancements and price advantages. Motors have reached an internationally leading level, batteries have reached an internationally advanced standard, and electronic controls are approaching an internationally advanced level. In 2020, sales reached 6.887 million units. However, there is still a problem of insufficient profitability overall. Except for leading companies like BYD and Tesla, most electric vehicle companies are in a state of loss, such as NIO, Xiaopeng, Ideal, and Li Auto, with annual losses of 14.94 billion yuan, 9.14 billion yuan, 20.3 billion yuan, and 51.1 billion yuan, respectively.[12] The future lies in increasing market concentration through technological upgrades and market competition. It is evident that the development of green technologies and green industries ultimately relies on the driving force of market mechanisms and market forces.

Clearly, while the development of green technologies and green enterprises requires the support of government and social organizations in the initial stages, it ultimately relies on the driving force of market forces. The specific path and mechanism are as follows: the first step is the breakthrough of green technologies, often occurring in developed countries, creating new technologies and products; the second step is the diffusion of green technologies, radiating and driving industrial development domestically, and then spreading the technology to emerging countries; the third step is to occupy the market, gradually expanding the sales market through technological improvements and marketing. As the market expands and economies of scale are formed, market forces drive green transformation.

Table 3: Green Transform Green Transformation Roadmap 2

Technology Formation	Technological Breakthrough	Technological Diffusion	Technology Market	Technological Benefits
Technological Functions	Achieving key technologies	Radiating and driving industries	Forming technological demand	Corporate profit generation
Mechanism Effects	Creating new products	Enhancing technological capabilities	Expanding market scale	Building market mechanisms

4. Conclusion

In his 2017 book, *Profit and Sustainability*, Harvard Business School professor Geoffrey Jones stated, "History has shown that profit and sustainability are difficult to reconcile. To date, green environmentalism has rarely led to economic returns."[13] Seven years have passed, and the world is undergoing new changes. With the rise of the new energy industry, Jones' view needs to be adjusted. Once new energy technologies and industries reach maturity, they will be accepted by producers and consumers, gradually developing into profitable technologies and industries.

Green transformation is a complex systems engineering project. It not only relies on government impetus but also, more importantly, on the support of green technological innovation, which in turn requires the support of a green innovation system. In this system, technology and regulation are like the two wheels of a car, driving green innovation from its infancy to maturity. At the same time, during its growth period, government regulations and policy incentives play a particularly important role. In its maturity period, the power of the market gradually grows and eventually becomes the dominant force driving green transformation.

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CADMUS, Volume 5, No.4, July 2025, 150-174

Unleashing the Synergy between Human Values and Digital Innovation:
A Holistic Framework for Sustainable Future Management Education

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Abstract

In an age marked by digital transformation and global uncertainty, traditional management education remains helpful but no longer sufficient to prepare leaders for the challenges ahead. This paper proposes a holistic framework that integrates human values with digital innovation to create a future-ready paradigm for business education. Built on a strong foundation of ethics, compassion, environmental care, and technological proficiency, our framework introduces ***Seven Transformative Educational Pillars and Five Engines of Sustainable Business Development****. These elements serve as a blueprint for cultivating conscious, adaptive, and impact-driven leaders. By drawing on ideas from systems thinking, emotional intelligence, and stakeholder theory, as well as lessons learned from hands-on, real-world experiences, the paper highlights real-world applications through global case studies from organizations like Google, Unilever, Patagonia, Amazon, and Zappos. It not only presents these cases as sources of knowledge but also reveals the hidden values these companies uphold during pivotal decision-making moments. By uniting humanistic principles with emerging innovations, the paper offers a visionary yet actionable roadmap for reimagining management education in a rapidly changing world.*

Sustainable business leadership requires more than profit metrics; it demands a triple vision: technological proficiency, environmental consciousness, and human development. Modern management education is the lens through which we develop this perspective.

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1. Foreword

Sustainable business leadership requires more than profit metrics; it demands a triple vision: technological proficiency, environmental consciousness, and human development. Modern management education is the lens through which we develop this perspective.

We are living in a pivotal era where the accelerating pace of technological advancement is reshaping every plane of business, society, and education. Artificial Intelligence, automation,

and digital ecosystems are redefining not just how we work, but also how we learn and lead. Yet, as we move forward with these powerful tools, a critical question arises: What values will guide the future of business leadership?

> *True education is that which prepares us for the larger life, making us capable of rising beyond mere survival and preparing us to contribute meaningfully to the world.*

This paper offers a fresh, transformative approach to that question, reimagining business education in a way that goes beyond traditional boundaries. It combines modern technological innovation with enduring human values, proposing a new roadmap for the future. By combining proven frameworks, real-world global case studies, and thoughtful philosophical insights, this paper envisions management education that goes beyond producing mere problem solvers. It aims to foster leaders who are data-driven but also empathetic, ethical, and deeply purpose-driven.

The proposed framework—secured in the Seven Educational Pillars and Five Engines of Business Transformation—presents a compelling blueprint for educators, policymakers, and industry leaders alike. From Google's 20% Innovation Time to Patagonia's values-led governance, from India's Green Revolution to HubSpot's well-being culture, the paper draws from a rich tapestry of real-world models that express this integrated approach.

This is more than a vision for reform. It is a call to action: to reshape our curricula, reimagine our pedagogies, and rethink our institutions—so that future leaders are equipped not just with technical skills, but with the moral imagination, cultural sensitivity, and complete awareness required to navigate the complexities of the 21st century.

2. Evolution of Management Education: Past, Present, & Future

The journey of management education reflects society's evolving needs and priorities, transitioning from a technical, hierarchical focus to an integrated model that blends strategic thinking, digital transformation, and ethical leadership. Historically, business schools emphasized analytical skills with limited human-centric competencies. Today, we witness a shift towards integrated learning approaches that combine technical expertise with emotional intelligence and ethical decision-making. The future demands a more comprehensive educational model, harmonizing technological proficiency with human values. This evolution aligns with technological advancements and shifting business expectations. This table examines the trajectory of management education by consolidating three major historical phases—Traditional Era (1900–1999), Digital Transformation Era (2000–2024) and Innovative Era (2025 and beyond)—into three distinct eras: exploring key themes such as pedagogy, emerging technologies, core competencies, and the future trajectory of management education.[1]

Table 1: The Evolution of Management Education: Where We have Been & Where We are Headed

Aspect	Traditional Era (1900–1999)	Digital Transformation Era (2000–2024)	Innovative Era (2025+)
Focus Areas	Scientific management, specialization, standardized curricula, hierarchical structures	Digitalization, AI & automation, blended learning, ethics & sustainability integration	AI-driven business models, personalized learning, decentralized ecosystems, regenerative business models
Key Technologies	Typewriters, mainframes, early computers, email	Cloud computing, AI, automation, immersive learning (VR, AR, Metaverse)	AI, ML, Quantum Computing,[2] Metaverse, Brain-Computer Interfaces, 6G, AI tutors, Neuralink-style interfaces, holographic collaboration
Statistical Insights	<5% MBA graduates (1950s), slow adoption of online learning	MOOCs rise (2010s), AI-driven course design (2020s)	50%+ MBA programs online (2035), AI mentors for all, EdTech market >$1T (2040)
Teaching Methods	Lecture-based, case studies, minimal technology use	Interactive learning, blended models (physical + online), AI-assisted learning	AI-powered adaptive learning, immersive business simulations, blockchain certifications, AI-generated learning paths[3]
Core Competencies	Technical expertise, hierarchical leadership, operations & strategy	Digital literacy, cross-cultural management, innovation mindset	AI fluency, digital leadership, systems thinking, ethical entrepreneurship, global collaboration
Key Characteristics	Teacher-centered, rigid structures, slow tech adoption	Hybrid learning, rapid tech adoption, greater accessibility	AI-augmented decision-making, human-AI synergy, continuous learning, Micro-credentials

3. Redefining the Purpose: The True Aim of Business Education

True education is that which prepares us for the larger life, making us capable of rising beyond mere survival and preparing us to contribute meaningfully to the world.

– Inspired by Sri Aurobindo

When we begin to see society as a living, interrelated system rather than just a collection of individuals, organizations, and economic systems, our entire vision of business education changes. Business education is no longer just about creating corporate professionals; it is about nurturing leaders who understand the subtle balance between economic, social, and environmental systems. The focus shifts from competition to collaboration, from abstract theories to reformative practices, and from short-term gains to long-term prosperity. This holistic and dynamic vision of business education aligns with the evolving needs of humanity, preparing individuals to lead with consciousness, adaptability, and a deep commitment to sustainable growth.

Case Study: Green Revolution

Visionary leadership has the power to reshape entire economies. A powerful example is the Green Revolution in India, where bold decisions, innovation, and collaboration turned a food crisis into an opportunity. This case study offers valuable lessons on how business education can nurture leaders who drive meaningful, lasting change.

The Green Revolution in India (1966–1976) demonstrated how visionary leadership, scientific innovation, and strategic collaboration can drive a large-scale transformation. The combined efforts of Mr. C. Subramaniam (Food & Agriculture Minister, 1964–1966) and Dr. M.S. Swaminathan showcase the power of systemic change, resilience, and sustainable growth.

Under their leadership, India's food grain production increased by 50% from 1966 to 1971 and by another 12% from 1971 to 1976, guaranteeing food security and economic stability. Key reforms such as the Minimum Support Price (MSP) policy (1965), the establishment of the Food Corporation of India (1965), ICAR restructuring (1966), and the creation of 1 lakh National Demonstration Plots (1966) empowered farmers to embrace high-yielding variety (HYV) seeds, fertilizers, and modern techniques. Just as agriculture was revitalized through market-driven policies, scientific leadership, and farmer authorization, business leaders must embrace innovation, ethical decision-making, and holistic strategy to create long-term economic and social impact. Future business education should move beyond technical skills, fostering conscious leadership, adaptability, and a commitment to sustainable progress, ensuring that students not only build successful enterprises but also dedicate themselves to meaningful transformation in society.[4]

The Green Revolution was not merely about science—it was powered by bold leadership, smart policies, and collaboration. Similarly, business education should go beyond technical skills to equip leaders who drive innovation, tackle challenges with a value-based approach, and create a lasting impact on society.

Sri Aurobindo's vision emphasizes that business education must go beyond skill development to shape future leaders with ethical responsibility, holistic intelligence, and a commitment to societal well-being. The ultimate goal is not just economic success but conscious leadership that drives positive transformation in the world.

4. Bridging the Gap: Current Shortcomings & Transformative Solutions

Imagine walking into a business classroom where learning is not just about absorbing theories, but about fundamentally changing how you see yourself and the world around you. This vision is not far-fetched—it is the future of business education that stands at a critical juncture today.

