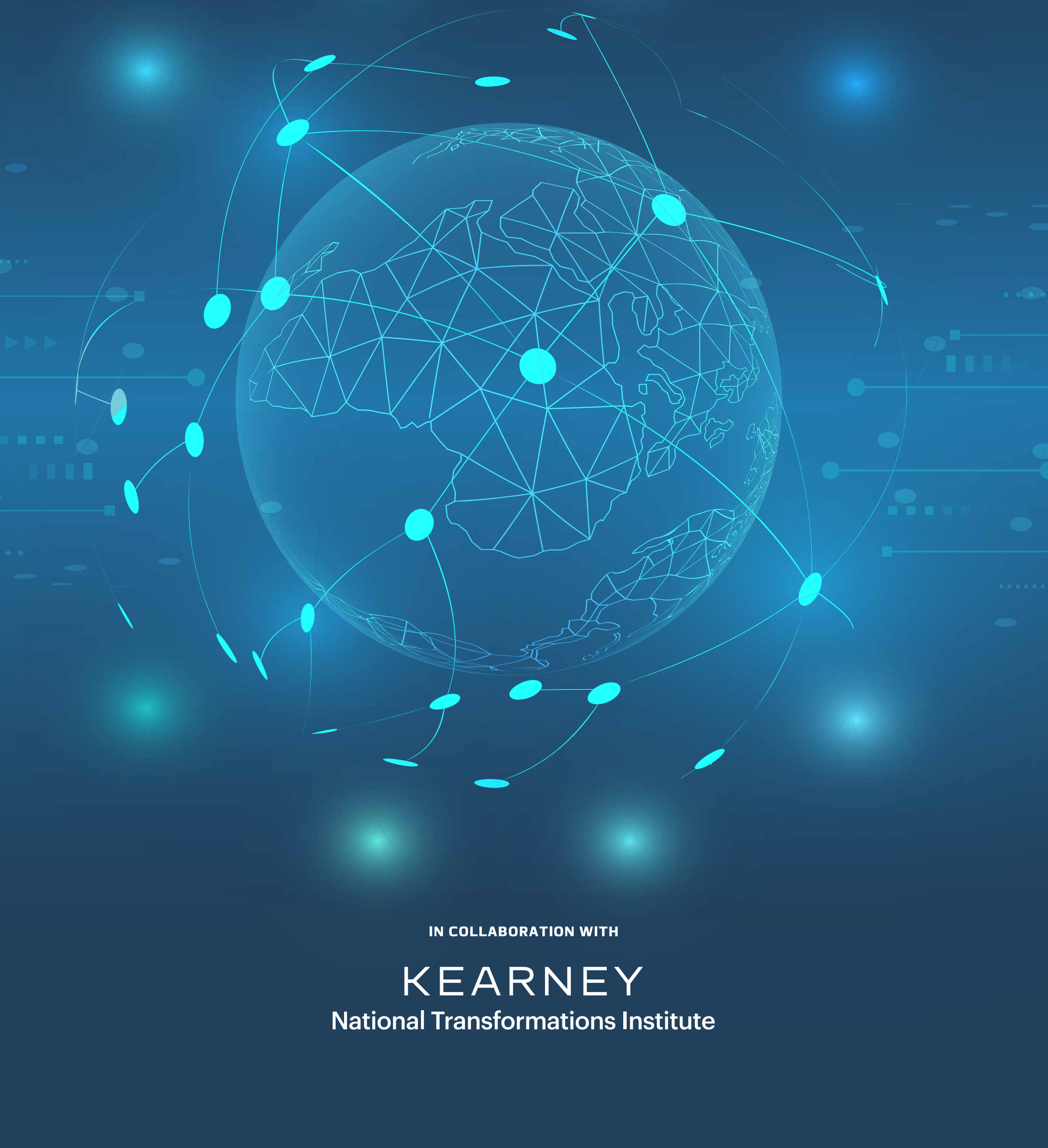
القمة العالمية للحكومات
WORLD GOVERNMENTS SUMMIT

8 TRANSFORMATIONS

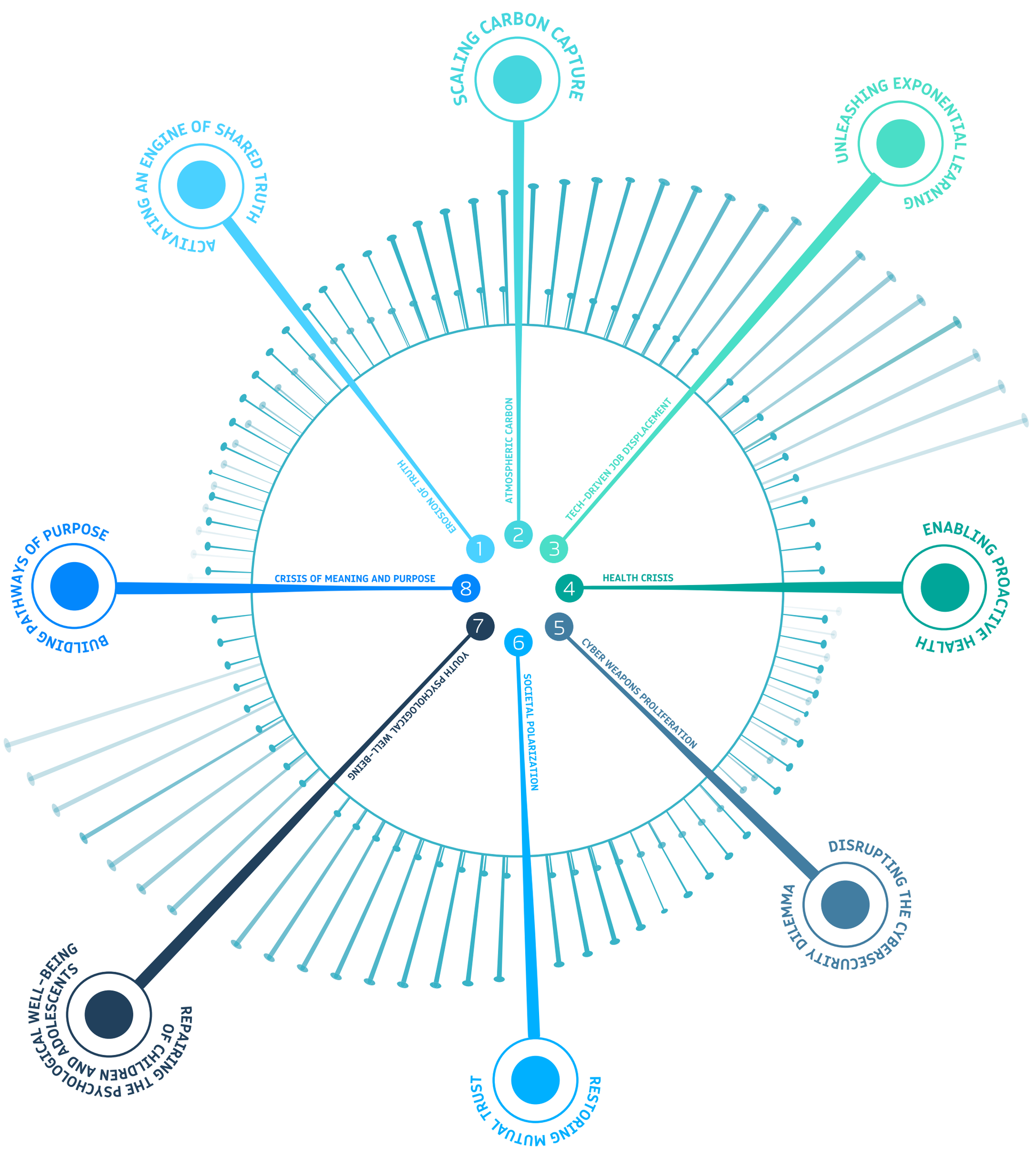
FROM CRISES
TO OPPORTUNITIES



IN COLLABORATION WITH

KEARNEY
National Transformations Institute

8 TRANSFORMATIONS: From Crises to Opportunities



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INTRODUCTION

After years of increasing global volatility and deepening uncertainty, we have now entered a period of intersecting crises and intensifying challenges across the span of geopolitical, environmental, economic, and social domains. We are witnessing active conflict in multiple regions; record debt levels amidst elevated interest rates; and the increasingly costly effects of climate change.

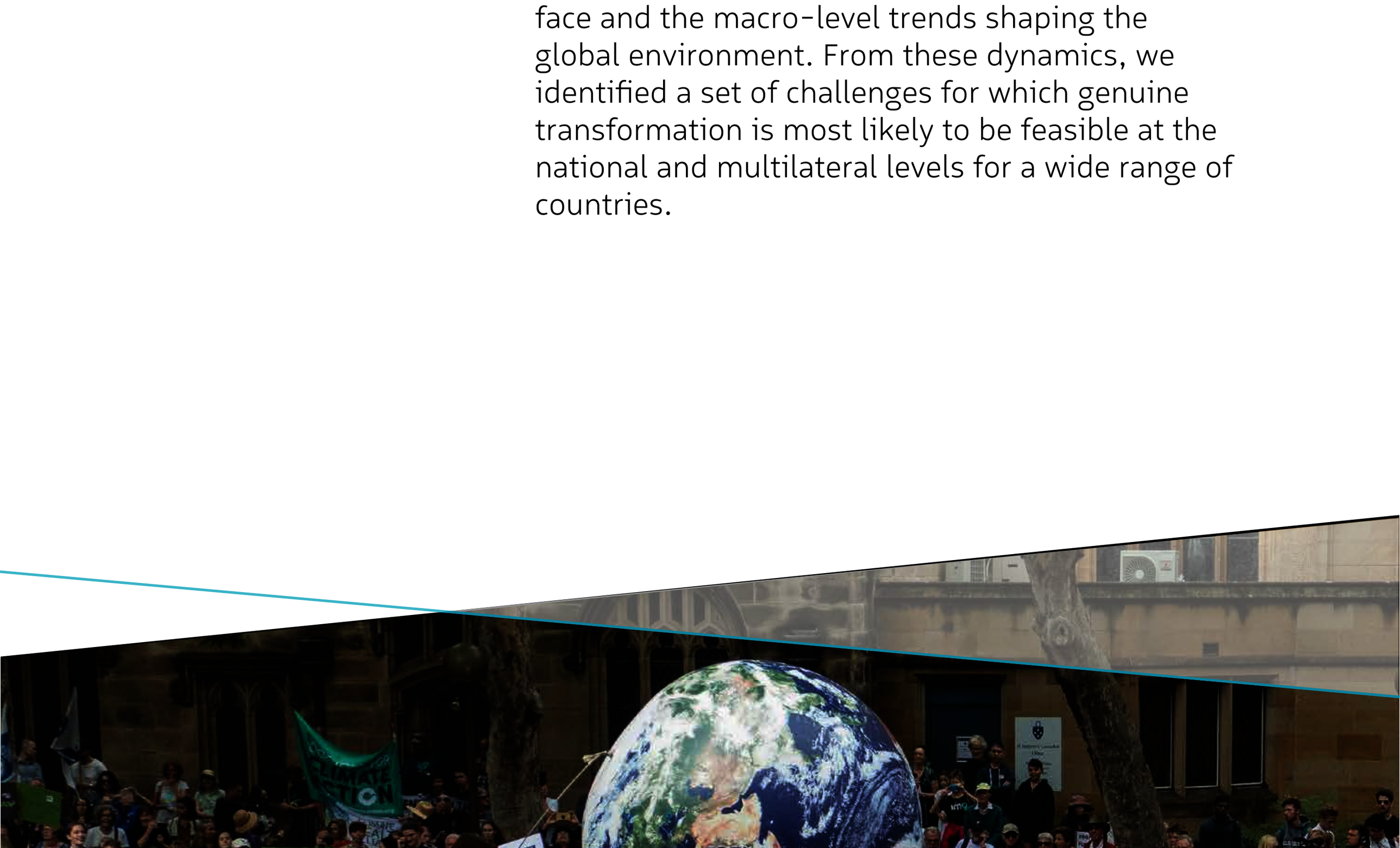
As a result, the international order, the global economy, and our public institutions are under tremendous pressure. For many countries, this pressure has profound political consequences, as meeting citizen needs is likely to be more challenging over the coming year. Governments will have less discretionary fiscal space precisely when they will need it most. Compounding the challenge in these countries is that government action is significantly impaired by political polarization.

The gap between the scale of our challenges and the capacity of our institutions to address them creates another peril – one that is arguably more significant than any of them: the grave risk of individual citizens giving up on the very possibility of positive change. At the core of this threat is a diminished confidence in collective action among citizens at the local and national level, and among countries at the multilateral level. All too often throughout history and around the world, such breakdowns in our confidence in collective agency have led to economic crises, episodes of societal breakdown, and wars.

However, history also makes clear that it is precisely at such junctures that transformative change becomes most possible, and that the key is not the avoidance of challenges but their transformation into watershed moments of shared advancement.

This paper identifies eight strategic challenges and crises facing government leaders around the world, and outlines pathways by which these problems can be turned into opportunities for transformation.

These transformations were selected based on an analysis of the components of the “polycrisis” we face and the macro-level trends shaping the global environment. From these dynamics, we identified a set of challenges for which genuine transformation is most likely to be feasible at the national and multilateral levels for a wide range of countries.



We have not sought to develop a comprehensive package of policy interventions to address all aspects of each challenge, but rather to identify specific paths forward that in various ways harness the forces that are contributing to the challenge to generate its transformation. Each chapter examines a specific challenge; identifies a potential pathway to solving it; surveys the obstacles to that solution; and proposes a transformation – i.e., an approach to using the causal machinery of the challenge itself to create a self-sustaining path to progress.

By directly taking on the causal structure of the challenges facing their citizens – and by enlisting those citizens in transforming the challenges into opportunities – government leaders can unleash the vast power of human agency that is currently blocked in so much of the world by resignation, despair, and civic disengagement, creating new solution-centered renaissances in their communities, countries, and indeed the world. Each of the chapters that follow are intended to serve as blueprints for doing precisely that.

“By directly taking on the causal structure of the challenges facing their citizens – and by enlisting those citizens in transforming the challenges into opportunities – government leaders can unleash the vast power of human agency”

1

EROSION OF TRUTH

ACTIVATING AN ENGINE OF SHARED TRUTH:

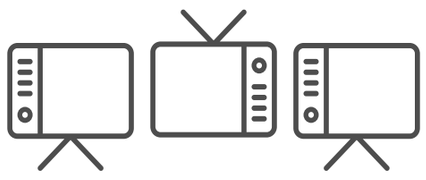
A science-based approach to igniting the market for credible content

THE CHALLENGE

A vicious cycle of misinformation and bias

The foundation of shared truth on which our societies rely is eroding. Misinformation is proliferating at unprecedented rates, compromising our collective ability to distinguish fact from falsehood. Jonathan Swift once wrote, "Falsehood flies, and the Truth comes limping after it."[1] This has been empirically proven; fake, vitriolic, and biased news spread more quickly than does accurate reporting. It takes true stories about six times as long to reach 1,500 people as it does for false stories to reach the same number of people.[2]

Behind the proliferation of misinformation are the machine learning algorithms of media platforms. These algorithms reinforce media consumption patterns and prioritize content based on viral spread, regardless of veracity, in order to capture growing attention.[3] As a result, these content algorithms are increasingly geared to disseminate this type of content, further expanding falsehood's reach.