We are witnessing an essential reimagining of how we prepare leaders for an increasingly complex and interconnected world. Business education is evolving beyond a place of academic learning into a space for profound inner and outer transformation. Those who enter this journey must be prepared for an education that touches not just the intellect but also the heart and spirit—a realization that education can be an opportunity to transcend limitations and grow into a higher awareness that humanity desperately needs.

This transformation incorporates several key dimensions that extend beyond traditional educational frameworks. Let us explore the current education system's shortcomings and the transformative solutions that can help us—and our future leaders—grow beyond them:

Table 2: Business Education: Shortcomings vs. Transformative Solutions

Shortcomings	Transformative Solutions
Overemphasis on material outcomes, ignoring deeper learning.	*Integral Learning*: Blending material, psychological, and conscious knowledge.
Fragmented subject-based learning limits interdisciplinary connections.	*Transdisciplinary Curriculum*: Fostering interconnected, consciousness-based learning.
Competition-based evaluation discourages collaboration.	*Evolutionary Education:* Prioritizing self-discovery and lifelong adaptability.
Short-term focus on grades neglects lifelong learning.	*Personalized Pedagogy*: Adapting to each student's unique growth trajectory.
Standardized teaching overlooks diverse learning needs.	*Holistic Development*: Integrating physical, emotional, and conscious well-being.
Intellectual focus neglects physical, emotional, and spiritual growth.	*Experiential & Ethical Learning*: Encouraging reflection, creativity, and ethical decision-making.
Education prioritizes memorization over critical thinking.	Beyond rote memorization, emphasizing interconnected knowledge, critical thinking, inquiry, and real-world application.

By addressing these fundamental shortcomings through targeted solutions, we can construct a comprehensive educational approach.

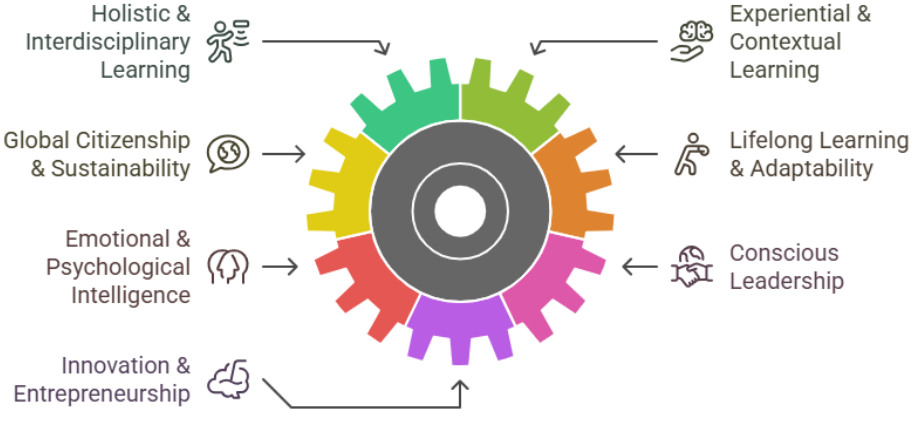
5. The Integrated Framework: Seven Pillars of Transformative Learning for Knowledge, Awareness & Action

The current education system has been foundational in shaping societies, fostering literacy, and creating pathways for growth. It has democratized access to knowledge through digital advancements and built frameworks that support skill acquisition, scientific progress, and economic development. Most importantly, education has been a powerful engine for social mobility, empowering individuals from diverse backgrounds to access better opportunities.

Despite these achievements, today's education system struggles with fundamental limitations: an excessive focus on grades and material success neglects emotional intelligence; siloed subjects prevent students from making vital cross-disciplinary connections; competitive environments undermine collaboration; and standardized approaches fail to appreciate diverse learning styles. These fragmented approaches ultimately limit critical thinking and real-world application capabilities.

Business education must evolve to meet the demands of a complex and interconnected world. Education should develop the person wholly—intellectually, emotionally, ethically, and socially—so that a developed self contributes to a just and sustainable society. The ultimate goal is a world where education uplifts humanity, fostering equality and transformative progress. One major challenge is that we often focus on the past for lessons and the future for aspirations while neglecting the present. True learning must balance past wisdom, future vision, and present action. Education should not confine but expand human potential, embracing infinite possibilities for the future of humankind. A forward-thinking, inclusive, and adaptable education system will shape ethical leaders, visionaries, and changemakers who build a fairer and more sustainable world.

Figure 1: The Seven Pillars of Educational Transformation: A Unified Framework



This framework presents seven core pillars that reimagine business education as a transformative force. Each pillar fosters holistic growth—intellectual, emotional, ethical, and social—creating a dynamic system for conscious leadership, innovation, and societal progress.

Future business leaders require a holistic understanding of markets, cultures, human behavior, and technological advancements. A curriculum grounded in integral knowledge fosters wisdom over mere data-driven decision-making, emphasizing ethical leadership and sustainable business practices.

The Seven-Pillar Solution Model:

1. **Integral Knowledge-Based Education** – Moving beyond rote memorization, this step emphasizes a deep understanding of interconnected knowledge systems, fostering critical thinking, inquiry, and real-world application.
2. **Consciousness-Based & Transdisciplinary Education** – Encouraging awareness-driven learning by integrating subjects across disciplines, enabling students to see the bigger picture and develop systems thinking.
3. **Unity-Based & Collaborative Education** – Replacing individualism and competition with a cooperative learning environment, promoting teamwork, empathy, and collective progress.
4. **Evolutionary & Lifelong Education** – Prioritizing self-discovery, adaptability, and continuous learning, ensuring that education extends beyond degrees to nurture lifelong personal and professional growth.
5. **Emotional, Psychological & Ethical Intelligence Education** – Embedding emotional intelligence, ethical reasoning, and psychological well-being in curricula to develop well-rounded individuals with integrity and self-awareness.
6. **Experiential & Contextual Education** – Fostering learning through practical experiences, ethical reflection, and creativity, ensuring that students not only absorb information but also apply knowledge ethically in real-world contexts.
7. **Holistic & Integral Well-Being Education** – Integrating physical, mental, and emotional well-being into the educational framework, preventing burnout, stress, and disengagement while fostering self-awareness and resilience.

This unified model envisions an education system that prepares individuals not just for careers but for meaningful contributions to society and the evolution of human consciousness.

By embracing this transformative approach, education can move beyond material success to cultivate wise, ethical, and adaptable leaders for the future.

5.1. Integral Knowledge-Based Education

Business education must evolve beyond traditional, profit-centric models by integrating intellectual, emotional, and ethical dimensions. Future business leaders require a holistic understanding of markets, cultures, human behavior, and technological advancements. A curriculum grounded in integral knowledge fosters wisdom over mere data-driven decision-making, emphasizing ethical leadership and sustainable business practices. Moving beyond rote memorization, this step emphasizes a deep understanding of interconnected knowledge systems, fostering critical thinking, inquiry, and real-world application.

Application to Business Decision-Making

By synthesizing insights from various disciplines—including economics, psychology, ethics, and environmental science—decision-makers can balance profitability with social and environmental impact. This approach fosters a more sustainable and ethical business environment where leaders think beyond short-term gains to long-term value creation for all stakeholders. Colin Mayer's perspective is particularly valuable here, as it challenges executives to ask not just 'How can we maximize profits?' but 'How can we profitably solve problems for people and the planet?' This fundamental reframing transforms how business decisions are evaluated and implemented.

Frameworks for Integral Business Thinking

To implement integral knowledge-based education in business practice, organizations can adopt comprehensive and popular frameworks already available that align with ethical leadership and sustainability:

- *Triple Bottom Line (TBL) Framework:* Introduced by John Elkington in 1994, TBL measures business success across three dimensions: People, Planet, and Profit. This approach encourages companies to evaluate their social and environmental impact alongside financial performance, promoting a balanced pursuit of sustainability and profitability.
- *Colin Mayer's Purpose-Driven Framework:* Oxford professor Colin Mayer redefines corporate purpose, arguing that businesses should "produce profitable solutions to problems of people and planet, not profit from producing problems for people or planet." His work advocates reforming corporate governance to legally embed purpose beyond profit maximization, ensuring that companies actively contribute to solving societal and environmental challenges.
- *B-Corp Certification:* A global movement of businesses committed to balancing profit with social and environmental responsibility. Certified B Corporations meet rigorous standards of social and environmental performance, accountability, and transparency, legally embedding their commitment to stakeholders into their corporate governance.

- *Integral Theory:* Developed by Ken Wilber, Integral Theory offers a comprehensive framework that integrates multiple dimensions of reality into decision-making. By considering individual and collective, as well as internal and external perspectives, this approach fosters holistic understanding and action in complex business environments.

Case Study: Patagonia's Purpose-Driven Leadership

Patagonia, an outdoor apparel company and certified B Corporation, exemplifies the integration of profitability with purpose. Founded by Yvon Chouinard in 1973, Patagonia has consistently prioritized environmental and social responsibility alongside financial success. The company's B Corp certification validates its commitment to meeting the highest standards of verified social and environmental performance, transparency, and accountability.

Through its business practices, Patagonia demonstrates the effectiveness of integral knowledge-based decision-making:

- Donates **1% of sales** to environmental causes through its **"1% for the Planet"** initiative.
- Challenges suppliers to include costs for employee welfare in their bids.
- Actively invests in environmental activism, demonstrating a deep commitment to holistic business practices and Mayer's concept of corporate purpose extending beyond profit maximization.
- In 2022, Chouinard transferred ownership of the company to a trust and nonprofit organization dedicated to fighting climate change, further cementing Patagonia's legacy as a purpose-driven enterprise.

By integrating frameworks like the Triple Bottom Line, Mayer's purpose-driven approach, B Corp principles, and Integral Theory into their strategic approach—as exemplified by Patagonia—businesses can nurture leaders who possess not only analytical and technical expertise but also the ethical foresight and holistic vision needed for sustainable success.[5] Patagonia's case demonstrates how integral knowledge-based education translates into real-world leadership that balances commercial success with positive social and environmental impact. This multidimensional perspective empowers organizations to navigate complexity, drive meaningful innovation, and create long-term value in an increasingly interconnected and socially conscious global economy.[6]

By fostering leaders who think holistically and act ethically, integral knowledge-based education lays the foundation for a consciousness-driven, interdisciplinary approach to learning and leadership.

5.2. Consciousness-Based & Transdisciplinary Education

In today's complex business landscape, challenges are multifaceted, requiring leaders to integrate insights from various disciplines. A consciousness-based approach to business education combines fields such as economics, psychology, sociology, and environmental studies. This integration enables students to develop systemic solutions to global issues like climate change, social inequality, and digital transformation.