40%

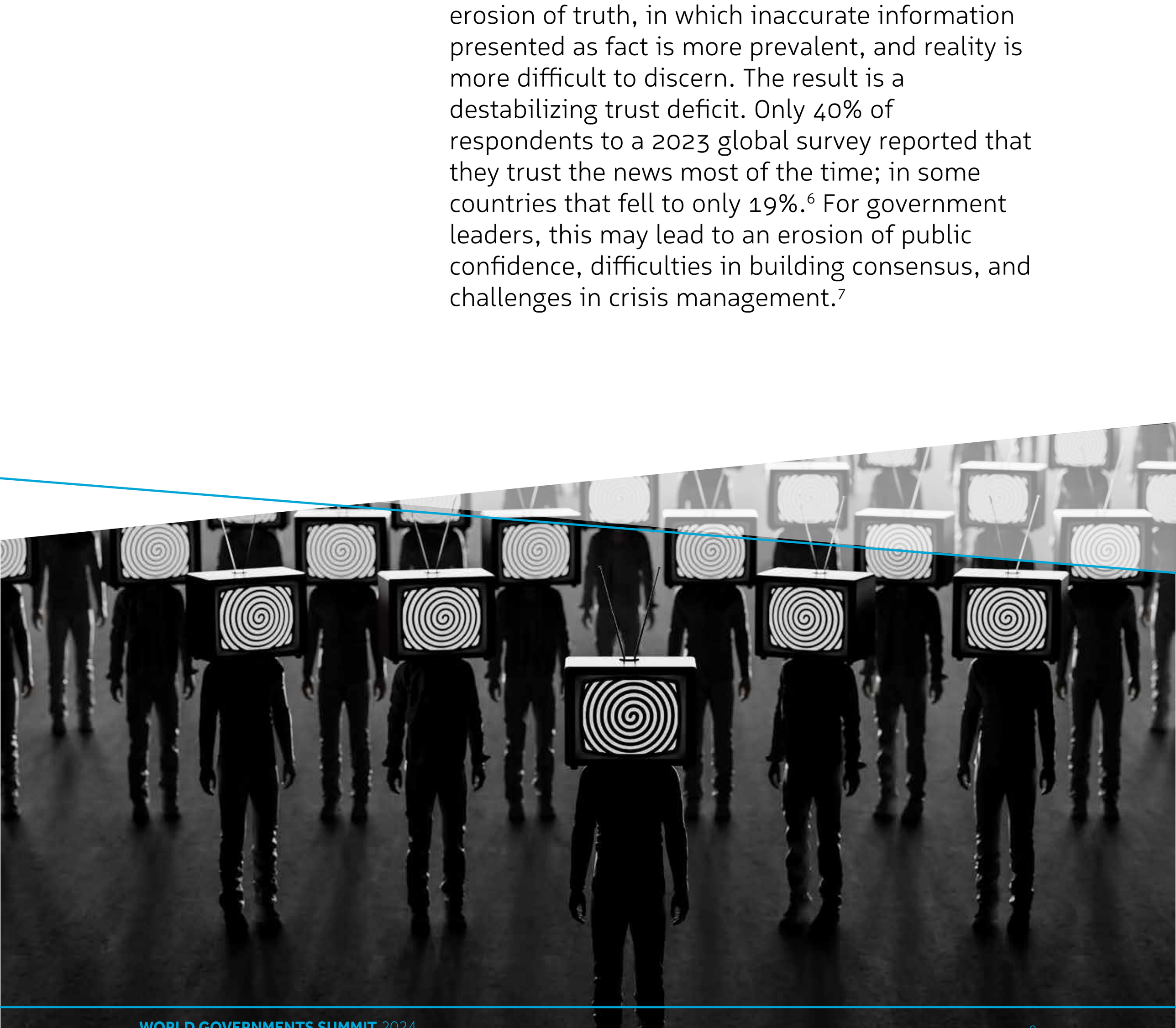
Of survey respondents globally reported that they trust the news most of the time, but in some countries that fell to only

19%

At the same time, the world of highly realistic and immersive digital platforms is growing at a dramatic rate – as are the technologies that support them. While these environments and tools offer a multitude of benefits, with applications from healthcare to entertainment, they have also democratized the ability to generate false information in a wider array of formats.[4]

Increasingly realistic deepfake messages, calls, and videos further compound the misinformation crisis. The US Department of Homeland Security warned in 2021 that deepfakes pose "a clear, present, and evolving threat to the public across national security, law enforcement, financial, and societal domains."[5]

These dynamics are resulting in a systematic erosion of truth, in which inaccurate information presented as fact is more prevalent, and reality is more difficult to discern. The result is a destabilizing trust deficit. Only 40% of respondents to a 2023 global survey reported that they trust the news most of the time; in some countries that fell to only 19%.[6] For government leaders, this may lead to an erosion of public confidence, difficulties in building consensus, and challenges in crisis management.[7]



We have already seen this dynamic at play, undermining efforts to address pressing crises such as climate change and the COVID-19 pandemic.[8] More such instances will undoubtedly arise in our future if we do not act intentionally, imaginatively, and urgently to counteract them.

Despite public awareness of the threat of online misinformation, there are currently precious few tools for assessing the credibility of content. This creates a transaction cost in terms of the effort required for an individual news consumer to validate for themselves the credibility of a given piece of content. Few readers or viewers will be inclined to undertake such an effort.

If we cannot create a more efficient, accessible means by which individuals can reliably assess the credibility of the content they consume, we will find ourselves without a consensus understanding of what truth is – and at heightened risk of social fragmentation and instability. Such an information environment threatens our collective ability to agree on the basic facts undergirding the critical challenges that we must solve together – and imperils our ability to solve them.

2 3 4 5 6 7 8

1

Proliferating Misinformation

90%

Percentage of respondents to an Associated Press/NORC poll who said misinformation is a serious problem. However, only 28% of the total respondents reported regularly fact checking the news they consume.[9]

75%

Percentage of respondents who overestimate their own ability to distinguish between fake and real news headlines, according to a 2021 University of Toronto study.[10]

Figure 1: Where exposure to fake news is highest

% of respondents who say they were exposed to completely made-up news in the past week[1]

[1.] Selected countries, n=74,000 respondents in 37 markets (Jan/Fab 2018)
Source: Reuters Institute

Figure 2: Fake news stories are a problem – but who's to blame?

Fake news stories cause... about basic facts of currents affairs

Who's responsible for preventing fake news from spreading?

Based on survey of 1,002 US adults conducted in December 2016
Source: Pew Research Center

THE SOLUTION

Evidence-based credibility scoring.

There is an opportunity to disrupt the current vicious cycle of misinformation, and instead create a pervasive virtuous cycle of truth promotion. Core to this solution is an evidence-based and transparent credibility rating system, applied to the vast information landscape with the aid of targeted artificial intelligence.

There are several meaningful bases on which to form clear criteria for such a scoring system – a prerequisite for effectively leveraging AI. The first is adherence to broadly accepted journalistic standards,[11] including the citation of sources (where possible) and the avoidance of obvious conflicts of interest. The second is analysis of linguistic markers associated with deliberate efforts to manipulate cognitive bias.

Applications of automated fact checking and semantic analysis both play a role, with automated fact checks seeking additional data sources to verify claims, and semantic analysis (a natural language processing method) scanning to discern the sentiment, emotions, and context within a given text.[12]

Together, these methods can conduct the vast information processing required to be able to assign a credibility score.

Innovative companies are emerging to do precisely this type of news accuracy confirmation. Seekr Technologies is an AI company based in the United States that specializes in content evaluation. Its purpose is to redefine the search industry by empowering people to make highly informed decisions on what they consume, share, and trust online.

Pat Condo, Seekr's founder and chief executive officer, explained that credible journalism "informs rather than influences because it adheres to clearly defined professional standards that are designed to minimize bias and promote objectivity," adding that "AI enables us to analyze news – at virtually unlimited scale – against these established standards of fact-based journalism, and then score it for credibility. Trained AI coupled with superior computing power is the antidote to the growing manifestation of general adversarial computing systems."[13]

1 2 3 4 5 6 7 8

Even in their limited use to date, source credibility labels have led to substantively meaningful increases in news diet quality among even the heaviest misinformation consumers.[14]

However, official news is not the sole source of an individual's information diet; this approach must also affect information consumption habits over the longer term.

Only when individuals have grown accustomed to automatically verifying the credibility of information can other vectors of misinformation be addressed. Falsehoods spreading through rapid messaging applications such as WhatsApp, for example, will still require one's own fact-checking initiative.

The extent to which such behavioral change can be realized is a function of how much users trust that the algorithms producing credibility scores are themselves unbiased. This will require, to the greatest extent possible, full transparency with regard to the scoring criteria, to allow all users to understand how and why the information they are consuming has received its score.

1 2 3 4 5 6 7 8

An additional potential safeguard against the vulnerabilities of AI is to establish a culturally and politically diverse panel of individuals who would serve as the public faces of this credibility standard. In the event that the AI underlying the standards were to fail, these individuals could call out the breach and alert the public that the credibility ratings were going offline until the problem was fully identified, contained, and solved.

There are precedents for this idea – X's (formerly Twitter) Trust and Safety Council, an advisory group of independent experts who addressed such concerns as hate speech, child exploitation, suicide, self-harm, and other problems on the platform until the panel was dissolved in December 2022,[15] could serve as a template for such a body.

Fact-Checking Imperative

12%

Measured reduction in belief in misinformation in an experiment up to two weeks post fact checking of disputed news[16]

8.6%

Increase in news diet quality among the heaviest misinformation consumers after viewing source credibility labels[17]

THE OBSTACLE

Misaligned reward structures.

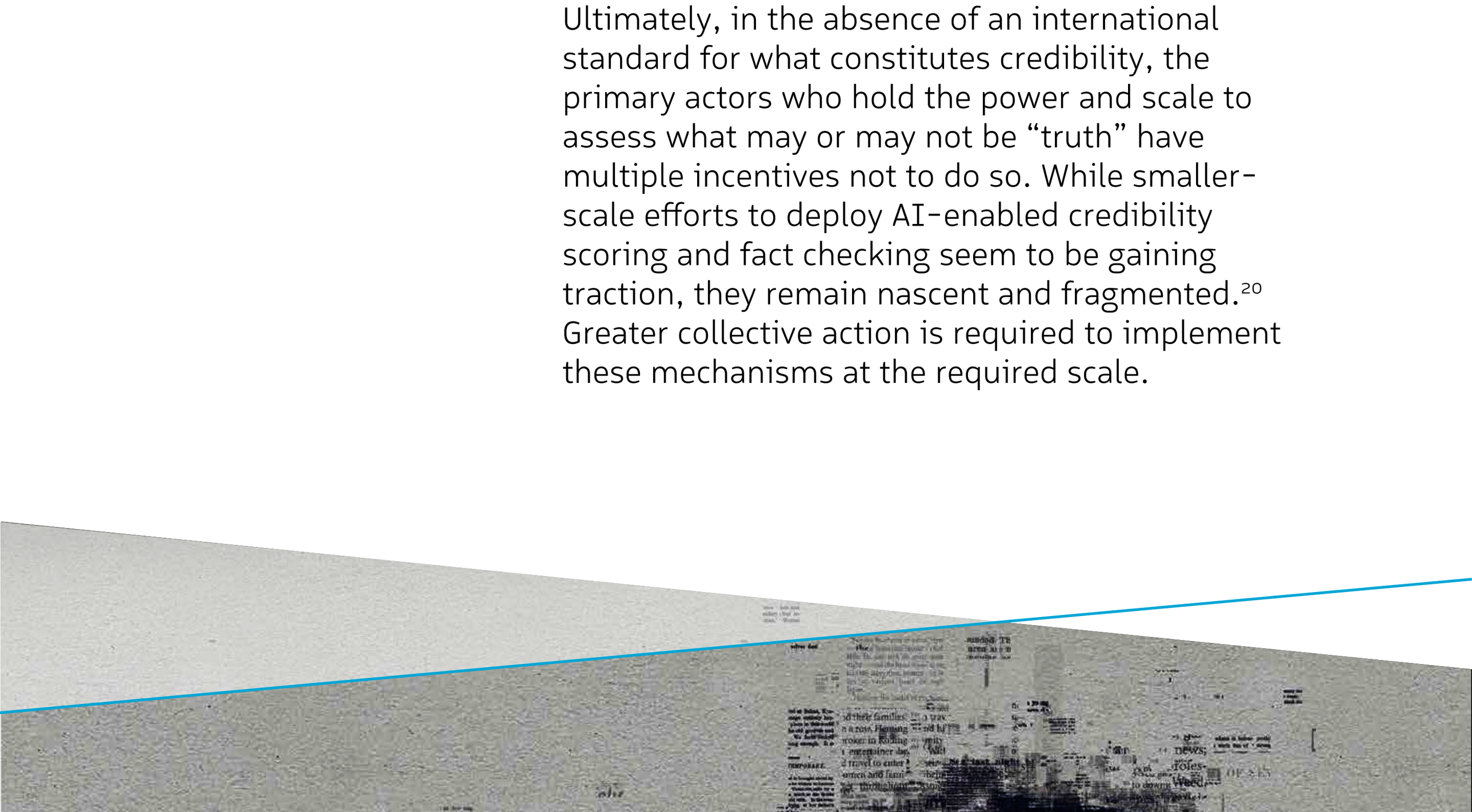
In the absence of any truly reliable and responsive credibility scoring, the current set of economic and political incentives contributes to the vicious cycle of falsehoods. Misinformation is immensely profitable, and it is uniquely suited for widespread dissemination. A social experiment revealed that the 15% most habitual Facebook users were responsible for 37% of false headlines shared.[18]

Content-based platforms have no incentive to lose out on user engagement in a competitive media environment. An investment by any individual media organization in a credibility scoring AI platform could actually create a competitive disadvantage for that company.

In addition, various state and non-state actors are using misinformation in highly sophisticated ways as an instrument of power. These actors are inclined to resist any meaningful attempt at credibility scoring, as it would constrain such operations.

At the same time, governments may be reticent to engage in efforts to address misinformation given the high sensitivity of the international community to actions seen to curb freedom of expression online.[19] While the objective of a scoring approach is to change the way users interact with information – and not to moderate content itself – there are sure to be those who interpret such scoring as filtering or otherwise influencing online content.

Ultimately, in the absence of an international standard for what constitutes credibility, the primary actors who hold the power and scale to assess what may or may not be "truth" have multiple incentives not to do so. While smaller-scale efforts to deploy AI-enabled credibility scoring and fact checking seem to be gaining traction, they remain nascent and fragmented.[20] Greater collective action is required to implement these mechanisms at the required scale.