Encouraging a "big picture" and human-centered approach involves integrating Systems Thinking, which helps students recognize interconnections within organizational contexts, Design Thinking, which sharpens the focus on user or customer perspectives, and Theory U, which fosters deeper self-awareness in leaders so they can sense emergent realities and co-create innovative solutions.

Conscious Solutions for Evolving Market Dynamics

- *Systems Thinking:* Introduced by Peter Senge in "The Fifth Discipline," systems thinking is a holistic approach to analyzing complex business issues. It emphasizes understanding the interrelationships within organizational systems to identify patterns and leverage points for effective change.[7]
- *Design Thinking:* Pioneered by IDEO and popularized by the Stanford d.school, design thinking is a human-centered approach to innovation. It involves empathizing with users, defining problems, ideating, prototyping, and testing solutions. This iterative process encourages creativity and cross-disciplinary collaboration.[8]
- *Theory U (Presencing Framework):* Developed by Otto Scharmer, Theory U guides leaders through a process of sensing, presencing, and realizing. It focuses on cultivating deeper awareness and co-creating innovative solutions by tapping into emerging future possibilities.[9]

Real-World Case Study: Google's 20% Innovation Time Policy

Google's 20% innovation time policy exemplifies consciousness-based and transdisciplinary education principles in action within a corporate setting. By allowing engineers to dedicate one-fifth of their work time to personal projects, Google creates an environment where cross-disciplinary exploration flourishes. This policy has yielded remarkable results, including the development of Gmail, Google Maps, and AdSense—products that emerged from employees integrating insights across technical, design, and business domains.

- *Systems Thinking in Practice:* Google's innovation policy recognizes business as an interconnected ecosystem where value emerges from understanding relationships between technology, user needs, and market forces.
- *Design Thinking Application:* The 20% program embodies human-centered innovation by encouraging engineers to empathize with users, define problems worth solving, and iteratively develop solutions.
- *Theory U Embodiment:* Google's approach creates space for employees to suspend established thinking patterns, connect with emerging possibilities, and rapidly prototype transformative solutions.

Google's 20% innovation time policy demonstrates these frameworks working in concert, creating an environment where engineers can address complex challenges through multiple perspectives. This integrated approach has yielded breakthrough products like

Gmail, Google Maps, and AdSense—innovations that emerged not from siloed expertise but from allowing employees to traverse disciplinary boundaries while remaining connected to user needs and market realities. The success of this model offers compelling evidence for why business education must evolve beyond single-framework approaches to embrace integrative, consciousness-based learning.

5.3. Unity-Based & Collaborative Education

In today's interconnected global economy, businesses thrive on cooperative leadership, shared value creation, and stakeholder engagement. Replacing individualism and competition with a cooperative learning environment that promotes teamwork, empathy, and collective progress is essential. Transitioning from traditional, competitive, profit-maximization models to collaborative frameworks enables companies to initiate social impact while achieving economic success.

Comprehensive Frameworks for Integral Business Thinking

- *Shared Value Framework:* Developed by Michael E. Porter and Mark R. Kramer, the Shared Value Framework posits that businesses can generate economic value by identifying and addressing social problems that intersect with their operations. By aligning business success with social progress, companies can enhance their competitiveness while simultaneously advancing societal well-being.[10]
- *Collaborative Capitalism Model*: Introduced by Rosabeth Moss Kanter of Harvard Business School, this model emphasizes the importance of shared leadership and partnership in organizations. Collaborative capitalism encourages businesses to work together with various stakeholders, including competitors, to innovate and solve complex societal challenges, leading to mutual benefits and sustainable success.[11]
- *Stakeholder Theory:* Articulated by R. Edward Freeman in 1984, Stakeholder Theory suggests that businesses should create value for all stakeholders, not just shareholders. This includes employees, customers, suppliers, communities, and the environment. By considering the interests and well-being of all parties involved, companies can build sustainable strategies that foster loyalty, innovation, and long-term profitability.[12]

Real-World Case Study: Unilever's Sustainable Living Plan

In 2010, Unilever, a global leader in consumer goods, launched the **Unilever Sustainable Living Plan (USLP)** to decouple business growth from environmental impact while enhancing positive social outcomes. The plan set ambitious goals, including helping over a billion people improve their health and well-being, sharing the company's environmental footprint, and enhancing the livelihoods of millions.

To achieve these objectives, Unilever partnered with governments, NGOs, and consumers, embracing a collaborative approach to sustainability. This strategy not only reduced the company's carbon footprint but also demonstrated that responsible business practices can drive profitability and long-term growth.[13]

By integrating environmental, social, and economic considerations, Unilever's Sustainable Living Plan shows how businesses can leverage unity-based and collaborative frameworks to create value for both stakeholders and society. It proves that collaboration across sectors can fuel innovation, resilience, and sustainable success.

5.4. Evolutionary & Lifelong Education

In the rapidly evolving landscape of artificial intelligence, automation, and digital economies, business education must emphasize continuous learning and adaptability. Leaders are required to cultivate a growth mindset, resilience, and curiosity to navigate and lead through industry disruptions successfully.

Comprehensive Frameworks for Integral Business Thinking

- *Lifelong Learning Model (UNESCO, 2015):* This model advocates for education that extends beyond traditional institutions, promoting learning as a continuous process throughout an individual's life. It emphasizes the importance of accessible and flexible learning opportunities to meet the diverse needs of all learners. Central to this model are principles of equity, quality, and inclusion. UNESCO views lifelong learning as a key driver for social development, personal fulfillment, employability, and active citizenship, highlighting that all learning modes—formal, non-formal, and informal—deserve recognition and support.[14]
- *Digital Learning Platforms:* Platforms such as Coursera, edX, and LinkedIn Learning democratize access to continuous business education, offering a wide range of courses that enable professionals to upskill and stay current with industry trends.
- *Agile Learning Framework (McKinsey & Company):* This framework promotes rapid, iterative upskilling strategies for businesses, enabling organizations to respond swiftly to changing market demands and technological advancements.[15]

Real-World Case Study: Amazon's Learning Culture

Amazon exemplifies its commitment to continuous learning and professional growth through the Career Choice program, which pre-pays tuition for employees pursuing education in areas ranging from high school completion to bachelor's degrees and industry-recognized certifications. By investing in employee development, Amazon helps its workforce remain adaptable in a fast-evolving job market. As part of its broader Upskilling 2025 pledge, the company has committed over $1.2 billion to multiple training initiatives—including Career Choice—to upskill hundreds of thousands of employees by 2025.[16]

By integrating these frameworks and platforms, businesses can cultivate a culture of continuous learning and adaptability to navigate an evolving market landscape. The Lifelong Learning Model promotes ongoing skill development, while Digital Learning Platforms provide accessible, personalized education. The Agile Learning Framework enables rapid upskilling, keeping organizations ahead of industry shifts. Together, these approaches foster innovation, resilience, and sustainable growth in a dynamic global economy.

5.5. Emotional, Psychological & Ethical Intelligence Education

In today's complex business environment, leaders must possess self-awareness, ethical reasoning, and emotional intelligence (EI) to navigate global challenges with integrity and resilience. Integrating ethics, mindfulness, and psychology into business education curricula is essential for developing these competencies.

Integrating Emotional, Psychological, and Ethical Intelligence in Business Education

- *Emotional Intelligence Framework (Daniel Goleman, 1995):* Daniel Goleman's EI framework outlines four key components:

  Self-Awareness: Recognizing and understanding one's own emotions.
  Motivation: Harnessing emotions to pursue goals with persistence.
  Empathy: Understanding and sharing the feelings of others.
  Social Skills: Managing relationships to move people in desired directions.

Developing these competencies enables leaders to navigate complex interpersonal dynamics and make informed, empathetic decisions.[17]

- *Ethical Decision-Making Models (Joseph Badaracco, Harvard Business School):* Joseph Badaracco offers practical frameworks for navigating ethical dilemmas in business. His approach emphasizes:

  Defining the Problem: Clearly articulating the ethical issue at hand.
  Identifying Stakeholders: Recognizing all parties affected by the decision.
  Considering Alternatives: Evaluating various courses of action and their potential.
  Reflecting on Values: Aligning decisions with personal and organizational ethics.[18]

- *Mindfulness-Based Leadership (Google's Search Inside Yourself Program):* Google's "Search Inside Yourself" (SIY) program integrates mindfulness practices with emotional intelligence training to enhance leadership skills. The program focuses on:

  Mindfulness Meditation: Cultivating present-moment awareness to reduce stress and improve focus.
  Self-Awareness Exercises: Deepening understanding of one's thoughts, emotions, and behaviors.
  Empathy Development: Enhancing the ability to connect with and understand others' perspectives.[19]

Real-World Case Study: Zappos' Culture of Empathy and Ethical Leadership

Zappos, founded in 1999 and later led by CEO Tony Hsieh, exemplifies emotional and ethical intelligence in business practice. The company is known for its "Delivering WOW Through Service" motto and unique cultural practices, including paying new hires to quit if they do not align with the company's values. Guided by 10 Core Values centered on

honesty, growth, and ownership, Zappos maintained its distinct identity even after Amazon's acquisition in 2009. Their approach to flattening hierarchies through experiments like Holacracy has resulted in high employee satisfaction, customer loyalty, and a thriving culture built on well-being and clearly defined values. This demonstrates how emotional intelligence and ethical leadership principles can create tangible business success.[20]

Incorporating emotional, psychological, and ethical intelligence into business education is critical for shaping leaders who can meet the demands of today's intricate global landscape with authenticity and resilience. Frameworks such as Daniel Goleman's Emotional Intelligence model, Joseph Badaracco's ethical decision-making guidelines, and Google's mindfulness-based leadership program "Search Inside Yourself" provide concrete methods for cultivating these essential skills. Real-world examples like Zappos illustrate the transformative power of a values-driven culture built on empathy, continuous learning, and principled leadership. By embracing these practices, organizations can foster robust, people-centric workplaces and long-term ethical success, ensuring that leaders are equipped not only to excel in their roles but also to make meaningful positive impacts on society.

5.6. Holistic & Integral Well-Being Education

In today's demanding world, holistic well-being has become essential for effective leadership and organizational success. True well-being integrates body, mind, and consciousness, enabling individuals to act with resilience, clarity, and purpose. As workplace stress increases, organizations recognize that future leaders need well-being competencies alongside technical skills. By incorporating physical health practices, mindfulness training, and emotional intelligence into leadership education, we prepare decision-makers who can maintain their well-being, foster healthy organizational cultures, and prioritize human flourishing in their strategic vision.