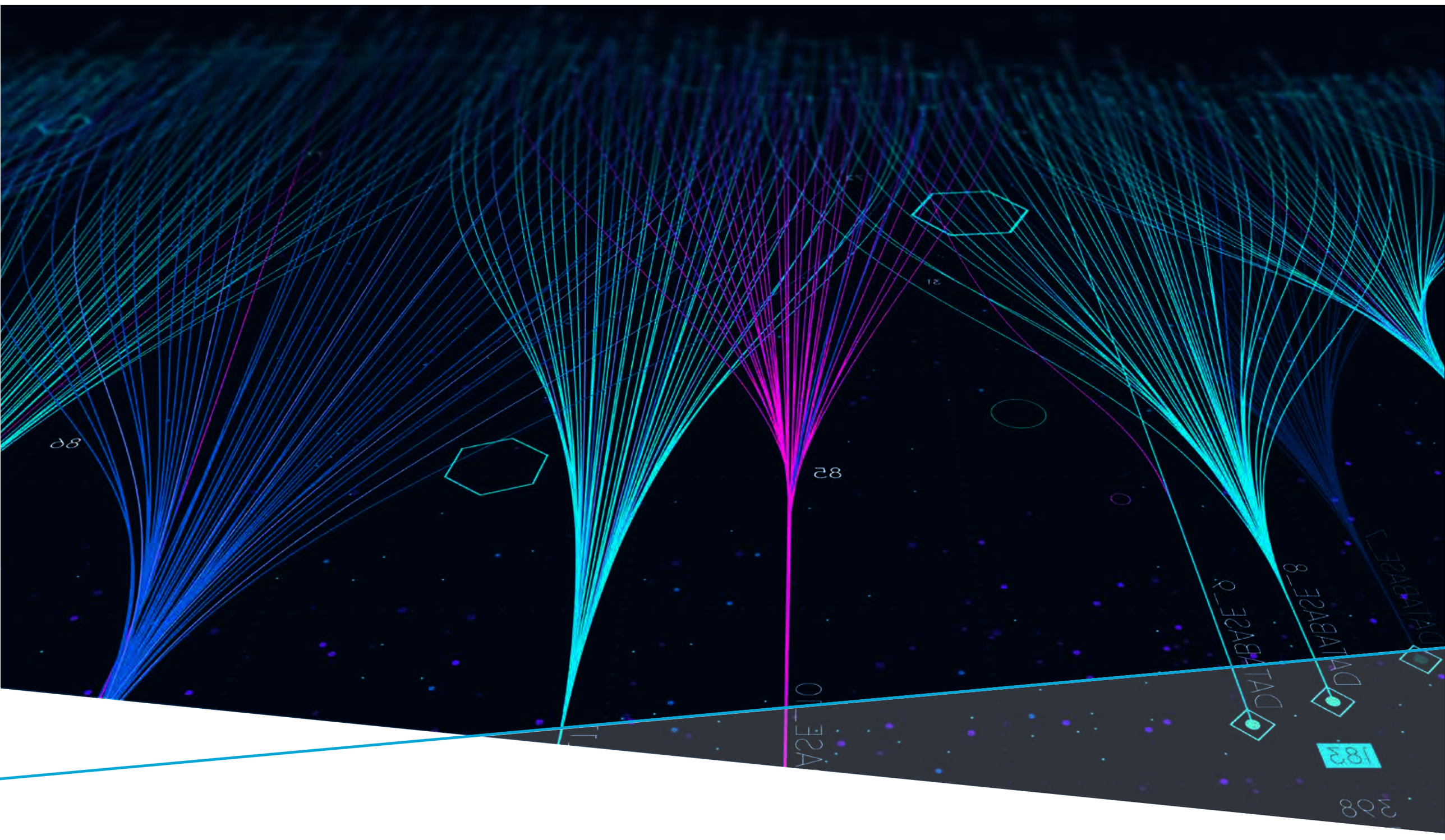
THE TRANSFORMATION

Forming workable international standards of credibility.

To realize the full power of this transformation requires overcoming the fears and biases that would sow seeds of doubt about its intent and credibility. In a world of universal trust, such a requirement could indeed be realized.

However, given the realities of a diverse world with varied cultural and social contexts and ever present geopolitical tensions, it is unrealistic to think that a form of universally shared truth could be established from the top down. An alternative approach, however, are international standards of credibility – the very standards that would guide such AI-driven credibility scoring mechanisms.

This would require a group of countries to come together to develop a shared set of metrics for assessing news and informational credibility through a shared scoring mechanism. This can be translated into standards for an AI-based credibility model, and then applied consistently within the participating countries.



In the most optimistic case, such an undertaking could even be universal in scope – executed under the auspices of the United Nations (UN) or through a new form of a global multilateral organization.

Implementing a credibility scoring mechanism would help to reverse the current misinformation incentive structure by rewarding more credible content. Consumers of information will be less likely to believe – or pass along – information that is branded with a low credibility score on an internationally agreed standard, thereby combating the malicious spread of the misinformation itself.

Conversely, a higher credibility score would cause consumers to migrate their consumption toward more credible information sources, creating powerful economic incentives for media companies and content platforms to generate ever more credible content.

In short, we have the power to harness the same incentives that are currently fueling the erosion of truth, and to deploy them to spur a transformation in how online content is evaluated and understood.

THE OUTCOME

Truth, re-incentivized.

If implemented pervasively and effectively, widely aligned and AI-deployed credibility scores can fundamentally alter the reward structure of information sharing online, steering engagement toward more positively rated content; rewarding content companies that generate evidence-based, non-manipulative content; and ultimately generating a virtuous cycle that re-incentivizes the truth.

By meaningfully changing the way we engage with information, we can revive trust and confidence in the very institutions necessary for a cohesive society. And by restoring a sense of shared truth, our collective ability to solve the many challenges and crises that we currently face will be strengthened immensely, and not a moment too soon.

1 2 3 4 5 6 7 8

2

ATMOSPHERIC CARBON

SCALING CARBON CAPTURE:

A global moonshot to achieve an exponential leap in the removal of atmospheric carbon

THE CHALLENGE

An accelerating tragedy of the global commons.

By now, the data is unassailable, and grim. On our current trajectory, the world will reach temperature levels 2˚C above preindustrial levels by 2052.[21] At that threshold, more than 70% of Earth's coastlines will see oceans rise by up to 0.66 feet, or 0.2 meters,[22] endangering the lives of the more than 150 million people globally who will live at or below sea level. Warming of this magnitude could inflict up to $69 trillion in damage on the global economy.[23]

In an attempt to mitigate the worst potential effects of climate change, 196 nations agreed at the 2015 United Nations Climate Change Conference in Paris (COP21) to keep global warming to 1.5˚C.[24] To meet the targets set by what has come to be known as the Paris Agreement, emissions need to be reduced by 45% by 2030, and must reach net zero – that is, a state where greenhouse gas (GHG) emissions are balanced or outweighed by those removed from the atmosphere – by 2050.[25]

Currently, the world is not even close to achieving such reductions. The current pace of emissions growth will result in a 10.6% increase in emissions by 2030,[26] and it is likely that we will exceed the 1.5˚C benchmark before 2027.[27]

In other words, despite an ever-expanding number of carbon reduction commitments and multilateral initiatives, we are facing the urgent risk of catastrophe.[28] While reducing carbon emissions remains an imperative, relying solely on the hope of such reductions is an insufficient strategy for avoiding the most devastating effects of global warming.[29]

Without a radical step change, those effects will threaten the security and livelihoods of all people, through the destruction and disappearance of natural resources; large-scale migrations; the spread of infectious diseases; and social and political instability. There will be an acute tightening of financial pressure on governments and societies that are already strapped for resources, particularly in sub-Saharan Africa; South and Southeast Asia; the Middle East; Latin America; and Oceania – all of which are predicted to experience the gravest effects of climate change.[30]

Given this stark reality – that emissions reduction alone cannot realistically allow us to achieve our shared goals – a bold new global effort is required.

Carbon Removal Imperative

CO_2

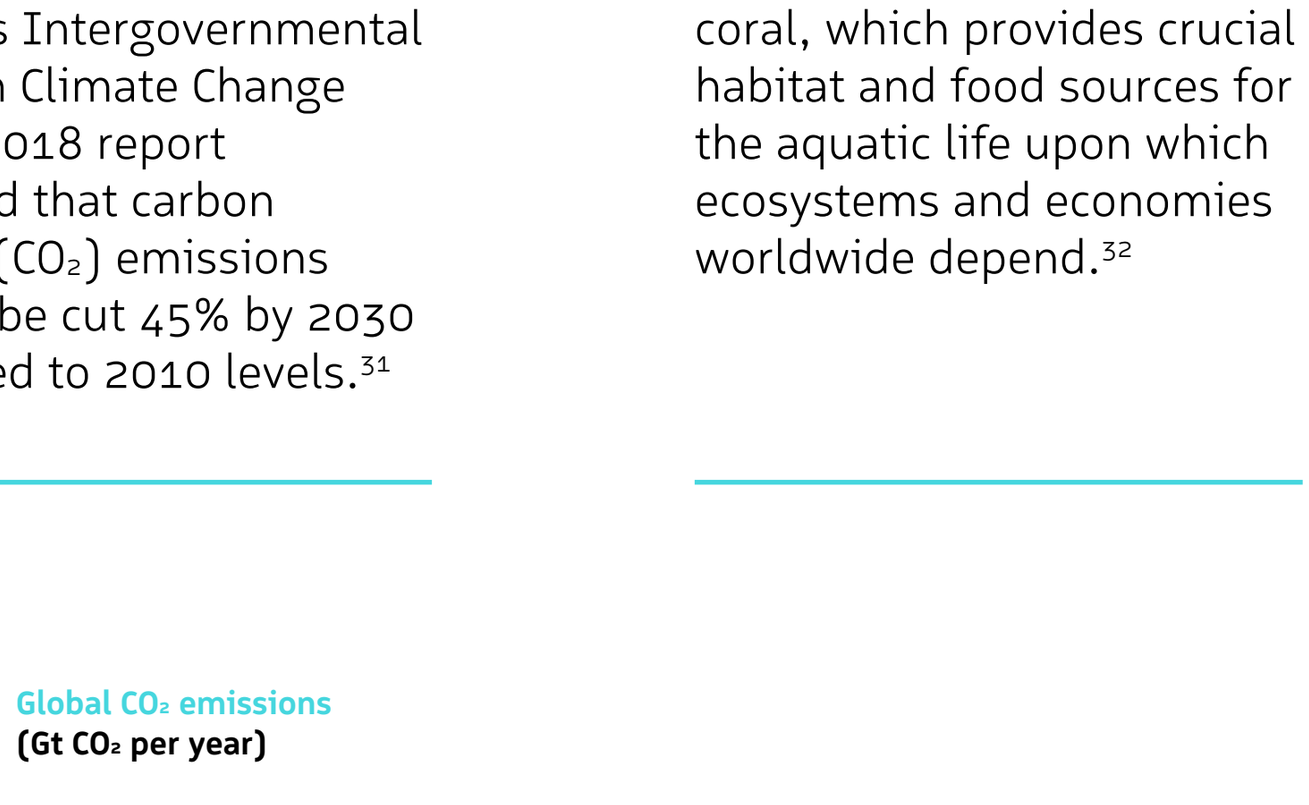
10.6%

Amount by which global emissions will increase even under widespread current emissions reduction commitments by 2030, compared to 2010 levels. The UN's Intergovernmental Panel on Climate Change (IPCC) 2018 report indicated that carbon dioxide (CO_2) emissions need to be cut 45% by 2030 compared to 2010 levels.[31]

99%

Estimated proportion of the world's coral that would be lost in the event of a 2˚C temperature rise. A 1.5˚C rise is projected to bring about the loss of 75% of all coral, which provides crucial habitat and food sources for the aquatic life upon which ecosystems and economies worldwide depend.[32]

Figure 3: Carbon removal required to keep global warming below 1.5° C



IPCC, Mercator Research Institute

THE SOLUTION

Carbon removal at an entirely new scale.

87%

of the pathways compatible with keeping warming below 2˚C require large-scale atmospheric carbon removal.

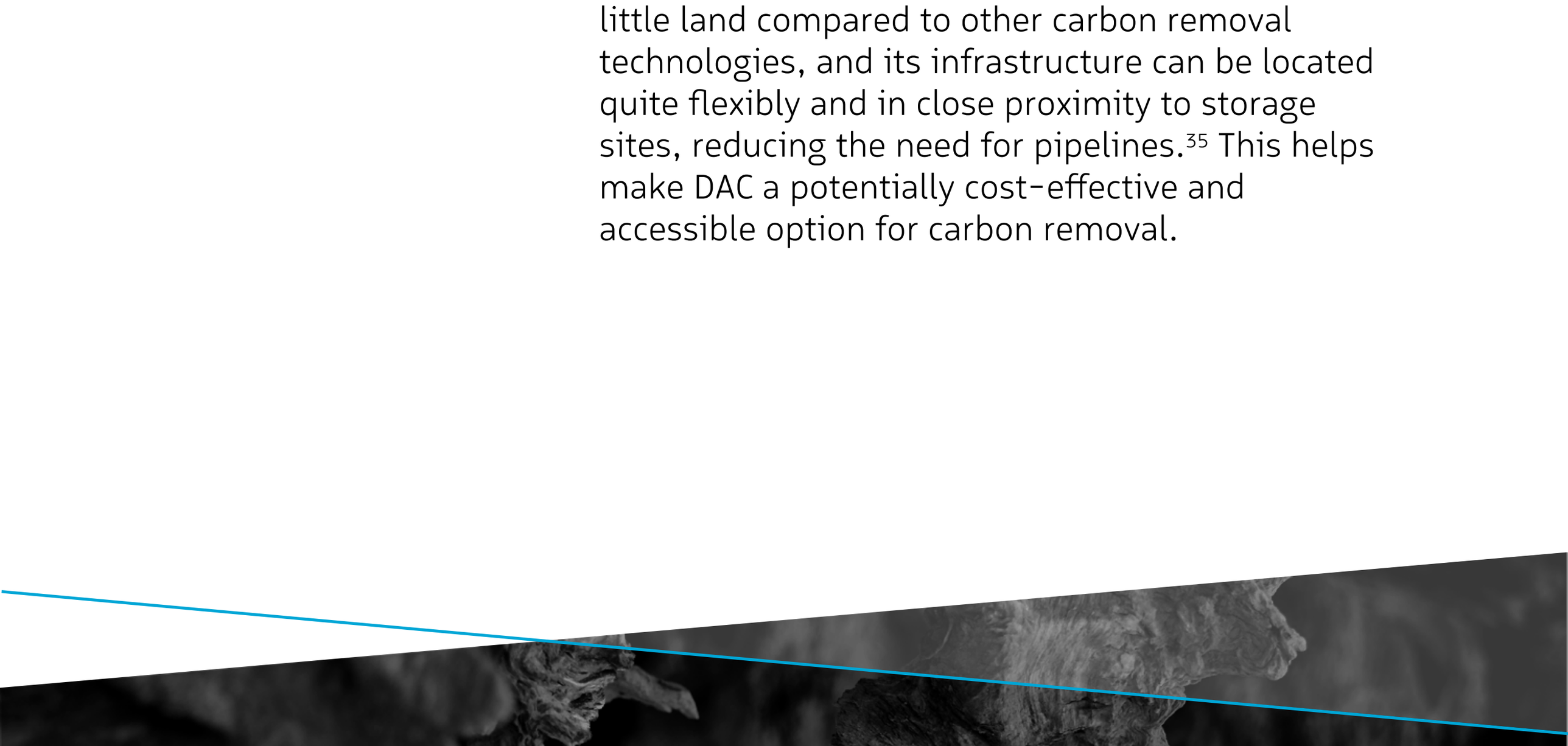
While the world focuses on reducing carbon emissions, another crucial approach for reaching net zero is extracting those emissions from the atmosphere. Both are essential, but the extraction approach – often referred to as carbon dioxide removal, or CDR – has yet to be rolled out beyond a very modest scale.

Every one of the Intergovernmental Panel on Climate Change (IPCC) emissions pathways that are compatible with keeping warming below 1.5˚C require large-scale atmospheric carbon removal – as do 87% of the pathways compatible with keeping warming below 2˚C.[33] CDR is not merely an option for reaching our targets; it is a requirement.

The sheer amount of carbon removal required is staggering. It is estimated that one billion tons of carbon dioxide would need to be removed from the atmosphere each year between now and 2050 in order to reach net zero and keep global warming to 1.5˚C.[34]

There are many ways to remove carbon from the atmosphere, including the planting of trees. No single carbon removal method will suffice on its own to avoid climate catastrophe – it is vital to deploy a range of effectual approaches. One carbon removal technology with particularly exciting potential to remove carbon at the required scale is direct air capture, or DAC.

This approach deploys liquid solvents or solid sorbents containing chemicals that trap carbon, which is released through a heating process and then captured for underground sequestration or commercial use. Crucially, DAC uses relatively little land compared to other carbon removal technologies, and its infrastructure can be located quite flexibly and in close proximity to storage sites, reducing the need for pipelines.[35] This helps make DAC a potentially cost-effective and accessible option for carbon removal.

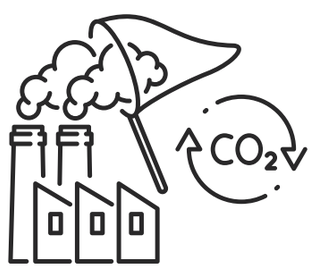


Deploying DAC globally, and at much larger scale, represents an opportunity to decisively improve our chances of staying under the 1.5˚C ceiling. The viability of this technology is now established scientific fact, with 18 DAC plants currently operating worldwide. Each individual facility currently removes approximately 10,000 tons of CO_2 per year.[36]

That volume is only a small percentage of what is required, but there is a demonstrable opportunity to develop a DAC program at global scale.[37] Two plants, each of which promise to have an absorbent capacity of one million tons per year, are already in advanced development in the United States, supported by a combined $1.7 billion in funding from the US Department of Energy and the investment firm BlackRock.[38] Other countries, including Australia, Canada, and the United Arab Emirates, are investing in similar projects.[39]

Even with these investments, however, the present scale of carbon removal is simply insufficient. The International Energy Agency's Net Zero Emissions by 2050 Scenario calls for the world's DAC systems to pull more than 90 million tons of CO_2 by 2030 and 980 million tons by 2050[40] – a far higher level of carbon removal than anything in place today. DAC is still in its early developmental phase, and while its potential is clear, progress in development remains too slow. It does not have to be.

A broader deployment of DAC is necessary, and could be brought about through several practical steps. There is a clear role for governments in developing policies and incentives that reduce the cost of capital, a critical prerequisite to enhancing the feasibility of larger DAC projects. Such policies may include investment tax credits, access to government loans, or the reduction of interest rates paid on the investment.



The International Energy Agency's Net Zero Emissions by 2050 Scenario calls for DAC systems to pull

90

MILLION TONS

of CO_2 by 2030 and

980

MILLION TONS

by 2050

Tesla offers an example of successful early-stage government support: The electric vehicle giant was heavily supported by a low-interest government loan during its early years.[41]
A similar offering could be made available to DAC companies to accelerate development and scaling of the technology.

It is important to recognize that while DAC holds potential as a carbon removal solution, it is no panacea. At this stage, climate change demands a highly inclusive approach, in which a wide range of potential fixes are advanced swiftly and simultaneously.

This requires a continued emphasis on reducing carbon emissions from vehicles, buildings, energy production, agriculture, and other leading sources. It also includes an increased level of innovation and investment in carbon removal methods. DAC is one such method, but it is far from the only one – other measures, such as reforestation and accelerated carbon mineralization, should also be considered as part of a comprehensive global carbon removal strategy.[42]

Plant Construction Viability

2

Million metric tons of CO_2 emissions expected to be removed each year from the atmosphere from two DAC plants in advanced development in the United States – an amount equivalent to the annual emissions of roughly 445,000 gasoline-powered cars.[43]

18

Number of direct air capture plants currently operating worldwide, each capturing almost 10,000 tons of CO_2 per year.[44]

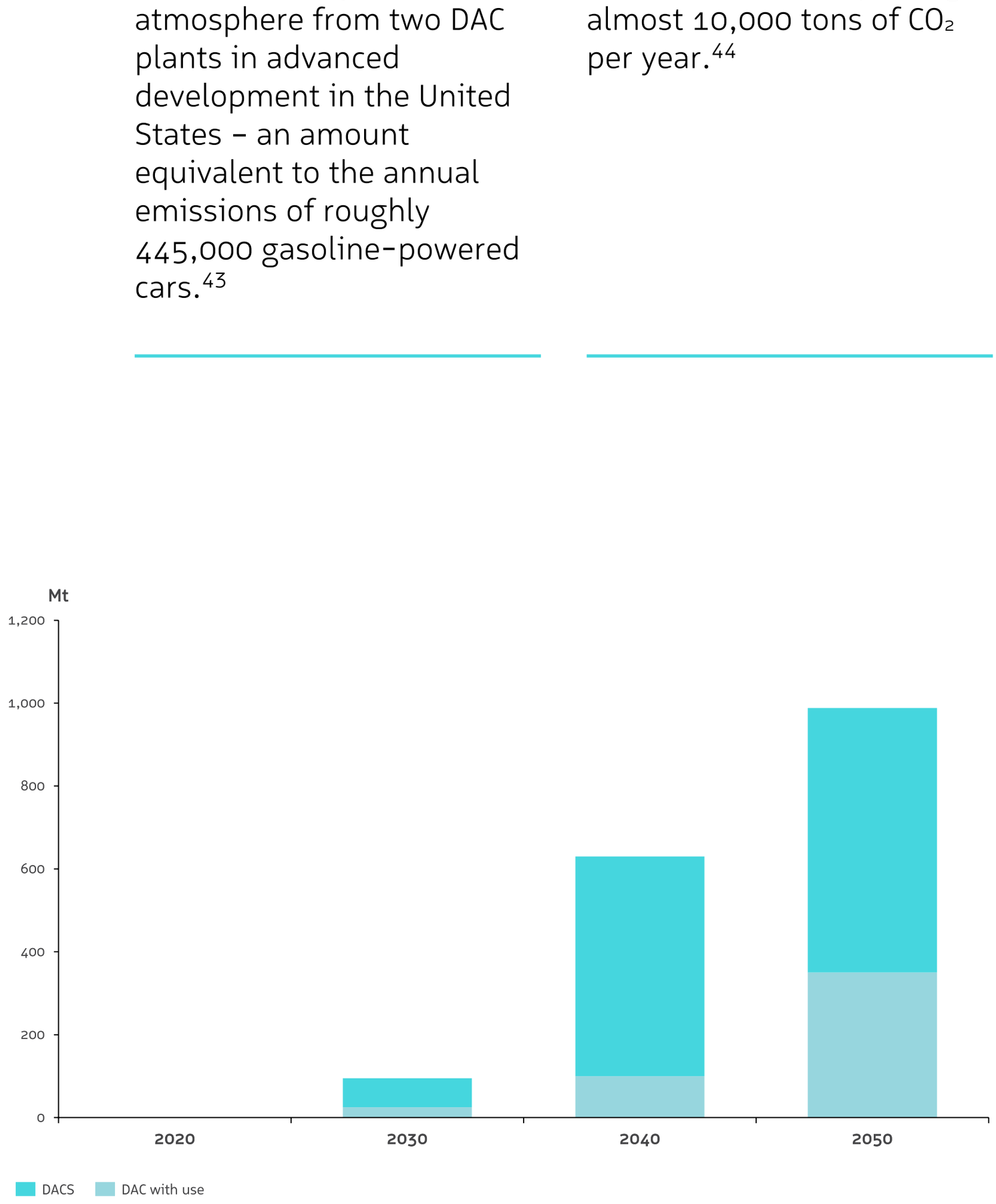


Figure 4: Global CO_2 capture required from DACS and DAC in the Net Zero Scenario

Source: International Energy Agency

THE OBSTACLE

Massive costs, divergent interests, weak incentives.

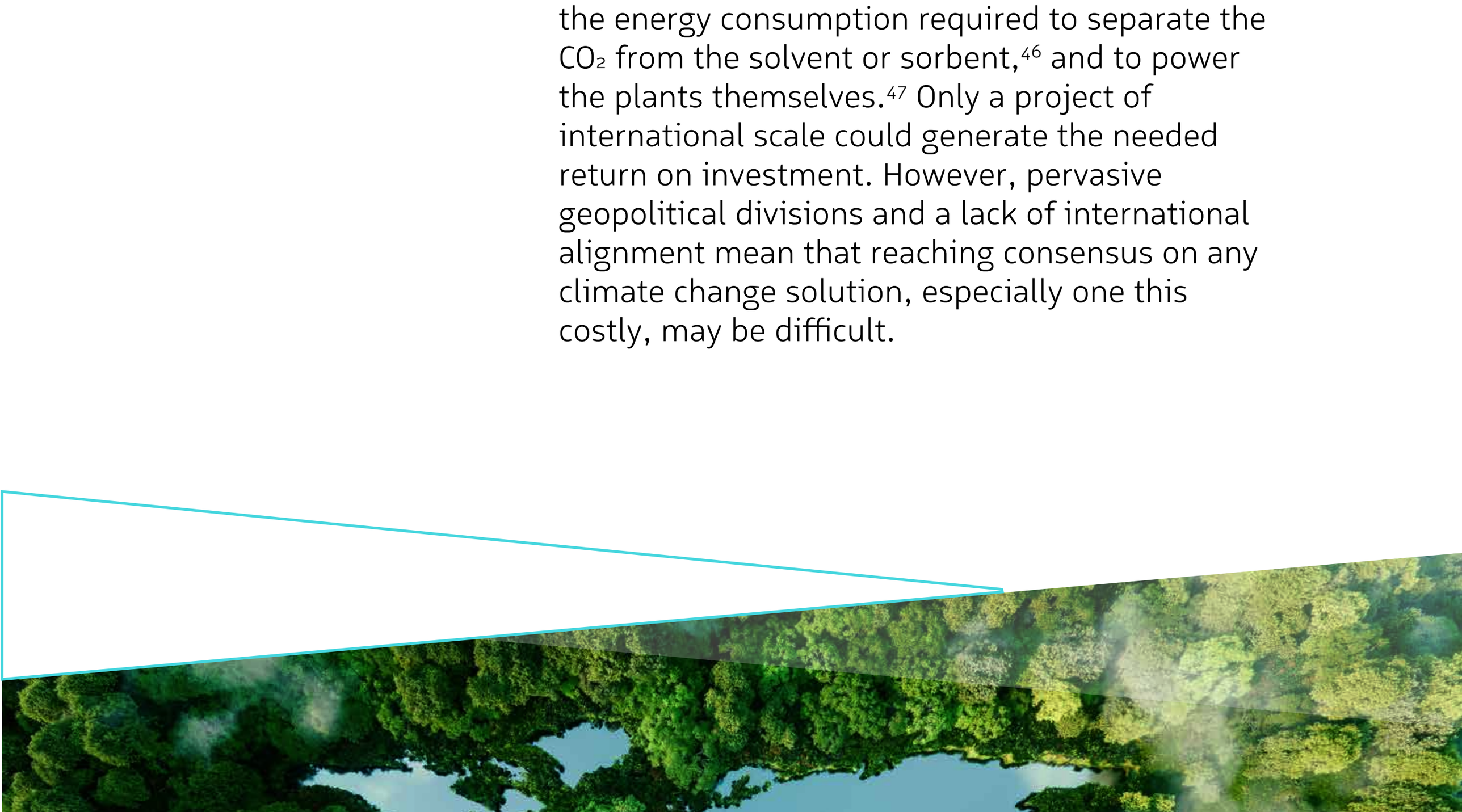
Unfortunately, there is currently no clear business case for either governments or the private sector to invest in DAC at the requisite scale. The infrastructure investments required to advance DAC worldwide are daunting, due to the sheer size of the engineering challenge.

First, energy costs remain prohibitive. Carbon capture, a similar carbon removal technology, is generally carried out at the point of emission. This technology captures greater concentrations of carbon but is unable to capture carbon already in the atmosphere – as DAC can.

GHGs, including CO_2, are much less concentrated in the ambient air from which DAC captures them than that coming out of factory or power plant flues. As such, DAC requires significant amounts more energy to extract. Today, commercial prices for DAC exceed $500/ton removed, preventing the realization of global energy system savings.

Second, liquid solvent and solid sorbent DAC approaches, the two processes furthest along in development, require large amounts of steel, concrete, and chemicals. Scaling up DAC will require the expansion of regional and global supply chains for all of these materials. Large infrastructure investments must also be made for transportation and storage of CO_2 following its capture, including for transport pipelines and injection pumps.[45]

DAC systems require the deployment of highly advanced low-emission technologies to reduce the energy consumption required to separate the CO_2 from the solvent or sorbent,[46] and to power the plants themselves.[47] Only a project of international scale could generate the needed return on investment. However, pervasive geopolitical divisions and a lack of international alignment mean that reaching consensus on any climate change solution, especially one this costly, may be difficult.



THE TRANSFORMATION

An equitable, profitable direct air capture market.

To overcome these challenges, governments should seize this opportunity to enable a clear business model for the deployment of large-scale DAC plants through the creation of new markets and incentives for innovation.

Core to this intervention is a multilateral consortium with the shared purpose of radically accelerating innovation in the core technologies of DAC – a globalized, focused concentration of effort and resources on the singular outcome of removing carbon from the atmosphere. By uniting a global coalition of government leaders, private sector entities, and academic experts in a joint program, it may be possible to develop and deploy DAC technology at an unprecedented scale – and with far more velocity than we could achieve otherwise.

Such coalitions have proved to be successful in other contexts. The G20's Global Infrastructure Hub (GI Hub), for example, advances the delivery of sustainable, resilient, and inclusive infrastructure. The GI Hub collaborates with the public and private sectors, acting as a knowledge center to concentrate vast amounts of data, insights, tools, and programs that inform both policy and infrastructure delivery.[48]

A global investment project for DAC could build the infrastructure required to achieve decisive scale, and could accelerate innovation across the value chain by concentrating global talent and resources. A program of this nature would ultimately advance collective action; strengthen the global supply chain; accelerate innovation; and increase the feasibility of DAC deployment at the immense scale needed.

The breakthroughs generated through such a collaboration would not only be necessary for the advancement of DAC – they might very well spawn other, even more promising technologies and strategies for mitigating climate change.

Such a collaborative investment by leading economies may inspire the involvement of governments seeking to gain domestic support for meaningful action on climate change. For those states willing to take the lead, this historic effort represents an unparalleled opportunity to demonstrate visionary global leadership for the benefit of all the world's people.

Engagement with this project might also be regarded as a highly practical economic measure, since a global surge of spending on DAC infrastructure would likely create jobs around the world, as private sector entities compete for contracts to participate.

The construction of a DAC plant large enough to absorb one million tons of carbon per year could generate roughly 3,500 jobs.[49] Once fully constructed, each plant would require nearly 280 workers to maintain and operate the facility.[50] The construction, engineering, and equipment manufacturing sectors combined could see at least 300,000 new jobs created as a result of bringing DAC to full scale.[51]

By participating in this global effort to accelerate the technology, nations would gain a say in where these facilities, investments, and jobs are ultimately allocated. Nations that choose not to participate might not be able to exercise the same degree of influence.

THE OUTCOME

Toward a green, equitable future.

If we can achieve the vision of deploying high-performance DAC plants globally, while also accelerating progress in carbon emissions reduction, we can reduce atmospheric carbon decisively, slowing and ultimately halting man-made climate change.

By investing collective resources in a program to foster DAC technologies, governments can help bring about a more secure and sustainable world for all.

12 3 4 5 6 7 8

TECH-DRIVEN JOB DISPLACEMENT

UNLEASHING EXPONENTIAL LEARNING:

Harnessing AI in education to accelerate the future-readiness of the workforce

THE CHALLENGE

Contending with potentially unprecedented levels of technological disruption.

An acceleration in the development of artificial intelligence threatens to radically disrupt labor markets and economies. The release of ChatGPT in November 2022 shocked even leading experts with how rapidly and unexpectedly its generative AI capabilities had been developed.[52] Within a year, ChatGPT gained over 100 million weekly active users, making it the fastest-growing platform for consumers in history.[53]

Yet, ChatGPT is far from being the only disruptive technological advance in recent years. Search giant Google recently introduced Performance Max, a goal-based, AI-powered platform that allows advertisers to optimize ad placement and data collection across Google's various channels and networks. Google is already reportedly looking to let go of sales workers whose jobs were automated by these new tools.[54]

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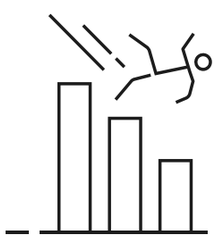
Beyond this, AI is disrupting several industries – altering both the nature of work and its availability.[55] In healthcare, for example, next-generation surgical robots and cutting-edge diagnostic tools have replaced humans in many operating rooms.[56] Such displacement will only pose a greater challenge as the sophistication of AI continues to advance and its range of potential use cases continues to expand.