Comprehensive Frameworks for Integral Human Well-being

- *Workplace Well-Being Index (Gallup, 2020):* This index measures employee happiness and engagement, providing organizations with insights into areas needing improvement to enhance overall well-being. By regularly assessing factors such as job satisfaction, work environment, and employee stress levels, companies can implement targeted strategies to improve their workplace culture.[21]
- *PERMA+4 Framework:* An extension of the original PERMA model, this framework includes Positive Emotions, Engagement, Relationships, Meaning, Accomplishment, plus Physical Health, Mindset, Environment, and Economic Security. It offers a comprehensive approach to well-being applicable in organizational settings.[22]
- *Mindful Business Charter (UK Corporate Initiative):* The Mindful Business Charter provides a practical framework aimed at reducing unnecessary stress and promoting better mental health and well-being in the workplace. It encourages open communication, respect for rest periods, and thoughtful delegation of tasks. By adopting the charter's principles, organizations commit to fostering a culture that prioritizes the mental health of their employees.[23]

Real-World Case Study: HubSpot's Well-Being Strategy

HubSpot, a leading software company specializing in customer relationship management (CRM) and inbound marketing platforms, has gained recognition for its strong company culture and holistic approach to employee well-being. The company's flexible/hybrid work model, unlimited vacation policy (including a "Global Week of Rest"), and robust mental health resources help employees adapt schedules and avoid burnout, while open discussions about stress ensure a supportive environment. Rooted in a values-based "Culture Code" that emphasizes empathy, transparency, and "HEART" (Humble, Empathetic, Adaptable, Remarkable, Transparent), HubSpot also supports employee resource groups (ERGs) and organizes social events that foster connection and inclusivity, regardless of location. Fortune named HubSpot among the "Best Workplaces for Parents 2024" and "100 Best Large Workplaces for Women," while Forbes featured it in "America's Dream Employers for 2025," underscoring its commitment to a supportive and inclusive workplace.[24]

Business schools that embed these well-being principles graduate leaders who champion innovation while caring deeply for the people they serve. Building psychologically safe, human-centered workplaces is no longer optional; it is essential to resilience and long-term success. As stakeholders demand broader value creation, leaders who integrate well-being practices into their leadership will not only drive profit but also nurture human flourishing, creating organizations that sustain both purpose and prosperity in today's interconnected world.

5.7. Experiential & Contextual Learning

In the realm of business education, it is imperative to prioritize **experiential and contextual learning** that immerses students in real-world scenarios, fostering the development of conscious and responsible leaders. This integrated approach emphasizes hands-on experiences within authentic contexts, ethical challenges, and practical applications to bridge the gap between theoretical knowledge and practical execution.

Comprehensive Frameworks for Experiential & Contextual Learning

- **Harvard Business School Case Method (1920s – Present):** This pedagogical approach engages students in the analysis of real-world business dilemmas, enhancing critical thinking and decision-making skills. By dissecting complex scenarios, students learn to navigate challenges and devise strategic solutions, preparing them for leadership roles in dynamic business environments.[25]
- **Lean Startup Methodology (Eric Ries, 2011):** Emphasizing experimentation and iterative development, this methodology encourages entrepreneurs to build minimum viable products, test hypotheses, and refine business models based on customer feedback. This approach reduces waste and accelerates the innovation process, aligning closely with experiential learning principles.[26]
- **Integration of Immersive Technologies:** The adoption of Virtual Reality (VR), Augmented Reality (AR), and business simulations is revolutionizing experiential

learning. These technologies create immersive environments where students can engage in simulated business scenarios, allowing for practical application of theoretical concepts in risk-free settings. This approach enhances understanding and retention of complex business principles.[27]

- **Situated Learning Theory (Lave & Wenger, 1991):** This theory posits that authentic learning occurs within "communities of practice" where knowledge is socially constructed through collaborative engagement. In business education, situated learning manifests through industry-embedded projects, where students work alongside professionals to solve real business challenges. This framework emphasizes that learning is inseparable from doing and occurs most effectively when situated within relevant professional contexts.[28]

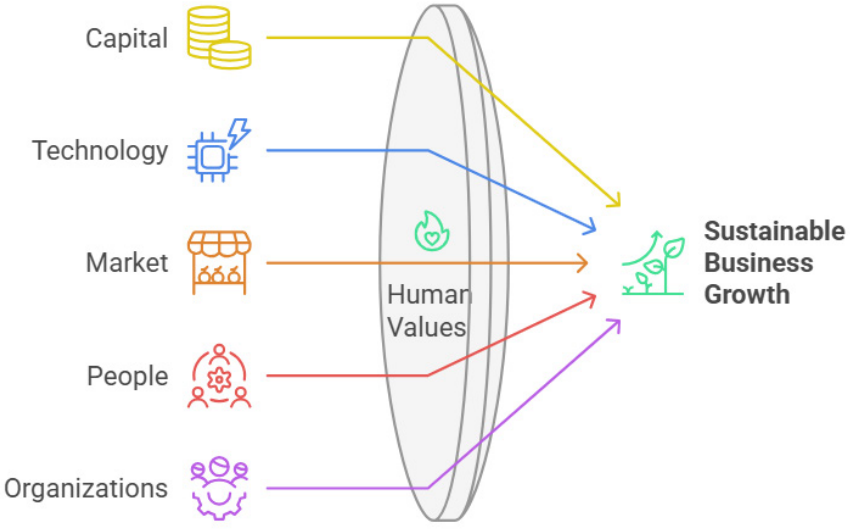
IKEA's commitment to sustainability is exemplified through its **IWAY (IKEA Way on Purchasing Products, Materials, and Services)** strategy, established in 2000. Serving as IKEA's supplier code of conduct, IWAY outlines expectations for social and environmental responsibility, encompassing labor conditions, safety, and environmental practices. This model ensures that suppliers adhere to stringent standards, promoting ethical sourcing and the integration of circular economy principles throughout IKEA's supply chain. IKEA's continuous updates to IWAY reflect an iterative, feedback-driven approach, aligning with the Lean Startup mindset of constant refinement based on real-world impact. By continually updating IWAY to reflect evolving sustainability standards, IKEA demonstrates the practical application of experiential and ethical learning in its operations.[29]

Experiential and contextual learning frameworks—including the Harvard Case Method, Lean Startup, Immersive Technologies, and Situated Learning Theory are essential for developing responsible business leaders. IKEA's IWAY model illustrates how these frameworks can be integrated in practice. By embracing these approaches, business education cultivates leaders with both business acumen and ethical commitment, preparing graduates to drive sustainable innovation across diverse global contexts.

6. Driving Business Sustainability: Five Engines Powered by Human Values for the Future Education System

The future of business education must move beyond traditional profit-driven models to holistic leadership development, emphasizing a triple vision: technological proficiency, environmental consciousness, and human development. To prepare future leaders, the education system should merge five fundamental engines with the education system, each playing a crucial role in shaping a sustainable, ethical, and innovative business environment. Five engines powered by human values are inextricably intertwined and drive their practical implementation in real-world business. Sustainable and profitable corporate growth can be achieved by tapping into five unlimited sources of energy, known as the five engines of growth.[30]

Figure 2: Five Engines Powered by Human Values



The Five Engines of Business Growth

1. **Market** represents the sum of society's needs and aspirations that businesses can serve. A deep understanding of the market is essential for sustained business growth. Companies must identify unmet needs, anticipate trends, and innovate to elevate customer aspirations. Strong customer relationships, built through superior service, proactive engagement, and adaptability, ensure long-term loyalty. By evolving with customer needs, businesses foster market expansion and drive continuous growth.

   Key Points:

   - Anticipating market trends and customer expectations.
   - Delivering personalized experiences and superior service.
   - Continuous engagement to build lasting customer loyalty.

   Key Human Values:

   - Integrity
   - Transparency
   - Customer Empathy

2. **Technology** encompasses the knowledge, expertise, skills, patents, and know-how used to create and deliver products and services. It is the foundation of innovation, enabling companies to meet evolving societal needs. Leveraging cutting-edge technologies improves operational efficiency and enhances product quality. Continuous investment in research, quality control, and digital transformation drives adaptability. Mastery of technology ensures long-term competitiveness, sustainability, and growth.

Key Points:

- Commitment to innovation and continuous improvement.
- Leveraging advanced technologies to optimize efficiency.
- Rapid adaptation to industry and technological advancements.

Key Human Values:

- Responsibility
- Sustainability
- Safety and Quality

3. **People** – Employees are the foundation of any organization, making talent acquisition, retention, and development critical growth factors. A thriving corporate culture, employee motivation, ongoing training, and leadership development empower a productive workforce. Companies that value their employees see improved creativity, efficiency, and overall business performance.

   Key Points:

   - Attracting, motivating, and retaining skilled, committed employees.
   - Providing opportunities for professional and personal growth.
   - Empowering employees to maximize productivity and creativity.

   Key Human Values:

   - Respect and Inclusivity
   - Employee Well-being
   - Personal and Professional Development

4. **Capital** includes all forms of assets—financial resources, infrastructure, intellectual property, and brand equity. It enables companies to develop, produce, and deliver products and services to meet market needs. Effective financial management is essential to optimize capital allocation and control costs. Strategic investment in revenue-generating assets builds financial stability and drives profitability. Mastering capital management ensures sustainable growth and long-term business resilience.

   Key Points:

   - Strategic allocation and efficient utilization of financial resources.
   - Effective cost control and budgeting for growth.
   - Leveraging capital to stimulate innovation and expansion.

   Key Human Values:

   - Ethical Stewardship
   - Transparency and Accountability
   - Financial Integrity

5. **Organization** is the structure, systems, skills, and relationships that mobilize a company's capacities to deliver products and services. It unifies people, suppliers, customers, and partners to meet societal needs effectively. A structured and agile organization enables businesses to scale efficiently and adapt to change. Streamlined operations, strong communication, and leadership alignment drive efficiency and resilience. Mastering organizational agility ensures long-term sustainability and competitive advantage.

   Key Points:

   - Fostering organizational agility and responsiveness.
   - Developing efficient systems for smooth and coordinated operations.
   - Maintaining clarity in roles, responsibilities, and communication channels.

   Key Human Values:

   - Collaboration and Teamwork
   - Openness and Trust
   - Collective Accountability

The value-driven approach to business has gained significant traction in recent years, moving from the periphery to the core of successful business practices. These concepts should be introduced to business school students as fundamental principles of modern business education.

By integrating these engines and their associated human values into curricula, students will develop a comprehensive understanding of sustainable business practices. This approach prepares future leaders to skilfully balance profit objectives with ethical considerations, environmental responsibility, and human development. Business schools should emphasize that while each engine contributes individually to growth, their true potential emerges through harmonious integration. Companies that achieve this synergy demonstrate consistent growth, profitability, and resilience—even during challenging market conditions. By embedding these value-driven practices in business education, graduates will be equipped to:

- Unlock remarkable opportunities for innovation and growth
- Navigate complex challenges with integrity and purpose
- Create a positive societal impact alongside business success
- Lead organizations that thrive in both financial and ethical dimensions

This framework provides a blueprint for business education that prepares students not just to succeed in business, but to redefine what business success means for the future.

7. Beyond Technology: How Values Shape Real-World Business Scenarios

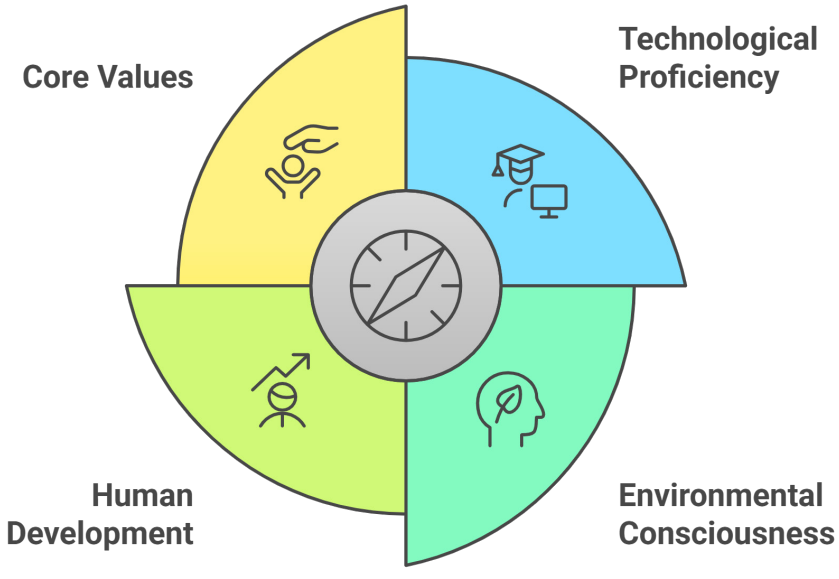
Sustainable leadership is not just about profits—it is about people, the planet, and progress. Future leaders must blend technology with ethics, innovation with responsibility, and success with purpose to create meaningful change.

7.1. Leo's Story

Leo, a business student, wants to build a supply chain that is not just efficient but ethical. He uses AI to cut waste and blockchain for transparency, but he knows that technology alone is not enough. His values guide his choices:

- Smarter logistics with AI = Less waste, better efficiency.
- Blockchain for trust = Ethical sourcing, no hidden gaps.
- Fair wages & diversity = A workplace where everyone thrives.
- Transparency & impact = Business success beyond just profit.

Figure 3: Beyond Technology: How Values Shape Real-World Business Scenarios



7.2. Lessons from Leo: Building Businesses

- *Values First, Technology Second:* Technology is a tool. Values are the compass. True leadership starts with ethical principles guiding every decision.
- *Innovation Must Serve Humanity:* AI, blockchain, and other technologies create efficiency and transparency—but only values ensure fairness, dignity, and inclusion for all stakeholders.
- *Success is Measured by Impact, Not Just Profit:* A thriving business today measures its success not only by revenue, but by the positive impact it creates for people, communities, and the planet.

- *Sustainable Leadership is Human-Centered:* The future belongs to leaders who put human well-being, ethical responsibility, and environmental sustainability at the heart of their innovation.

Leo proves that true leadership is not just about using technology—it is about using it in the right way, guided by the values needed for meaningful change. By putting people first, he builds a business that is not only innovative but also fair, sustainable, and creates a positive impact on people and the planet.

The future of business education stands at a critical intersection of technological disruption, ethical leadership, and sustainability. While AI can revolutionize learning, only human values can ensure ethical progress.

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8. A Borderless, AI- & Technology-Driven Business Education

Conventional education is limited by geography, rigid frameworks, and outdated methods. In contrast, a borderless, AI-powered business education offers accessible, flexible, and competency-based learning that aligns with global challenges and sustainability goals.

8.1. Expanding Learning Frontiers

This new global model equips future leaders with agile, ethical, and technology-driven education, transcending physical and intellectual boundaries to foster a more inclusive and connected learning ecosystem.

8.2. Implications for Future Business Leaders

With AI-driven business education, leaders will:

- Adapt to rapid market shifts through real-time AI insights and decision-support systems.
- Think critically and ethically by integrating emotional intelligence with AI-driven learning.
- Leverage cross-cultural intelligence to collaborate effectively in a globally connected business environment.
- Innovate with AI and sustainability in mind, ensuring long-term, ethical business impact.

8.3. The Need for a Paradigm Shift

The future of business education must transcend physical and intellectual barriers. A borderless, AI- & Technology-Driven model ensures that learning is more inclusive,

competency-based, and globally relevant. The integration of AI, immersive technologies, and cross-border credentialing will empower leaders who are not only technologically proficient but also ethically and socially responsible.

8.4. Case Studies of Success

Several leading business schools have already begun implementing elements of this model:

- INSEAD's multi-campus approach, combined with AI-driven remote learning, has enabled truly global classroom experiences.[31]
- MIT Sloan's blockchain-verified credentialing system allows for secure, portable qualifications.[32]
- Stanford GSB's partnership with global corporations creates AI-powered apprenticeship opportunities across borders.[33]

8.5. Challenges and Considerations

While promising, this educational transformation faces hurdles:

- Ensuring equitable access to technology infrastructure across different economic regions
- Developing cross-border accreditation standards that maintain quality while enabling flexibility
- Balancing AI-driven efficiency with human connection and mentorship
- Addressing data privacy concerns in globally distributed learning environments

The shift toward borderless, AI- & Technology-Driven business education is already happening—the question is not whether we will adapt, but how quickly we can embrace the future of learning. Educational institutions, regulatory bodies, technology providers, and business leaders must collaborate to create frameworks that maximize the benefits while addressing the challenges.

By reimagining business education as a dynamic, technology-enhanced global ecosystem rather than a location-bound experience, we can prepare leaders who are equipped to navigate the complexities of tomorrow's business landscape with technological sophistication, ethical awareness, and human values.

9. Summary: A Transformative Vision for Future Business Education

The future of business education stands at a critical intersection of technological disruption, ethical leadership, and sustainability. As industries evolve through artificial intelligence, blockchain, and immersive digital environments, business education must adapt and innovate while remaining human-centric and purpose-driven. It is not just about

technology—it is about people using technology responsibly. While AI can revolutionize learning, only human values can ensure ethical progress.

This paper proposes a **holistic, future-ready framework**, anchored in:

- *Seven Learning Solutions:* Emphasizing transdisciplinary knowledge, lifelong learning, and ethical intelligence.
- *Five Business Development Engines:* Aligning technology, markets, capital, and human values.
- *Three Key Imperatives:*
  - *Redefine Learning*: Shift towards modular, AI-powered, lifelong learning ecosystems.
  - *Balance Innovation and Ethics:* Ensure digital advancements are guided by values-based leadership.
  - *Bridge Academia, Industry & Society:* Strengthen multi-sector collaboration for global impact.

Call to Action

- *For Business Schools:* Adopt AI-personalized learning, experiential education, and micro-credentials.
- *For Policymakers & Educators*: Create digital accreditation standards, embed ethics and sustainability, and enhance industry ties.
- *For Industry Leaders:*Invest in employee learning, support ethical business models, and co-create future-focused curricula.

Toward a Borderless, Ethical, and AI-Driven Future

Education must do more than train—it must **inspire leaders, innovators, and ethical changemakers**. As Peter Drucker said, *"The best way to predict the future is to create it."*

In the modern economy, knowledge is the most valuable asset, surpassing capital and labor. However, the true mission of education goes beyond mere knowledge acquisition; it must cultivate wisdom. Future leaders must be equipped not just with skills but with the consciousness to transform industries, societies, and humanity itself. Organizations must move away from rigid command-and-control structures and embrace knowledge-driven, ethical, and innovative approaches.

As Sri Aurobindo said, *"Education will be based on what we hope to receive from the future, and not on what we think we know from the past."*

The time to act is now. Let's reimagine business education for a future where knowledge meets wisdom, and innovation meets ethics.

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CADMUS, Volume 5, No.4, July 2025, 175-188

Technological and Socio-Economic Progress Toward a Post-Monetary Civilization: From Utopia to Real Policymaking

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Abstract

This article begins by examining the fallacies of meritocracy and capitalism. It then explores a new socio-economic system that promises to be more sustainable, equitable, and conducive to happiness than the one dominating most of the planet today, highlighting the crucial role of scientific progress. Our existing system thrives on scarcity, resulting in an unfair distribution of wealth and opportunities. In contrast, the proposed model relies on technological advancements to lead humanity into an age of abundance, rendering money irrelevant. The ultimate goal is to achieve a planetary civilization that is post-monetary, democratic, egalitarian, sustainable, and happier. The article offers recommendations for public policies and business actions to help realize this vision.

The ultimate goal is to achieve a planetary civilization that is post-monetary, democratic, egalitarian, sustainable, and happier.

1. Introduction – The Current Condition of Humanity

The striking improvement in living standards over the past 80 years has not prevented inequality, environmental deterioration, and unhappiness from expanding across the globe.

In 2013, Bong Joon-ho, who would later gain international acclaim for the Academy Award-winning film Parasite, directed the sci-fi movie Snowpiercer. Set in a post-apocalyptic future where Earth has become a frozen wasteland due to a climate catastrophe, the film depicts humanity living on a perpetually moving train. The elites reside in the luxurious front cars, while the poor are crammed into squalid tail compartments, performing repetitive tasks under the watch of armed guards. Fights and revolts are either spontaneous or orchestrated to control overpopulation.

The dystopian nightmare portrayed in Snowpiercer could become a reality if humanity fails to change its current trajectory. Globally, since 1990, inequality has been increasing within many middle-income countries and most of the developed ones.* Inequality is a dramatic societal challenge that can no longer be neglected. Regarding the climate cataclysm, "It is

* United Nations Department of Economic and Social Affairs, *Inequality in a Rapidly Changing World – World Social Report 2020* (New York: United Nations, 2020)

an established fact that human-induced greenhouse gas emissions have led to an increased frequency and/or intensity of some weather and climate extremes since pre-industrial time, in particular for temperature extremes".* Despite growing investments in renewables, over 80% of the energy consumed by human civilization still comes from fossil fuels.† We recycle very little—only 19% of global waste—and waste an enormous amount of food, enough to feed 2 billion people, or twice the number of malnourished humans.‡ In other words, we are failing to use the planet's resources effectively and efficiently, which significantly impacts the climate.