Currently, many people lack the required training to be meaningfully employed in a future economy where AI plays an ever larger role. It is already clear that the pace of technological advance is far outstripping the adaptive progress of our educational systems.[57] A new UNESCO global survey of over 450 schools and universities found that fewer than 10% of these institutions have developed policies or formal guidance concerning the use of generative AI applications.[58]

In some ways, the impact of this tech disruption that is already underway will be indiscriminate; generative AI eliminates jobs for college graduates and highly degreed professionals just as it does for vehicle drivers and retail workers.[59] However, unless we significantly rework our education systems, AI may exacerbate the major gaps in schooling and skill that already contribute to rising disparities. The quality of education already varies greatly around the world, with many children lacking access to formal schooling entirely.[60]

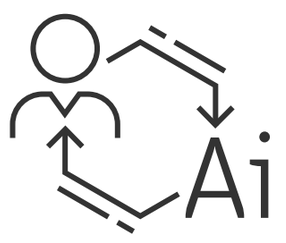
The uneven dissemination of AI technologies could lead to the emergence of a new AI divide, resulting in a disproportionate increase in the labor income for those possessing the knowledge and capital required to adopt AI safely and deploy it effectively, while leaving the rest even further behind.[61] Without swift intervention, the next generation of workers may enter the labor force lacking skills such as critical thinking, digital literacy, problem solving, and creativity – the very traits that are likely to be most needed.

Imminent Job Displacement



300

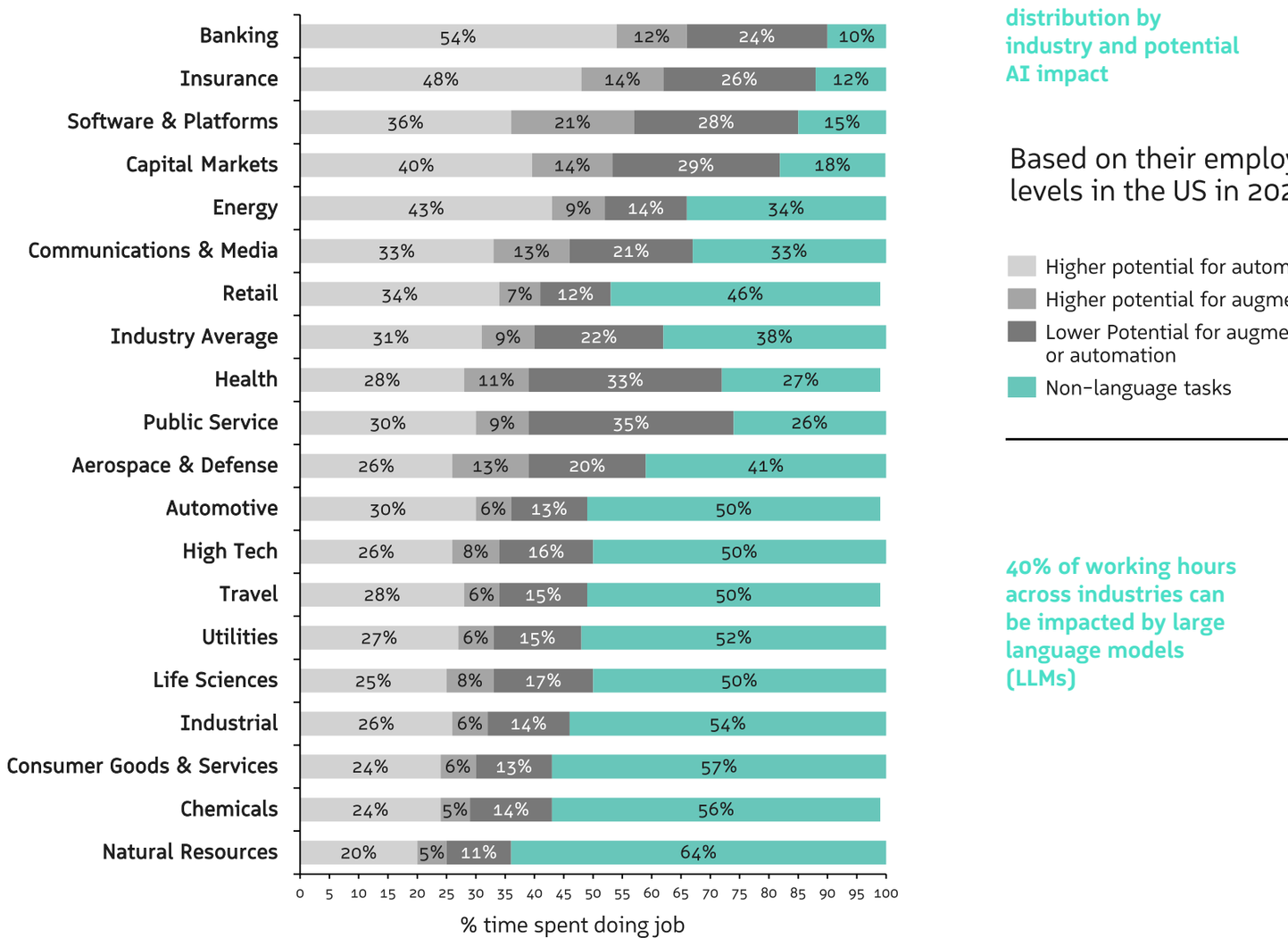
Million jobs expected to be lost or degraded by AI, according to a report by Goldman Sachs.[62]



56%

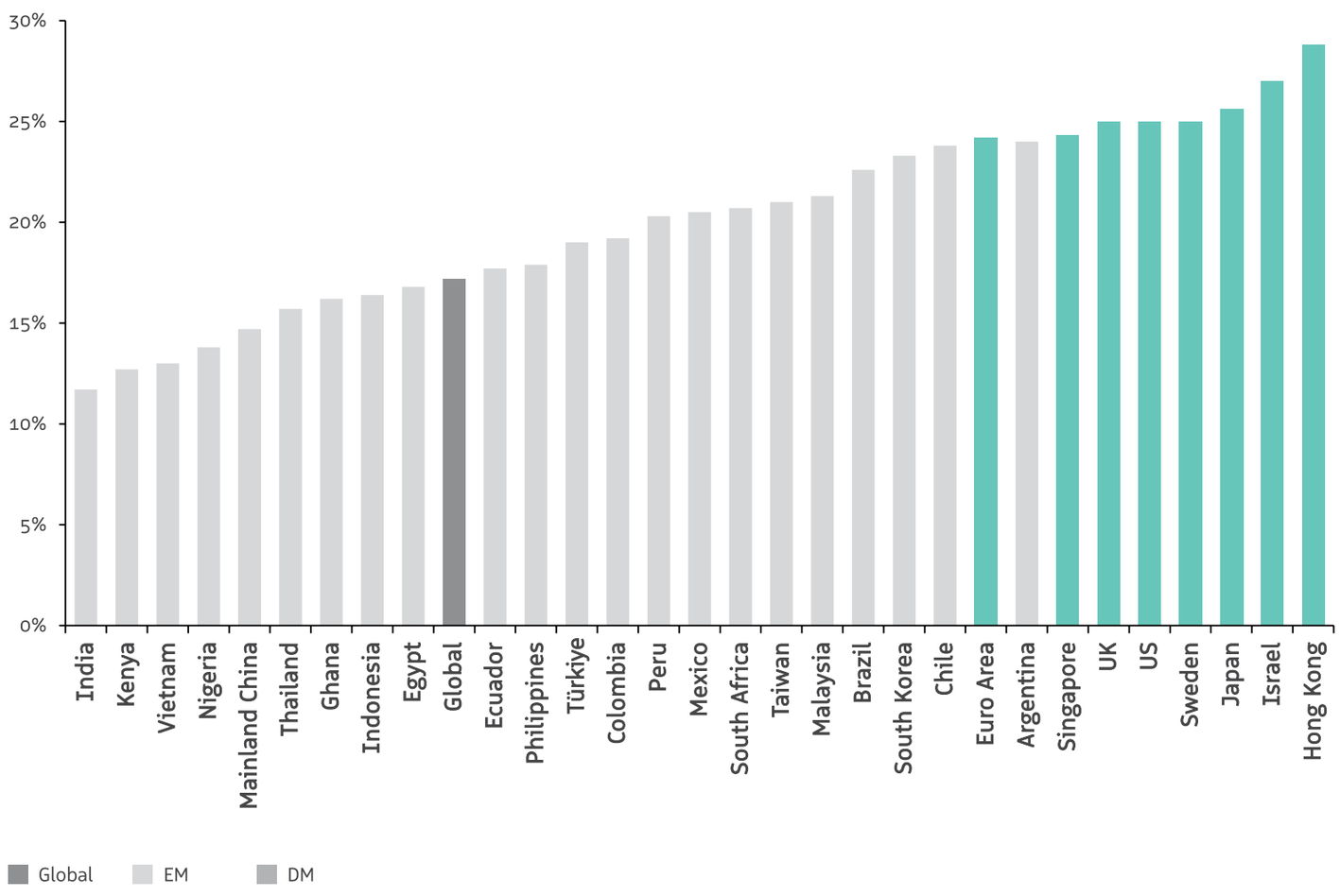
Percentage of entry level jobs at risk of being replaced by AI, according to an estimate by C-suite executives.[63]

Figure 5: Generative AI will transform work across industries



Notes: We manually identified 200 tasks related to language (out of 332 included in BLS), which were linked to industries using their share in each occupation and the occupations' employment level in each industry. Task with higher potential for automation can be transformed by LLMs with reduced involvement from a human worker. Tasks with higher potential for augmentation are those in which LLMs would need more involvement from human workers.
Source: Accenture Research

Figure 6: Percentage of full-time employees exposed to automation by AI



Source: Goldman Sachs

THE SOLUTION

Preparing students and workers for the AI future – through smarter use of AI.

A core element of the solution to AI-driven job loss is a more intelligent application of AI to the increasingly urgent challenge of educating our students and training our workers.

Emergent AI technologies can be leveraged to rapidly and readily develop and impart dynamically tailored, adaptive education and training to everyone. The capabilities of these applications are extraordinary and their educational potential essentially limitless.[64]

One such example is italk2learn, an adaptive learning platform that provides AI-based tutoring to primary school students with personal lesson plans.[65] Testing of the platform showed that the combination of structured practice, exploratory tasks, gaming, and speech recognition helped primary school pupils to gain a deeper conceptual understanding of topics, compared to students learning with other tutoring systems.[66]

Large language model (LLM) programs developed using pretrained models can be made domain specific, customized to subjects and industries as needed. They can also be geared to individualized teaching based on the learner's level of knowledge, their preferred learning style, and even their current emotional states.[67]

Generative AI (as already present in the form of LLM digital assistants such as Microsoft's Copilot) will soon be capable of delivering educational content that is accessible in any language.[68]

These highly adaptable and customizable platforms may fundamentally transform the classroom and workplace by providing a constant, continuous learning coach. For nations with diverse populations, this allows for tailored teaching to all students regardless of their background or language proficiency.

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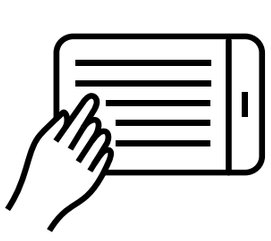
In some settings, particularly workplaces, this technology could function on its own. In schools, however, its greatest potential may be as a powerful complement to human teachers and instructors, who will adopt a necessary role in guiding safe AI integration and adoption – particularly as students seek to navigate and integrate lessons from a newly expansive array of sources.

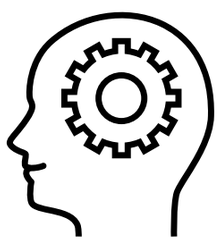
The job displacements wrought by AI may very well still be destabilizing. However, AI-based training is envisioned as a solution to supplement current pedagogical tools and to prepare the future workforce to use AI rather than be used (or displaced) by it.

Market Opportunities



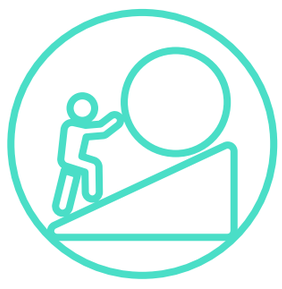
73%

And 68% of teachers and students, respectively, say that ChatGPT can help students learn faster and improve academic performance.[69]



$25

Billion current projections for the size of the market for generative AI in education by 2032, up from $1 billion today.[70]



THE OBSTACLE

A fragmented (and suspicious) marketplace.

The fundamental technology underpinning the proposed solution is already in existence. It is simply not yet widely marketed for deployment by educational institutions. Meanwhile, publicly available LLMs (even those embedded in existing tech solutions) are not yet adequate for classroom integration.[71]

The obstacle is twofold. First, there is a broad resistance to integrating emerging technologies such as generative AI in the classroom; many school systems around the world have established outright bans against the use of ChatGPT and other LLM models.[72]

Teachers fear that the integration of AI solutions could fully replace actual educators in the classroom, leading to widespread job displacement.[73]

Parents and teachers also fear that, in a teacherless society, AI-based education modules would hinder the development of students' critical thinking, communication, and other essential skills. Students may rely too heavily on AI and fail to think for themselves, leading to poor learning outcomes.[74]

Second, the concept of highly personalized teaching LLM tools remains, for now, little more than a futuristic possibility. Only a limited market currently exists for such products. School systems will be unable and unwilling to adopt learning technology that does not align with their curricular content.

The requirements of such content are often established at a highly localized level, and most school systems are too small to constitute profitable markets for tech companies to serve on an individual basis.

Consequently, while frontier AI technologies are being embedded in products for several sectors, developers have no incentive to do so for the education sector due to an apparent absence of a ready market.

THE TRANSFORMATION

Creating modular solutions for the worldwide market.

While fears about the potential negative impacts of AI within educational systems are not unfounded, they should be considered within context and weighed against the potential benefits of integrating this paradigm-shifting technology into education from an early age.

The resulting revolution in educational access would ultimately represent one of our best means of continuing the advance of human ingenuity, working in tandem with the technologies we have created while continuing to do what is needed to ensure we maintain control and oversight over their continued development.

Instrumental to this process is the collaboration between educational institutions, teaching experts, and solution developers to design education products in ways that foster critical thinking, problem solving, and other skills necessary to succeed in the jobs of the future.

Initiatives of this nature already exist on a smaller scale. A cross-disciplinary research initiative at the Massachusetts Institute of Technology aims to promote the understanding and use of AI across all segments of society. The effort, called Responsible AI for Social Empowerment and Education (RAISE), seeks to develop new teaching approaches and tools to engage learners in settings from elementary school to universities to the workforce.[75]

At a national level, the United Arab Emirates became the first country in the world to create a Ministry of Artificial Intelligence and the first in the Middle East to launch an AI strategy. At the core of the UAE's National Strategy for Artificial Intelligence lies an educational commitment to upskill the workforce through specialized training secondments.[76]

Through collaboration with educational institutions and governments, tech companies could develop interfaces and workflows into which school systems could upload their desired educational content (such as curricula, syllabi, reading materials, lesson plans, and testing protocols) in the form of data files readable by the machine learning algorithms. The procurement package would also include the requirement that providers deliver guidelines and tools for deploying, testing, and refining the resulting materials.