Inequality and climate change also appear to affect happiness. The 2024 edition of the World Happiness Report shows that happiness in North America, Australia, the Middle East, North Africa, India, and many European countries has declined from 2006-2010 to 2021-2023.§ Globally, less than one in four employees feel motivated at work (in Europe, approximately one in ten). Additionally, 59% of workers are "quiet quitting", and half of the workforce is actively looking for another job.¶ This is concerning, given that adults spend most of their time at work.

On the other hand, in many respects, humanity is doing better now than a few decades ago. For instance, we have eradicated diseases that were deadly centuries ago, we have the internet, we have apps that help us find love, and we can travel across the globe in just a few hours. In democratic nations, there are plenty of development opportunities for children regardless of their family's status. However, this progress should not prevent us from questioning whether the current situation is ideal, whether we are building enough foundations for further improvement, and whether a better socio-economic system is unattainable. The purpose of this article is to argue that the answer to these questions is "no" and proffer a theoretical model for the future, including some potential steps needed to achieve it.

2. Premise no. 1: Privilege is Mistaken for Merit

Despite its numerous benefits, capitalism is built on shaky grounds by overestimating merit, leading to an unfair distribution of wealth.

This premise builds upon a fundamental consideration of free will. Stephen Hawking said: "The molecular basis of biology shows that biological processes are governed by the laws of physics and chemistry and therefore are as determined as the orbits of the planets… so it seems that we are no more than biological machines and that free will is just an illusion."** This article adheres to his view and the evolutionary explanation of free will. It is crucial to

* Intergovernmental Panel on Climate Change, *IPCC Working Group I Sixth Assessment Report* (Intergovernmental Panel on Climate Change, 2021), Retrieved from https://www.ipcc.ch/report/ar6/wg1/

† Hannah Ritchie and Pablo Rosado, "Energy Mix," *Our World in Data*, January 2024 https://ourworldindata.org/energy-mix#:~:text=Globally%20we%20get%20the%20largest,the%20energy%20mix%20by%20country

‡ Silpa Kaza et al., *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050* (Washington, DC: World Bank, 2018), https://doi.org/10.1596/978-1-4648-1329-0; World Food Programme, "5 facts about food waste and hunger," *World Food Programme*, June 25, 2024. Retrieved from https://www.wfp.org/stories/5-facts-about-food-waste-and-hunger#:~:text=Global%20hunger%20isn't%20about,before%20it%20can%20be%20consumed.

§ J. F. Helliwell et al., *World Happiness Report 2024* (Oxford: Wellbeing Research Centre, 2024)

¶ Gallup, *State of the Global Workplace: 2024* (Gallup, 2024). Retrieved from https://www.gallup.com/workplace/349484/state-of-the-global-workplace.aspx

**Leonard Mlodinow and Stephen Hawking, *The Grand Design* (New York: Random House, 2010)

state this at the outset because, until conclusive proof on the nature of free will is found, the only valid standpoint on this matter—and the one on which this article is predicated—is an agnostic one that accounts for the environmental and biological factors, such as privilege and chance, that condition an individual's decisions. Human choices, efforts, and talent—in one word, merit—are derived from, or at least influenced by, a sequence of "nature" and "nurture" inputs.

If the ontology of free will is debatable, then the ontology of merit is equally contentious. Consequently, can we depend on a socio-economic system founded upon it?

Capitalism is based on the premise that, among other things, a) through merit anyone can succeed, and b) success is measured by financial wealth. This way of thinking underplays the importance of aleatory factors, reinforces the sense of entitlement of wealthier individuals, and generates conscious and unconscious biases against those with "unsuccessful" profiles. This finding is supported by empirical research on, for example, the limited social mobility in OECD countries and the uniformity of behavioral traits among people in positions of leadership.*

As a result, wealth tends to remain a prerogative of those who share similar characteristics in a self-perpetuating and self-reinforcing cycle. If we acknowledge that success is caused by many factors beyond our control, this system must appear to us profoundly unjust.

The concentration and perpetuation of wealth have two significant downsides. First, there is no certainty that people with similar traits associated with financial success make decisions that benefit everyone.† Second, higher levels of wealth provide access to better services, which are precluded to the less affluent citizens. A glistening example is education. According to the US National Bureau of Economic Research, children whose parents are in the top 1% of income earners are 77 times more likely to attend an Ivy League college in America than those whose parents are in the bottom income quintile.‡

This first premise leads us to question meritocracy, the foundations of capitalism, and therefore capitalism itself —a system credited with creating and flourishing the middle class, expanding consumer choices, and allowing underdeveloped nations to catch up, but also with causing or contributing to cause inequality, hyper-financialization, and cronyism.

3. Premise no. 2: The Benefits of Science and Technology Greatly Overweigh their Downsides

Humanity must rely on science, technology, and, more broadly, progress to address the issues described in the introduction and implement a new and better socio-economic system.

* C. Balestra and Marco Ciani, "Current Challenges to Social Mobility and Equality of Opportunity," in *OECD Papers on Well-being and Inequalities*, no. 10 (Paris: OECD Publishing, 2022). https://doi.org/10.1787/a749ffbb-en; A. Furnham and J. Crump, "Personality and Management Level: Traits That Differentiate Leadership Levels," *Psychology*, no. 6 (2015): 549-559. https://doi.org/10.4236/psych.2015.65053

† Wojciech Przychodzen and Fernando Gómez-Bezares, "CEO–Employee Pay Gap, Productivity and Value Creation," *Journal of Risk and Financial Management* 14, no. 5 (2021): 196. https://doi.org/10.3390/jrfm14050196

‡ Gayle Tzemach Lemmon, "Protests on Race and Injustice Should Make Us Look at How the Ivy League Enables Inequality," *NBC News*, June 22, 2020, https://www.nbcnews.com/think/opinion/protests-race-injustice-should-make-us-look-how-ivy-league-ncna1231618

Technology is often perceived as dangerous and frightening. For example, when the largest particle collider was about to be switched on in Geneva, Switzerland, in 2008, someone launched a lawsuit to stop it, fearing it would create a black hole and swallow the entire planet.* Another example is the recent rise of AI, which has prompted lawmakers in various regions to pass regulations in an attempt to control it. Yuval Noah Harari has posited that "non-human intelligence threatens our very existence."†

As a species, we must accept that if we wish to survive, we must eventually leave Earth and we can do it only by advancing our knowledge.

Provided that risks to human life, civil rights, and the planet are prevented, my proposed model adopts a more optimistic approach to technological and scientific progress.

In the field of space exploration, for example, progress has been stellar. Space mining—the exploitation of resources on celestial bodies such as asteroids and our natural satellite—is now considered by NASA as part of its Artemis mission to bring humans to the Moon and Mars.‡ To mention another example, continuous advancements in medicine, such as the CRISPR and mRNA technologies, raise hopes that many illnesses, including cancer, might eventually be defeated. The benefits of innovation are abundant in many other fields, and it would be impossible to mention them all here. Even in seemingly overhyped areas like generative AI, genuine positive outcomes are likely to be filtered from nonsense and will eventually produce tangible improvements on productivity.§

Scientific progress is essential as it is our primary means of developing defenses against a wide array of potentially deadly natural and anthropogenic phenomena. For instance, due to the intrinsic physics of our solar system, plant life on Earth will cease to exist in about 600 million years. In 1.1 billion years, there will be no seawater left on our planet's surface, and in 7.59 billion years, the Earth will ultimately be engulfed by the Sun.¶ As a species, we must accept that if we wish to survive, we must eventually leave Earth and we can do it only by advancing our knowledge.

Progress often arises from the demystification of dogmas and the questioning of established beliefs and social stigmas. It expands the boundaries of the mind by freeing it from prejudices. Technological progress frequently accompanies social and cultural advancements. For example, during the XV and XVI centuries, when humans began to question religious dogmas, sensing that human intellect could provide more convincing answers to the great

* "Doomsday Fears for a Particle Accelerator," *NPR*, April 1, 2008, https://www.npr.org/2008/04/01/89265915/

† Yuval Noah Harari, *Nexus*, https://www.ynharari.com/book/nexus/

‡ Cecilia Jamasmie, "Mining the Moon to lift off within ten years—NASA," June 28, 2023, https://www.mining.com/mining-the-moon-to-lift-off-within-ten-years-nasa/

§ Martin Neil Baily, Erik Brynjolfsson, and Anton Korinek, "Machines of Mind: The Case for an AI-Powered Productivity Boom," *Brookings*, May 10, 2023, https://www.brookings.edu/articles/machines-of-mind-the-case-for-an-ai-powered-productivity-boom/

¶ "Future of Earth," *Wikipedia*, https://en.wikipedia.org/wiki/Future_of_Earth

mysteries of life and the cosmos, the Renaissance and Humanism flourished. Geniuses like Copernicus and Galileo Galilei rose to prominence, paving the way for modern science based on observation, theory, prediction, and experimentation.

This second premise leads us to wonder whether scientific progress might give humanity a chance to build a new socio-economic system that preserves the advantages of capitalism while removing its drawbacks.

4. Theoretical Considerations: Can Humans Thrive Without Money?

The proposed model is based on the conviction that money should eventually be replaced by a system combining the abundance of most resources with the equitable distribution of inherently scarce ones, under a technology-supported governance. This article claims that such a system would be enabled by the universalization of a) ingenuity via education, and b) access to energy.

Corrections to pure capitalism and uncontrolled liberalism have been proposed and, sometimes, implemented. Social democracies, for instance, opted for a hybrid system that safeguards free market and private property while assigning certain tasks exclusively or partially to states. This system ensures that citizens contribute according to their possibilities to the cost of healthcare, pensions, and education. In the business realm, "stakeholder capitalism" is noteworthy. In this form of capitalism, "companies do not only optimize short-term profits for shareholders, but seek long term value creation, by taking into account the needs of all their stakeholders, and society at large."*

Nonetheless, the problems described in the introduction—inequality, climate disaster, and unhappiness—are more urgent and cumbersome than ever, requiring more ambitious and drastic solutions to guide our decisions. A new model for the future is needed.

My proposal aims to offer such a model by answering the hypothetical question: "What would occur if humanity chose to eliminate the use of money?" Around 5,000 years ago in Mesopotamia, humans realized that money was a functional and efficient tool to replace barter and ensure the supply of goods and services to individuals and communities. Nowadays, we can ask whether a better alternative, able to alleviate the issues raised in the introduction, can be developed.

To answer this question, it is crucial to acknowledge that money essentially rewards two fundamental factors: energy and ingenuity. Energy is the property needed to perform work, manifesting itself in, for example, electricity and heat. Ingenuity is the cognitive ability to be creative and original by conceiving either pragmatic solutions or novel ideas that provide intellectual and/or hedonistic gratification. In my view, ingenuity is always a combination of nature and nurture elements that must be distilled and sublimated by education and lifelong learning.