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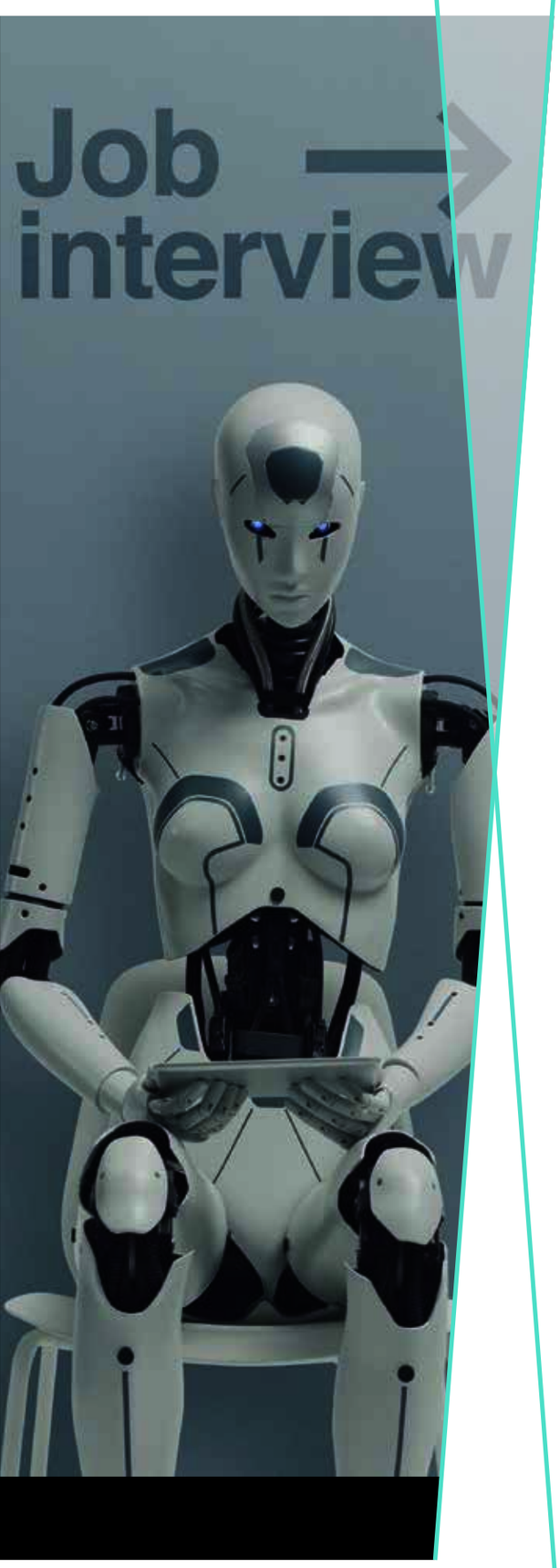


National, state, and provincial educational authorities with relatively aligned curricular models could enter purchasing coalitions and develop procurement packages that are of sufficient scale to induce ed tech companies to develop broad solutions that can then be tailored by the individual school systems to meet their specific needs.

Crucially, we must ensure a continued, prominent role for human teachers and instructors in the development and application of these technologies. This is not for the sole purpose of job retention but to continue delivering the educational outcomes that AI cannot impart – those related to people skills and emotional intelligence, among others.

Within the classroom, teachers will continue to play a crucial role in student learning, as they support them in interpreting and evaluating the content generated by these AI tools, ensuring that the information is accurate, relevant, and meaningful.[77]

As this is deployed, it is important to carefully consider ways in which AI-based education solutions can truly be disseminated in all corners of the world. A foundational prerequisite of expanding such valuable educational tools globally is the closure of the digital divide. Without considering the existing inequities of the world as they pertain to access to both formal schooling and digital connectivity, such a solution could serve to only exacerbate inequality.[78]

THE OUTCOME

Readying the workforce for a limitless but uncertain future.

A deployment of LLM education programs could transform the very instrument of job displacement into a powerful tool for future job readiness.[79] This in turn would smooth our collective shift to the future of work, providing people with the skills they will need in order to thrive in a world transformed by AI and other advanced automated systems.

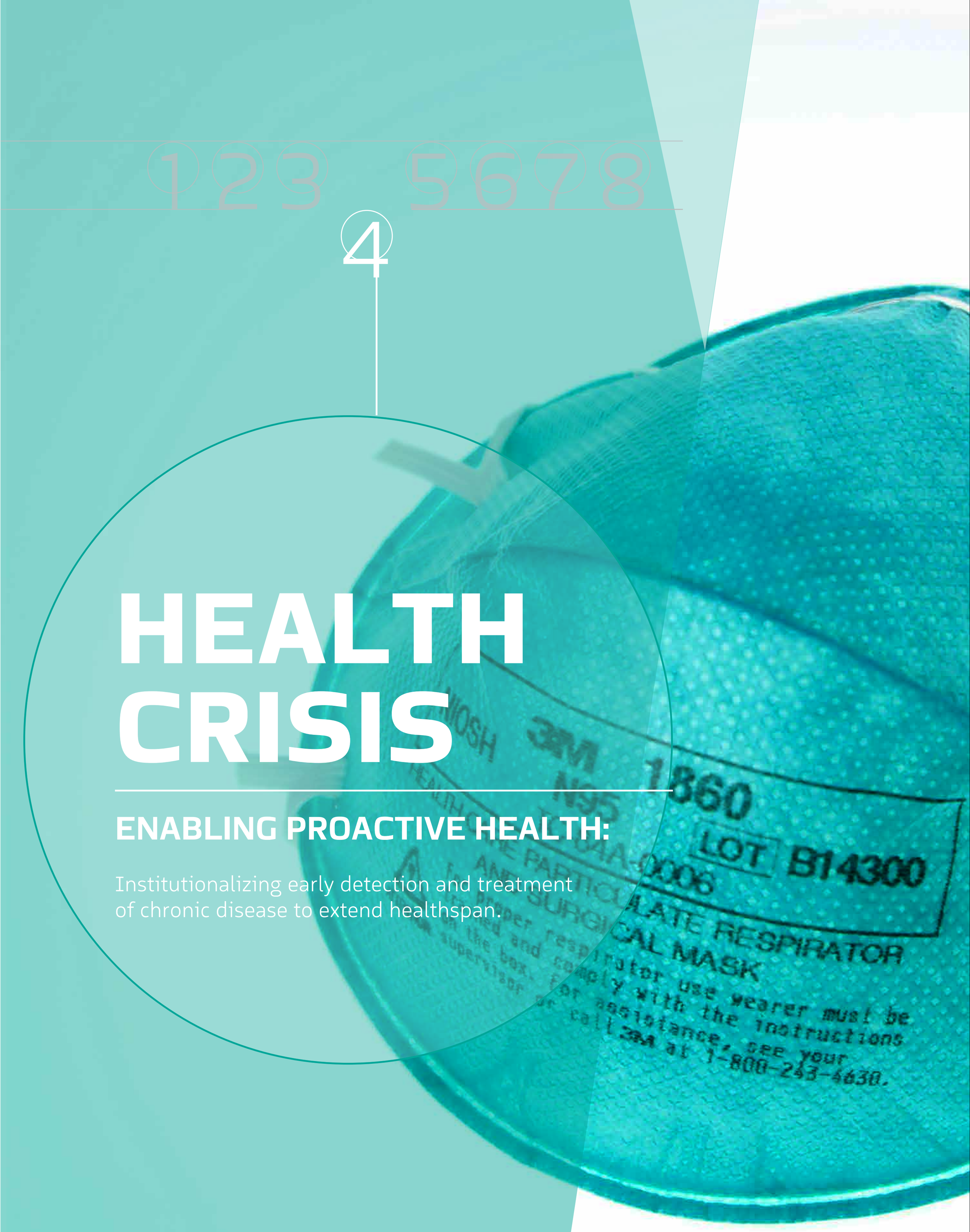
Leveraging this technology early will not only ease the impact of the coming wave of job displacement in the near term, it may also reduce the odds of chronic unemployment and social dislocation and give students and workers worldwide unprecedented access to education and career training at a time when such resources are more vitally needed than ever.

4

HEALTH CRISIS

ENABLING PROACTIVE HEALTH:

Institutionalizing early detection and treatment of chronic disease to extend healthspan.



THE CHALLENGE

Addressing the chronic disease crisis.

Much of the world is facing an avoidable health crisis that is sharply distinct from the challenges to human well-being that we have faced historically.[80] The infectious diseases that have accounted for a vast share of deaths over the centuries – such as malaria, tuberculosis, pneumonia, diarrheal disease, and various forms of pox and plague – have largely declined in both spread and lethal effect.[81] In fact, according to the World Health Organization, 2023 was a record year for the elimination of disease.[82]

The crisis we now face is in the form of chronic, non-infectious diseases such as cardiovascular disease, cancer, diabetes, cirrhosis of the liver, and neurogenerative diseases. Today, seven out of every 10 deaths globally occur as a result of such chronic conditions – largely preventable disorders that lead to premature disability and death.[83] That is, as Dr. Peter Attia emphasizes in his seminal book *Outlive: The Science and Art of Longevity,* these conditions do not just reduce lifespan, they reduce healthspan – "the period of life free of disease or disability."[84]

Less than

3%

of US healthcare dollars are spent on early diagnosis and preventive care.

The share of deaths from chronic diseases has grown substantially, and their treatment accounts for two-thirds of all healthcare costs in the United States. Unfortunately, health systems in most nations are structured to address chronic diseases through reactive treatment rather than prevention.[85] Less than 3% of US healthcare dollars are spent on early diagnosis and preventive care.[86]

This approach is neither medically effective nor fiscally sustainable. Survival rates for patients of chronic diseases are radically lower when diagnosed and treated later rather than earlier.[87] This phenomenon helps explain why health outcomes, measured in lifespan, are stagnating and even worsening in several countries, including some relatively affluent ones.[88]

Furthermore, such tardy, reactive diagnosis of chronic disease is putting increasing pressure on healthcare systems and creating mounting economic costs. Globally, health expenses continue to rise, both in absolute terms and as a share of GDP.[89]

Not only do chronic diseases impair the well-being of patients and their families, their effects ripple outward into our society and economy. If we are to have healthier populations, more productive economies, and more fiscally efficient national health programs, the current approach to diagnosis and interventions needs to be transformed.

Preventable Losses

Seven out of every

10

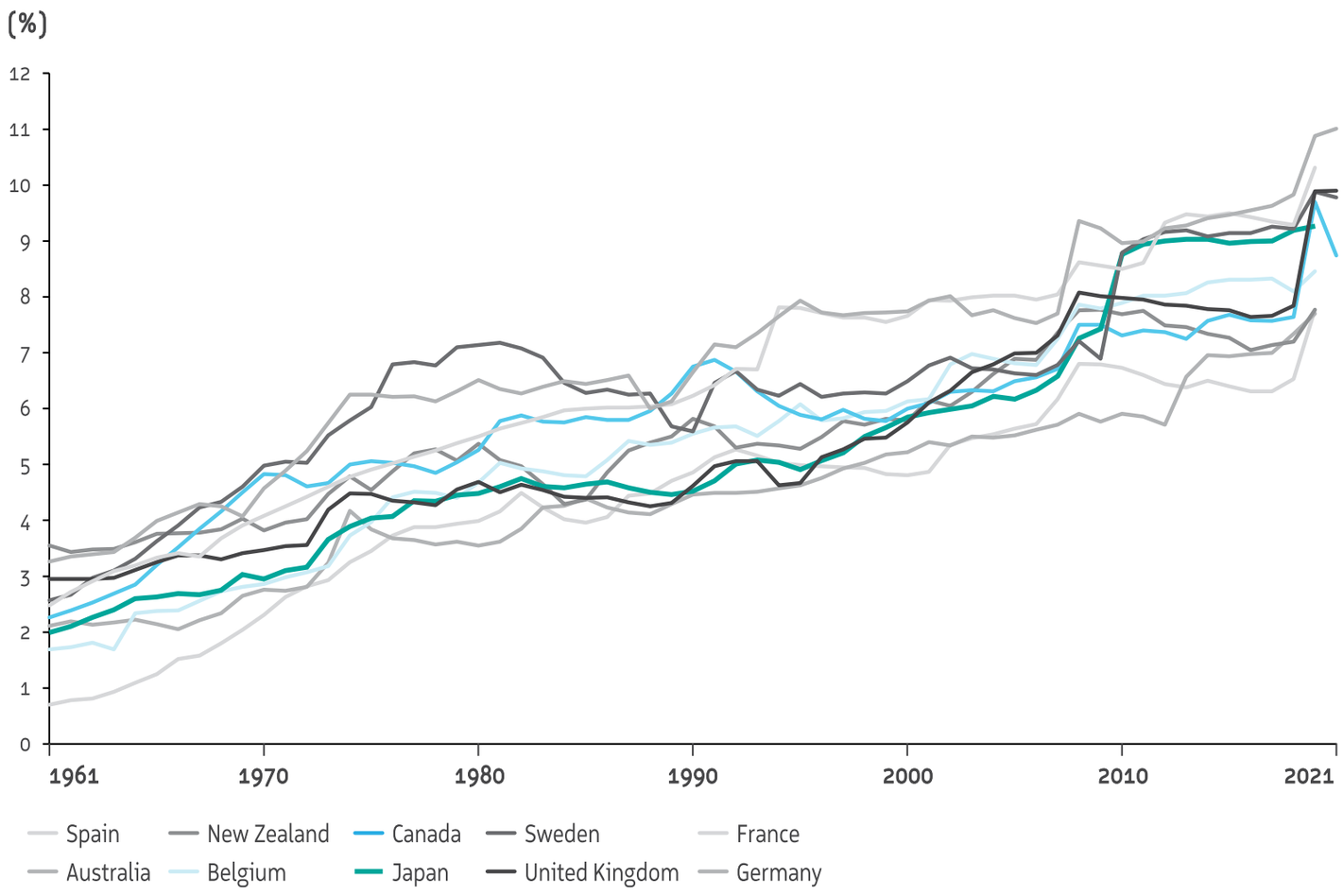
Deaths are attributable to chronic diseases worldwide.[90]

15%

Reduction in global GDP annually from poor health outcomes.[91]

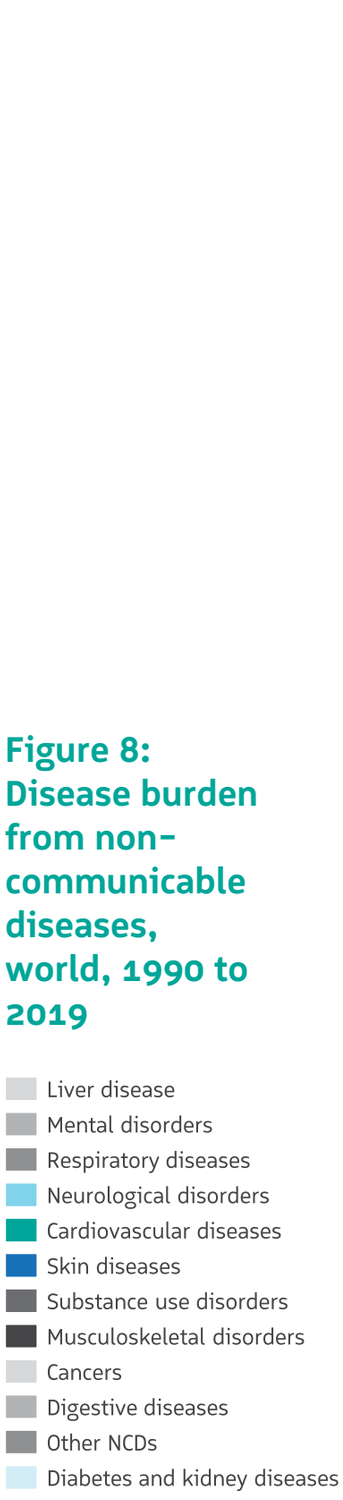
Figure 7: Government health expenditure as a share of GDP, 1961 to 2021

This metric captures spending on government-funded healthcare systems and social health insurance, as well as compulsory health insurance.



Note: Health spending includes final consumption of healthcare goods and services (i.e. current health expenditure). This excludes spending on capital investments.
Source: Our World in Data

Figure 8: Disease burden from non-communicable diseases, world, 1990 to 2019



Measured in DALYs (Disability-Adjusted Life Years) per year. DALYs are used to measure total burden of disease - both from years of life lost and years lived with a disability. One DALY equals one lost year of healthy life.

Source: OurWorld in Data

THE SOLUTION

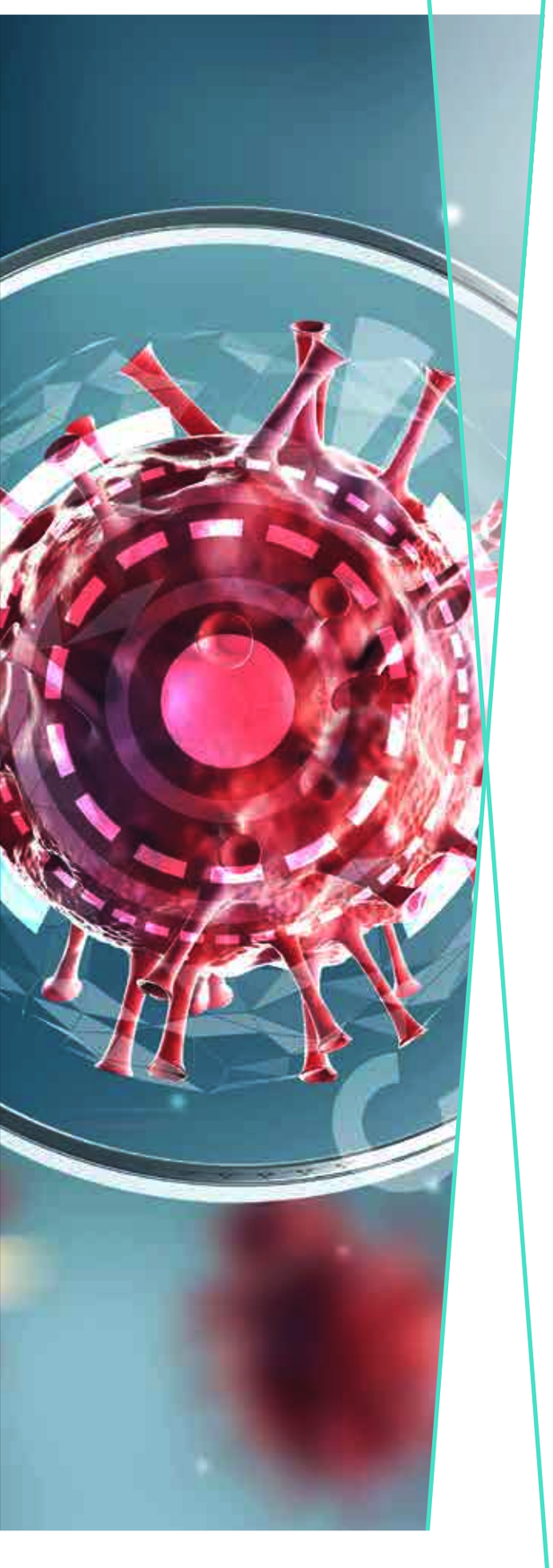
Embracing a preventive health paradigm.

To effectively combat the chronic disease crisis, we must adapt health systems such that, in addition to being able to deliver necessary reactive care, they are geared to identify the signals of chronic disease as early as possible and then deliver the requisite interventions at that early stage when they can be most effective and least costly.[92] This requires conducting early diagnostic testing and expanding diagnostic windows to capture indications of risk on an anticipatory basis such that evidence-based preventive treatment can begin.[93]

In countries with health insurance systems, policies requiring coverage for early screening and treatment are a key priority. Germany is one of the leading countries in preventive health and supporting policies regarding insurance, including through its 2015 Act to Strengthen Health Promotion and Disease Prevention.[94] The economics of such policies are compelling, as early diagnosis can greatly reduce healthcare costs,[95] particularly through reduced hospitalizations and better management of chronic conditions.[96]

At the same time, a holistic approach to health interventions is required – one that places greater emphasis on education and behavioral interventions. This entails earlier, more proactive management of potential risk factors, including lifestyle choices associated with chronic disease.[97] Behavioral interventions can also increase the likelihood that individuals will take greater care of their own health in ways that contribute to preventing, or at least delaying, the onset of chronic conditions.[98]

In addition, an emphasis on emotional and social health throughout primary and secondary education systems can yield significant benefits. Such an approach has been successfully adopted in Finland[99] and is credited with the nation's consistently strong performance in both health and education outcome rankings.



A nationwide commitment to incorporating preventive health messaging, as well as a new emphasis on students' social and emotional wellness into primary and secondary education, could generate gains against chronic disease for decades to come. One successful example is the Scottish government's Daily Mile initiative, a school-based physical activity intervention which seeks to encourage regular exercise. The initiative has been proven to improve the well-being of children across the country, as part of wider efforts to improve overall health and reduce the pressure on the NHS.[100]

A powerful way to supplement this education would be through a commitment on behalf of national health providers to investments in diagnostic technologies, including promising advances in genomics to enhance screening and risk profiling.[101] Wearable devices and artificial intelligence diagnostic tools could assist healthcare providers in proactively detecting and addressing health issues.[102] These tools can result in substantial cost savings, improved treatment efficacy, and greater disease surveillance and control – ultimately making a compelling business case for national health providers to embrace these advancements.

For example, genetic screening with AI technology can alert patients to their susceptibility to certain conditions so they can take action to avoid acquiring such an illness.[103] However, the intersection of AI and sensitive genomic information should be approached with great caution and only handled within ethical constraints that are closely supervised and controlled by human researchers.

Life-Saving (and Cost-Saving) Measures

40%

Reduction in premature deaths globally by applying preventive interventions.[104]

300%

Increase in quality adjusted life years produced by preventive care compared to reactive care, for the same marginal expenditure.[105]

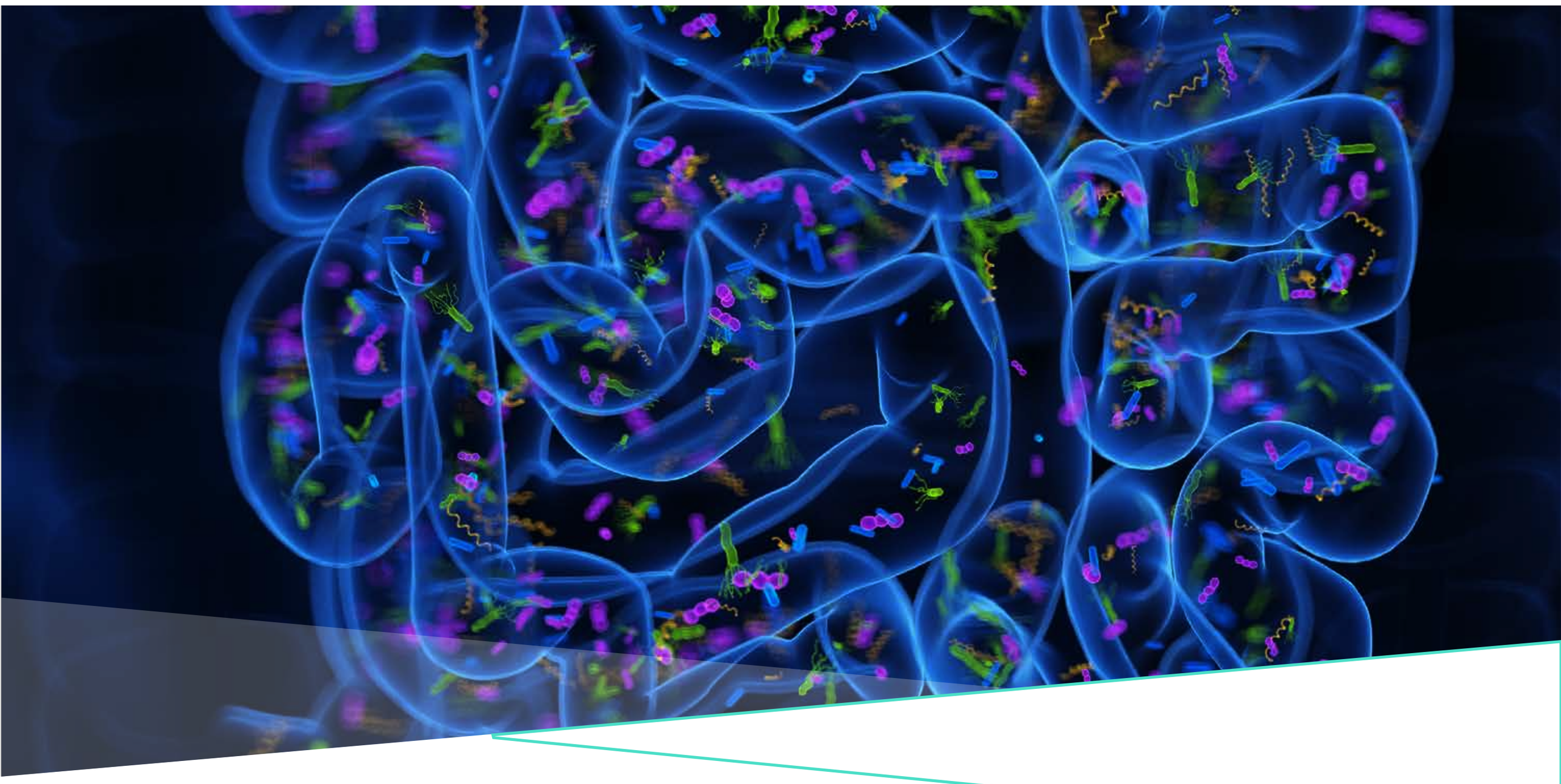
THE OBSTACLE

A fragmented system that reaches people too late.

The concept of expanding the diagnostic window and placing greater weight on early, preventive care is not new.[106] A broad set of challenges and misaligned incentives have deterred a preventive health paradigm from taking hold.

First, in several countries, there are multiple payors and providers in the health insurance market.[107] Traditional fee-for-service models incentivize healthcare providers for each service or treatment provided, creating a system where more interventions lead to higher revenue.[108]

For this reason, insurance companies are not incentivized to pay for early diagnostics and preventive care if the benefits will be reaped by another actor later in the individual's life. A fragmented health market is a core reason behind why value-based care, which aims to optimize an individual's health over the course of their entire life, has not succeeded in taking off.[109]



Second, the current health system does not do enough to ensure that individuals proactively pursue routine medical evaluations or adopt healthier lifestyle choices; far too many people go through their formative years without developing the awareness and the personal tools that would give them better odds of making and upholding such choices.[110] Too often, the threat of a chronic illness cannot be comprehended fully in the abstract; the statistics only register once an individual is diagnosed. This needs to change.

THE TRANSFORMATION

Adopting a lifelong early detection directive.

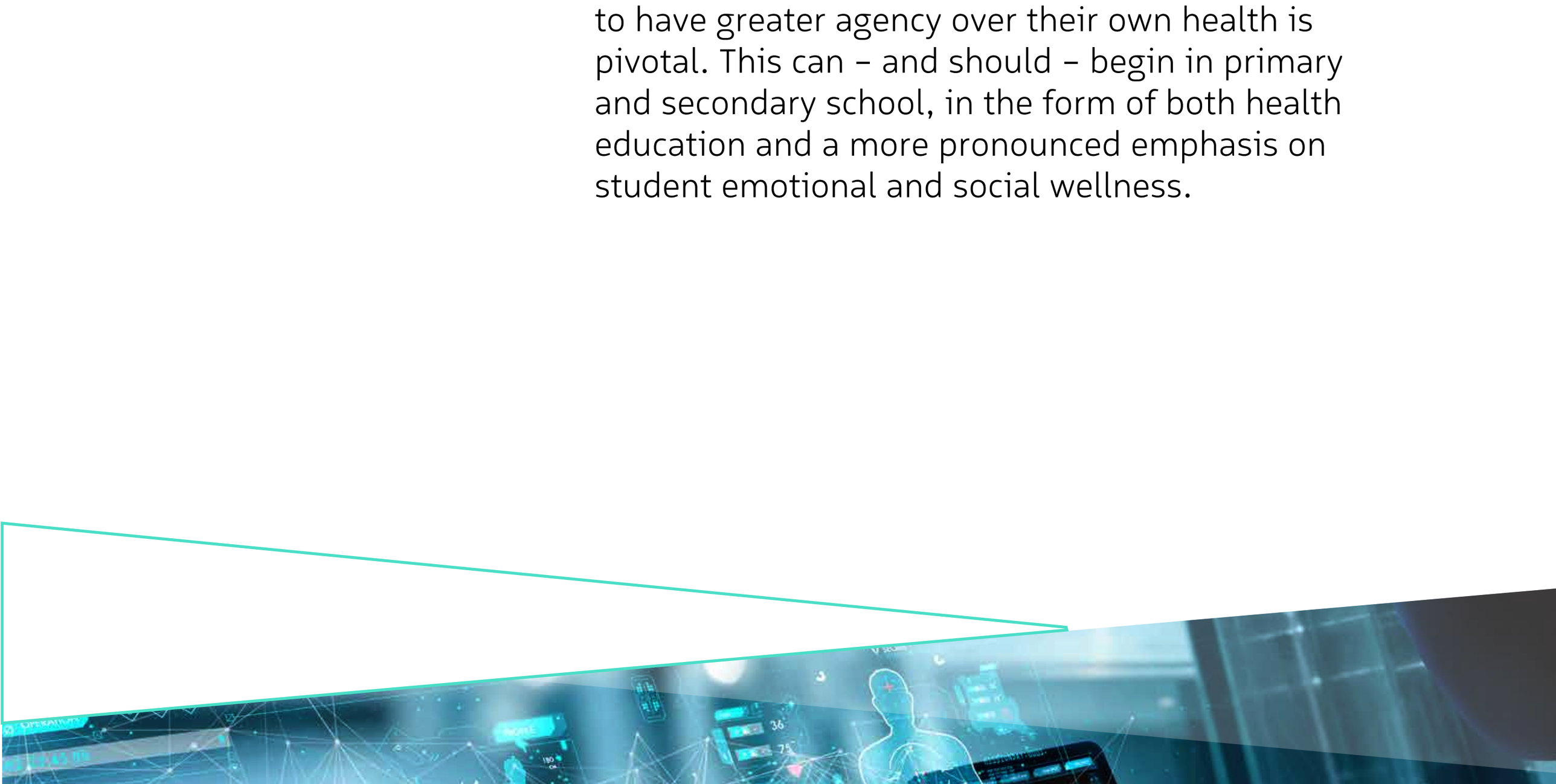
There is need for a requisite shift in resource allocation toward early detection and preventive care. The implementation of an early-detection-centered health system should include a re-engineering of the diagnostic insurance system.[111]