Other factors are non-fundamental. For example, a sufficiently evolved civilization can circumvent scarcity: the physical limitation of materials and goods can be overcome by

* Klaus Schwab and Peter Vanham, "What is Stakeholder Capitalism?," *World Economic Forum*, January 22, 2021, https://www.weforum.org/agenda/2021/01/klaus-schwab-on-what-is-stakeholder-capitalism-history-relevance/

harvesting resources through space mining, inventing comparable or better substitutes, and enacting a perfect zero-waste economy. However, cases of extreme scarcity, such as unique artworks and patents, are exceptions and must be regulated by a form of governance. This topic will be discussed later.

> *Once the access to ingenuity and energy is universalized and rendered free for all, a civilization that functions without money becomes conceivable.*

Besides energy and ingenuity, other factors either derive from one or both fundamental elements, depend on societal conventions, or cease to make sense in a truly efficient post-monetary socio-economic system. Unlike energy and ingenuity, these non-fundamental factors are not indispensable in every transaction and economic activity. Ultimately, the value these non-fundamental factors create is not real but only monetary.

Here is an example to explain why energy and ingenuity are fundamental. Antimatter is considered the most expensive thing on Earth, with its price estimated to be between $25 billion and 3,000 trillion per gram.* It is a form of matter with opposite charge relative to classical one, theorized in the early XX century by physicists such as Paul Dirac and observed in 1932. By examining how antimatter is produced, its constituents, and how these constituents are made, one can see that the value added at each step of the production chain serves primarily as reward to either energy or ingenuity. It is important to note that I will greatly simplify this reverse engineering process.

Antimatter is manufactured in particle accelerators. The concept of a particle accelerator is to bring very tiny particles near light-speed and smash them against each other or a target. Scientists study the resulting debris to answer open questions about fundamental physics and to discover theorized particles. One of the simplest accelerators is the cathode-ray tube, which was used in old TV sets. To continue this examination, let's consider the cathode-ray tube's relative simplicity. In it, a source of electrons—the cathode—shoots rays onto a phosphorescent screen. A magnetic deflector guides rays to form shapes on the screen. To buy this type of simple accelerator, one would therefore pay for the inventors' idea (Julius Plücker and Johann Wilhelm Hittorf) and the materials used in its construction.

The cathode is typically made of copper, the screen of phosphor, and the magnetic deflector of various materials, including polypropylene. Polypropylene is a plastic polymer. How is plastic made? First, fossil fuels like oil are extracted. This process requires engineers to devise extraction techniques and tools, taking responsibility for their proper functioning and safety (ingenuity), a significant amount of energy to power these tools (energy), and technicians to operate them. Technicians are compensated for their expertise (ingenuity) and their labor (energy).

* "Why This Stuff Costs $2700 Trillion Per Gram," *PBS Wisconsin*, November 14, 2019, https://pbswisconsin.org/watch/physics-girl/why-this-stuff-costs-2700-trillion-per-gram-jllccc/

After extraction, oil is refined into ethane and propane. These molecules undergo a process known as "cracking," where they are heated to extremely high temperatures to produce monomers such as ethylene and propylene. The value of cracking depends on energy and the ingenious ideas of those who invented and perfected it, such as William Merriam Burton and Eugène Houdry.

Once the monomers are created, they are combined with catalysts to produce a polymer "fluff", which is then fed into an extruder. The extruder melts the fluff and transforms it into plastic. Again, the value of extrusion lies in the reward for its inventor (Joseph Bramah) and the high energy required for the melting process.*

To sum it up: if any price is broken down to its components, and then the price of these components is broken down again, and this process is iterated until the components cannot be split further, it becomes clear that the fundamental blocks are, inevitably, energy and ingenuity.

We can now return to the initial question: "What would occur if humanity chose to eliminate the use of money?" The answer is as follows: once the access to ingenuity and energy is universalized and rendered free for all, a civilization that functions without money becomes conceivable.

To universalize ingenuity, education must be considered the most important factor of production and progress, and the greatest and noblest goal of mankind. Education must gain a status of prominence among all other human activities and be profoundly rethought to focus not on standardized notions, but on the aptitudes and abilities of each individual. Access to advanced and specialized education should be granted to everyone, enabling all to contribute their genius to collective well-being and prosperity. Education should be lifelong so that the opportunity to contribute does not discriminate based on age. Technology plays a major role in reshaping education, offering possibilities in terms of ubiquity, convenience of access, and personalization. If education is neglected by political agendas, even "advanced" nations risk plunging into ignorance, populism, reactionism, dogmatism, bigotry, and regression. Action is urgent: the average results of the Program for International Student Assessment (PISA), which the OECD administers every three years to 15-year-olds around the world to test their mathematics, scientific, and reading skills through standardized problems, have been deteriorating since 2012.†

In this context, it is crucial to emphasize that while capitalism undeniably contributes to promoting innovation by bolstering the private sector and the creation of patents and incentivizing employees to improve productivity through economic rewards, "self-determination" drivers have been found to be more effective in fostering innovation than monetary incentives. Factors such as interest, importance, and personal fulfilment are more influential in motivating creativity and ingenuity than merely capitalistic incentives.‡

* This Is Plastics. *Plastics Industry Association*, 2025, https://thisisplastics.com/. Accessed 22 May 2025.

† OECD, "How Did Countries Perform in PISA 2018?," in *PISA 2018 Results (Volume I): "What Students Know and Can Do"* (Paris: OECD Publishing, 2019), https://doi.org/10.1787/28450521-en

‡ E.K. Soleas, "Leader Strategies for Motivating Innovation in Individuals: A Systematic Review," *Journal of Innovation and Entrepreneurship 9*, no. 9 (2020), https://doi.org/10.1186/s13731-020-00120-w

To universalize energy, it must become increasingly accessible and affordable. Data shows that renewable energy is already cheaper than energy from fossil fuels.* The average price of solar panels has dropped by 90% in the last decade.† Global investments in renewables are growing faster than ever, with the added capacity in 2023 up by 50% compared to the previous year, and renewables accounting for 86% of newly installed electric energy capacity worldwide.‡ Theoretically, solar energy alone could power the entire planet. With more political willpower and public and private investments, significantly more solar energy can be harnessed. For example, uninhabited desert regions (e.g., the unclaimed area of Bir Tawil on the border between Egypt and Sudan) could be used to install solar panels. A global grid, combined with modern energy storage units, could avoid nighttime outages. Another practically infinite source of energy is geothermal, which has seen the largest drop in price in recent years.§ Besides high initial investments, geothermal boasts long-term operational costs that are "basically zero".¶ In summary, a diverse mix of renewable energy sources can drive this process further and, eventually, make energy free.

As briefly mentioned above, even in a world with free, abundant, and high-quality energy and ingenuity, a system of control and distribution seems inevitable. In a sufficiently remote future, perhaps this task will be performed by machines of superior intelligence. In the more immediate term, a form of governance that is as light and democratic as possible would be required to manage education, justice, extremely scarce and unique objects, and infrastructure maintenance.

Governance is defined as a system to manage public resources that is non-hierarchical, participatory, decentralized, and network-like—rather than representative—but at the same time reliable, authoritative, legitimate, and resistant to ideology and crime. Such a system should be self-organizing, self-sustainable, and unbureaucratic, because otherwise people would need to be paid just to keep it running. As such, governance can replace traditional governments based on either representative democracy, which countless studies have proven flawed,** or non-democratic systems, which are incompatible with an egalitarian model. The enabler of governance is, again, technology.

Blockchain, for example, can be applied even to public management. The principles of blockchain—resistance to fraud, decentralization, a certified single version of the truth, and the potential to automatize procedures—can allow citizens to track taxes from the moment

* International Renewable Energy Agency, "Renewables Competitiveness Accelerates, Despite Cost Inflation," *IRENA*, August 29, 2023, https://www.irena.org/News/pressreleases/2023/Aug/Renewables-Competitiveness-Accelerates-Despite-Cost-Inflation

† Hannah Ritchie, "Solar Panel Prices Have Fallen by Around 20% Every Time Global Capacity Doubled," *Our World in Data*, June 13, 2024, https://ourworldindata.org/data-insights/solar-panel-prices-have-fallen-by-around-20-every-time-global-capacity-doubled

‡ International Energy Agency, "Massive Expansion of Renewable Power Opens Door to Achieving Global Tripling Goal Set at COP28," *IEA*, January 11, 2024, https://www.iea.org/news/massive-expansion-of-renewable-power-opens-door-to-achieving-global-tripling-goal-set-at-cop28; International Renewable Energy Agency, "Record Growth in Renewables, but Progress Needs to be Equitable," *IRENA*, March 27, 2024, https://www.irena.org/News/pressreleases/2024/Mar/Record-Growth-in-Renewables-but-Progress-Needs-to-be-Equitable

§ Ibidem

¶ European Commission, "Why Can't We Use Geothermal Everywhere?," *CORDIS*, January 30, 2023 https://cordis.europa.eu/article/id/442835-why-can-t-we-use-geothermal-everywhere

** See, for example, Howard Schweber, "The Limits of Political Representation," *American Political Science Review* 110, no. 2 (2016): 382–396. http://www.jstor.org/stable/24809530. The inherent limits of representative democracy are reflected in the global decline of this system: "It was an inauspicious year for democracy with the average global score falling to its lowest level since the index began in 2006. Less than 8% of the world's population live in a full democracy, while almost 40% live under authoritarian rule—a share that has been creeping up in recent years." *Economist Intelligence Unit, Democracy Index 2023* (Economist Intelligence Unit, 2023), https://www.eiu.com/n/campaigns/democracy-index-2023/

they are paid to the moment the money is spent, ensuring no graft occurs. With "blockchain voting", citizens would be able to cast their votes on a secured social platform, rendering parliaments redundant as democracy would consist of technologically advanced referendums. The next logical step is called "augmented democracy". Under this system, voting power is delegated to avatars. By integrating it with the blockchain, the system becomes resistant to alterations and free from a single controlling entity. Anyone would be able to train and audit the algorithm.

The concept of "government by algorithm" dates back to the 1960s. Since then, many experiments have been performed to make public interest decisions based on data and precise forecasting models or to automate decisions. Examples of realms where algorithms have been used include smart cities, criminal prevention, and judiciary systems.

The model proposed in this article therefore requires defining a roadmap to universalize the fundamental drivers of monetary value—energy and ingenuity—and rely on a technology-powered governance to manage certain services and scarce or unique objects. This roadmap will be discussed in more detail later.

5. The Preservation of the Planet and the True Pursuit of Happiness

The model proposed in this article would contribute to the fight against anthropogenic climate change and increase people's happiness.

The proposed model aims to eliminate waste, maximize the efficiency of all factors of production, and create abundance. As a result, it would affect the sources of greenhouse gas emissions.

Electricity and heat production—the largest source—would benefit from the switch to renewables, which are not only the cleanest and safest sources but also the ones that use the least land.* Solar panels, for example, can be installed on the roofs of existing buildings and even on windows as transparent layers under certain conditions.† Emissions from industrial processes—the second largest contributor—would decrease thanks to improved waste management systems that aim for full recycling. The principles of circular economy would also apply to the third largest contributor, i.e., the cultivation of crops and livestock, which is primarily intended for food production. "[…] the food system today is wasteful, resource intensive, and polluting. A third of food is lost or wasted. Food waste and byproducts are landfilled, incinerated, and left to rot."‡ Transitioning to a more circular, efficient, and healthy nutrition system would ensure everyone has enough to eat by procuring local and seasonal food, maximizing the efficiency of supply chains, and diversifying diets (75% of food globally comes from just 12 plants and five animal species).§ The abandonment of fossil fuels—necessary to achieve free energy, given their physical scarcity—would abate

* Hannah Ritchie, "What Are the Safest and Cleanest Sources of Energy?," *Our World in Data*, February 10, 2020 https://ourworldindata.org/safest-sources-of-energy; Hannah Ritchie, "How Does the Land Use of Different Electricity Sources Compare?," *Our World in Data*, June 16, 2022 https://ourworldindata.org/land-use-per-energy-source

† Victoria Masterson, "This Technology Turns Windows into Solar Panels, Here's How," *World Economic Forum*, September 23, 2022, https://www.weforum.org/agenda/2022/09/transparent-solar-panel-windows/

‡ *Platform for Accelerating the Circular Economy*, https://pacecircular.org/action-agenda/food

§ Ibidem

the emissions from transportation and buildings, the last two contributors. The European Union is making significant strides: the EU Parliament and Council agreed in 2023 to make all new cars and vans zero-emission by 2035, and Germany passed a law in 2023 obliging all new residential heaters to be powered by renewables for at least 65% of their capacity.

Furthermore, the proposed model would contribute to a happier population. Although happiness is somewhat subjective, certain exogenous factors have been universally identified as predictors. The Harvard Study of Adult Development, which followed hundreds of men and their offspring for 80 years, found that the meaningfulness of human connections is the best predictor of a long and happy life.* On the other hand, objective explanations have been identified as predictors of unhappiness. Wars and conflicts, obviously, produce significant stress.† Climate change causes anxiety, especially among younger people, sometimes to a clinical degree.‡ Research shows that the deterioration of mental health in young people over the past decade could be partially explained by uncertainty about social connections, education, and job security.§ Not surprisingly, work is also a major stressor, as it was alluded to in the introduction. Studies show that work-related stress has increased greatly in the late 1990s and early 2000s.¶

By working towards a post-monetary civilization, at least some of the reasons for unhappiness would be alleviated, and happiness predictors would be strengthened. Work would be less of a stressor as it would be performed for reasons beyond economic reward. Education would be designed to customize formats, timetables, workloads, and expectations to individual needs. Through participatory democracy and de-politicization, political ideology would be superseded, preventing many societal conflicts, given that political differences account for most societal conflicts in wealthy nations.** As governments cede their legitimacy and power, so does the concept of "nation-state". Traditional borders would gradually disappear until a planetary civilization will render wars between nations pointless and obsolete. Lastly, by encouraging people to participate in a governance system, a strong social network would develop, providing individuals with a sense of purpose and an antidote to loneliness.

6. Recommendations for Public Policies and Business Actions

This section delineates some ideas for the practical implementation of the model proposed, structured into a two-phased approach, and provides a checklist for policymaking.

* Liz Mineo, "Good Genes Are Nice, but Joy Is Better," *Harvard Gazette*, April 11, 2017, https://news.harvard.edu/gazette/story/2017/04/over-nearly-80-years-harvard-study-has-been-showing-how-to-live-a-healthy-and-happy-life/

† O. Matlasevych and M. Mykolaychuk, "What War Never Destroys: Factors For Maintaining Happiness and Resilience in Young Families During War," *Youth Voice Journal. Inequality, Informational Warfare, Fakes and Self-Regulation in Education and Upbringing of Youth*, no. 2 (2023): 55-65. https://eprints.oa.edu.ua/id/eprint/9077

‡ Susan Clayton, "Climate anxiety: Psychological responses to climate change," *Journal of Anxiety Disorders* 74 (2020): 102263. https://doi.org/10.1016/j.janxdis.2020.102263

§ Susanne Schweizer, Rebecca P. Lawson, and Sarah-Jayne Blakemore, "Uncertainty as a driver of the youth mental health crisis," *Current Opinion in Psychology* 53 (2023: 101657). https://doi.org/10.1016/j.copsyc.2023.101657

¶ See, for example, Rigó M et al., "Work stress on rise? Comparative analysis of trends in work stressors using the European working conditions survey," *Int Arch Occup Environ Health* 94, no. 3 (2021): 459-474. https://doi.org/10.1007/s00420-020-01593-8, and Gallup, *State of the Global Workplace*: 2024 (Gallup, 2024). Retrieved from https://www.gallup.com/workplace/349484/state-of-the-global-workplace.aspx

** Laura Silver, Janell Fetterolf, and Aidan Connaughton, "Diversity and Division in Advanced Economies," *Pew Research Center*, October 13, 2021, https://www.pewresearch.org/global/2021/10/13/diversity-and-division-in-advanced-economies/

The following taxonomy and roadmap for implementing the proposed model should be regarded as a set of inspirations, without claiming to be exhaustive. This approach distinguishes two phases: a prodromic or preparatory phase, which is advisable to implement in the forthcoming decades, and a subsequent or aspirational phase, contingent upon the successful execution of the preceding actions, anticipated to be realized within several centuries. This roadmap also underscores the imperative of a gradual transition to a post-monetary society, as prices progressively lose their relevance—for example, through the commoditization of certain products—and lifestyles become increasingly sustainable, for example, through the attainment of full circularity.

Figure 1: The Goal of a Post-monetary Civilization: A 2-phased Approach

	Phase 1	**Phase 2**
Technological and Scientific Progress	• AI and robotics should progressively replace an increasing number of repetitive and mechanical occupations. • Telemedicine and self-monitoring health devices should be leveraged to treat a broader spectrum of illnesses, thereby supplanting some functions traditionally performed by healthcare administrations.	• AI-powered robots will start to support humans in daily tasks, leading to an increasing form of symbiosis. • Nano-engineering will reach mass scale. • Space exploration will be significantly advanced by the permanent colonization of the Moon and Mars. • Many diseases will become extinct, and life expectancy will rise exceptionally.
Energy	• Renewable energy sources must entirely supplant fossil fuels in the most technologically advanced nations, while less advanced nations must commit to this transition as expeditiously as possible. • Governments must ensure that energy remains affordable and accessible to all citizens.	• Breakthrough sources of energy will be deployed at scale, resulting in a dramatic reduction in energy costs globally, ultimately making energy abundant and free.
Education, Research & Development	• Governments should substantially increase investments in education across all levels, from early childhood education to lifelong learning, and adopt rigorous quality standards. • Innovative educational methodologies, which deviate from standardized, rote-learning programs, should be extensively piloted and evaluated.	• Public education will be on par with private education, ensuring no one is left behind and literacy rates are high everywhere. • As a result, everyone's level of education will be comparable, and diplomas, degrees, and almae matres will cease to be indicators of future earnings.

National Governance	• Income redistribution measures, including higher taxes on financial speculation and rents and lower ones on labor, should be enacted. • Participatory democracy tests should be conducted locally, utilizing blockchain voting and representation through volunteering or sortition. • The sharing and circular economy should be enhanced through governmental subsidies, levies on avoidable waste, and technological advancements (e.g., self-driving vehicles). • The adoption of algorithms and digitization in public services should be extended. • Steps should be implemented to significantly reduce taxes, norms, and bureaucracy, thereby initiating the process of hollowing out traditional government structures.	• Entire nations will begin to implement digital liquid democracy systems. • Societies will achieve full circularity. • The relevance of taxes will diminish progressively.
Supranational Governance	• Citizenship and visa systems should be revised so that individuals obtain citizenship wherever they pay taxes, and free movement through borders is facilitated via international treaties (e.g., expanding the Schengen area or replicating its format in other regions). • Tax havens should be abolished.	• Extensive regions of the planet will either consolidate into single nations or operate as unified entities, such as the "United States of Europe." • A substantial reduction in global inequality will be observed, both across and within nations. • Bureaucratic functions will be confined to regional or global levels and will be minimized through digitization. • An increasing number of public services will be administered by machines, and decisions of public interest will be made by digital avatars.

Private Businesses	• Companies should require workers to dedicate part of their working time to education, paid by the employer, and volunteering, according to each worker's abilities. • Stock buybacks must be disincentivized and the reinvestment of profits in innovation, research & development must be encouraged. • Workers' representatives should join decision-making bodies. • Executives' compensation must be linked to factors such as customer and employee satisfaction.	• Companies will prioritize non-financial performance indicators. • Technology will increasingly supplant traditional human labor, and employees will be motivated by creative and fulfilling tasks and the sense of community fostered by their organizations, rather than by monetary incentives.
Money	• Nations must transition to cashless societies.	• Cash will be phased out in most parts of the world, while a regulated digital currency —by definition, global—will become the predominant form of currency, initially running parallel to traditional currencies. • In a more distant future, a completely dematerialized form of "special purpose" currency will be used exclusively to fund exceptional human endeavors, such as space exploration, which require inherently scarce resources in extraordinary amounts.

Policymakers who are persuaded by the proposed model can contribute by supporting actions and policies that, directly or indirectly, aim to:

- Democratize access to public services such as education and justice, energy production and provision, and law-making and enforcement (**S**ocial & Participatory Democracy).
- Foster research and innovation (**P**rogress).
- Decrease the bureaucratic, regulatory, and fiscal burden (**H**ollowing-out).
- Enhance international cooperation (**E**nhancement or Expansion).
- Reduce scarcity, eliminate waste, increase efficiency, promote circularity, automate processes, and create abundance (**Re**sources' universalization).

This is called the "**SPHERe** model" in this article.

Further avenues of research building on the "SPHERe model" could be envisioned to more precisely delineate the steps or strategies necessary for the proposed transition and survey citizens' acceptance. Additionally, targeted tests for specific enabling innovations, such as participatory democracy, could be developed.

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