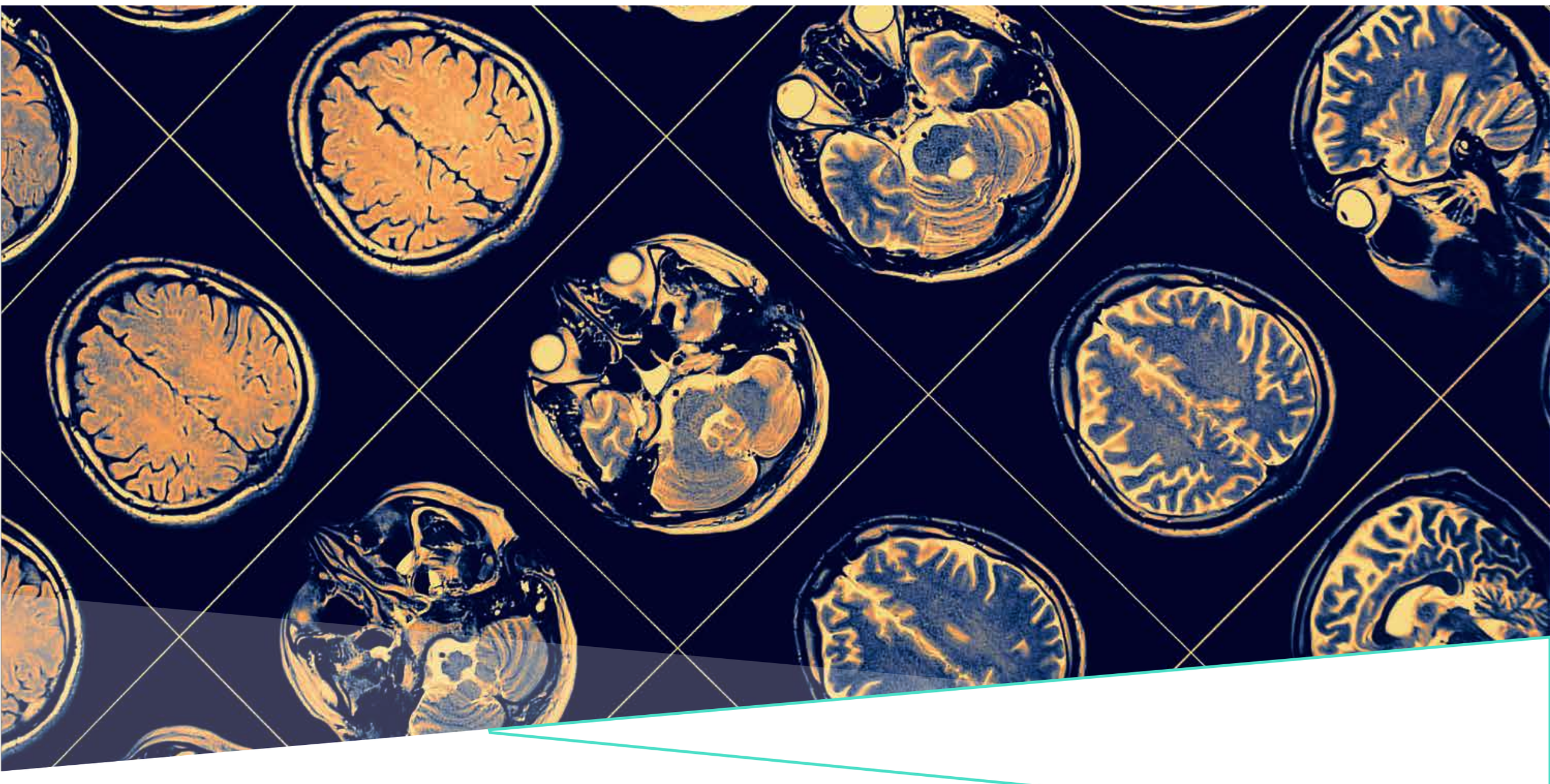
The most effective way to incentivize insurance companies to cover a wider range of checkups for a broader segment of the population is to implement nationally mandated expanded coverage. This has been particularly successful in India, where the PM-JAY scheme provides a health cover of Rs. 5 lakh to families living below the poverty line.[112]

A direct mandate will address the current market failure of insufficient coverage. In single-payor systems, this mandate will be even simpler to enforce.

Even in countries where such an approach is either fiscally untenable or (as in the case of the United States) politically fraught, there are meaningful policy steps that could greatly expand the scope and efficacy of chronic disease prevention efforts. Such steps, as outlined in Canada's Chronic Disease Action Plan, include increasing investment in chronic disease prevention and control, particularly for screening initiatives, remote patient monitoring, and e-health platforms through grant programs.[113]

Empowering individuals to take responsibility and to have greater agency over their own health is pivotal. This can – and should – begin in primary and secondary school, in the form of both health education and a more pronounced emphasis on student emotional and social wellness.





This approach can be accompanied by more comprehensively embracing technologies that make it easier to diagnose chronic conditions in the early stages. We are at the frontier of harnessing the wealth of insights from wide-ranging health data that can be leveraged (with ethical safeguards firmly intact) to create AI-generated, personalized health guidance that will maximally enhance the odds of preventing or successfully treating the onset of chronic disease.[114]

This could include the development of a personal health platform through which individuals can access their own health data and receive personalized recommendations for preventive care.

These platforms already exist on a smaller scale. Apple has integrated their health informatics mobile application, Apple Health, with their Apple Watch product. This platform features health data aggregation, monitoring, and alerts. It can identify trends in physical activity, track sleep patterns, and offer recommendations for improving overall well-being.[115]

THE OUTCOME

Setting new health priorities.

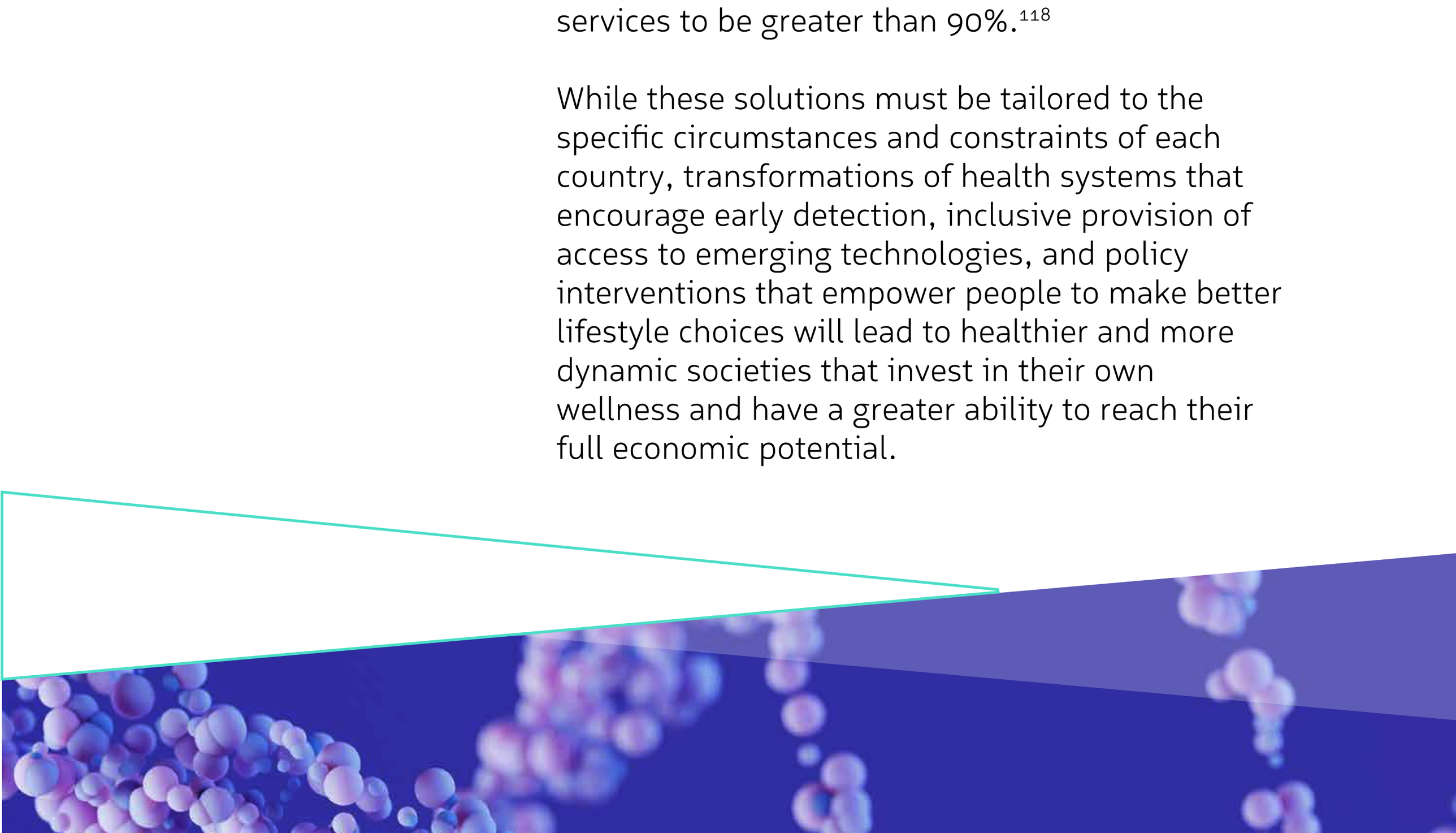
The urgency to transform health systems is rising, as the chronic disease crisis is leading to plateauing health outcomes; burgeoning financial costs; and a growing toll of lives curtailed and cut short.[116]

Given the rapid advancements in wearables technology, artificial intelligence, genomic science, and behavioral sciences, there has never been a better opportunity to drive a preventive care transformation. Such technologies should complement a broader push to make emotional and social health – as well as personal health awareness – a more significant component of primary and secondary education.

Crucially, multilateral collaboration and private sector investment will be critical to making these technologies and other solutions available in emerging and developing countries facing critical resource constraints, including financial shortages, lack of knowledge, underdeveloped infrastructure, and much more.[117]

While the specific challenges of low-income countries go beyond the scope of this chapter, it is worth highlighting the vast potential of telemedicine in these contexts, where a recent study found patient satisfaction with telehealth services to be greater than 90%.[118]

While these solutions must be tailored to the specific circumstances and constraints of each country, transformations of health systems that encourage early detection, inclusive provision of access to emerging technologies, and policy interventions that empower people to make better lifestyle choices will lead to healthier and more dynamic societies that invest in their own wellness and have a greater ability to reach their full economic potential.



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CYBER WEAPONS PROLIFERATION

DISRUPTING THE CYBERSECURITY DILEMMA:

A governed marketplace to bring the illicit trade of cyber vulnerabilities into the light

THE CHALLENGE

The weapons of a 21st- century arms race.

We are in the midst of a 21st-century arms race. It is a fierce competition among a wide array of actors to develop and deploy increasingly technologically advanced weapons, including cyber weapons that exploit vulnerabilities in the information technology networks upon which our economy and society now so acutely depend.

This cyber arms race is fueled by a thriving black market for what are known as “zero-day” bugs and exploits, so named for the length of time that passes, from a developer’s perspective, between awareness of a vulnerability and its exploitation. With zero-day attacks, vendors are left with no time – or zero days – to proactively address the problem. The threat intelligence and cybersecurity company Mandiant identified a total of 80 such exploitations in 2021, up from 32 in 2019.[119]

More recently, Mandiant identified a higher number of zero-day attacks for the first seven months of 2023 than had taken place over the entirety of 2022.[120] The market for cyber vulnerabilities provides bidders with access to zero-day security flaws and to programs capable of exploiting them.

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The cyber weapons built on zero-day vulnerabilities are wielded by a wide range of actors, including governments, with an alarming frequency. They have the ability to cause widespread chaos, sowing digital and physical destruction in critical systems around the world.[121]

Within the last decade, bugs like Heartbleed and Shellshock have been exploited in vital networks, enabling the theft of sensitive personal and health data, and even intrusion into the networks of the US Department of Defense.[122] With nation-states, cyber mercenary groups, and hacktivist organizations all vying for the same coveted vulnerabilities, exploits that once cost $500 can now reach prices of $150,000, or reportedly more.[123]

There is overwhelming evidence that, despite assurances of secrecy attached to such high purchase prices, the same vulnerabilities and exploits are sold to multiple entities around the globe.[124] Cyber weapons have become a significant source of strategic advantage for both state and non-state actors around the world, providing a covert and relatively low-risk means of disrupting adversaries.

At the same time, cyber weapons have become a wildly lucrative business opportunity for skilled hackers and the intermediaries who traffic their discoveries. Given the low level of global alignment on the governance of cyberspace, there is an escalating risk that the proliferation of offensive cyber capabilities will result in large-scale destruction, particularly if used in tandem with other forms of weaponry such as nuclear weapons.

Increasingly, leaders in the fields of national security and technology are warning of the dangers of cyber vulnerabilities in ever more ubiquitous artificial intelligence systems.[125] Hacks that exploit vulnerabilities in emergent AI networks could have a destructive potential far exceeding those of past attacks.

Without concerted efforts, the unbridled proliferation of offensive cyber capabilities will continue to pose an escalating risk to national security around the globe and to the stability of the global order itself.

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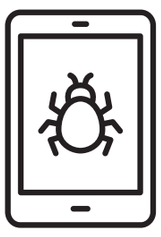
An "Open" Black Market



$1 million

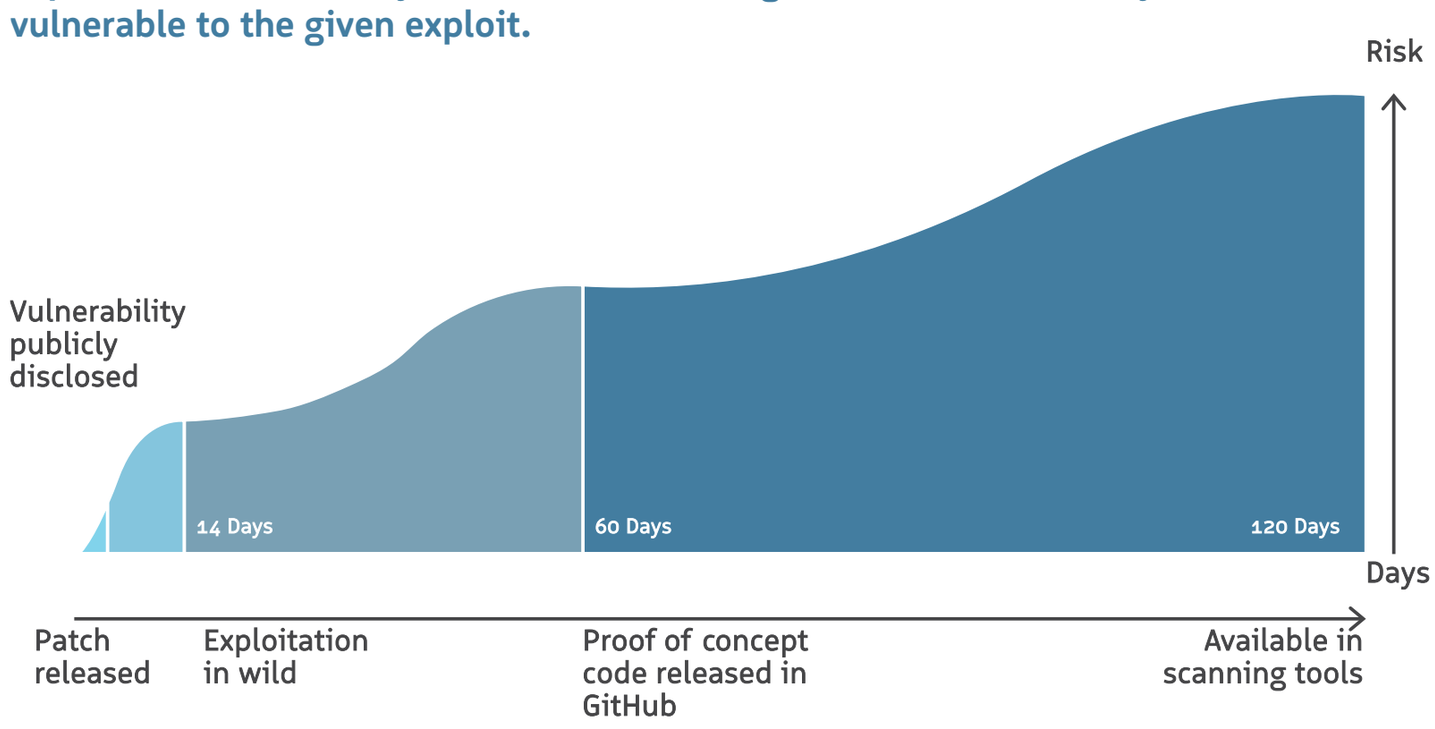
to $2 million: The price tag for tried-and-tested ways to remotely hack the iPhone. Anyone can procure zero-day exploits from catalogs offered by private companies that openly publish their acquisition price lists online.[126]

81

The number of private technology and security companies assessed with high or medium confidence to be selling intrusion capabilities at arms fairs around the globe. An estimated 75% of these are marketing their capabilities to foreign governments.[127]

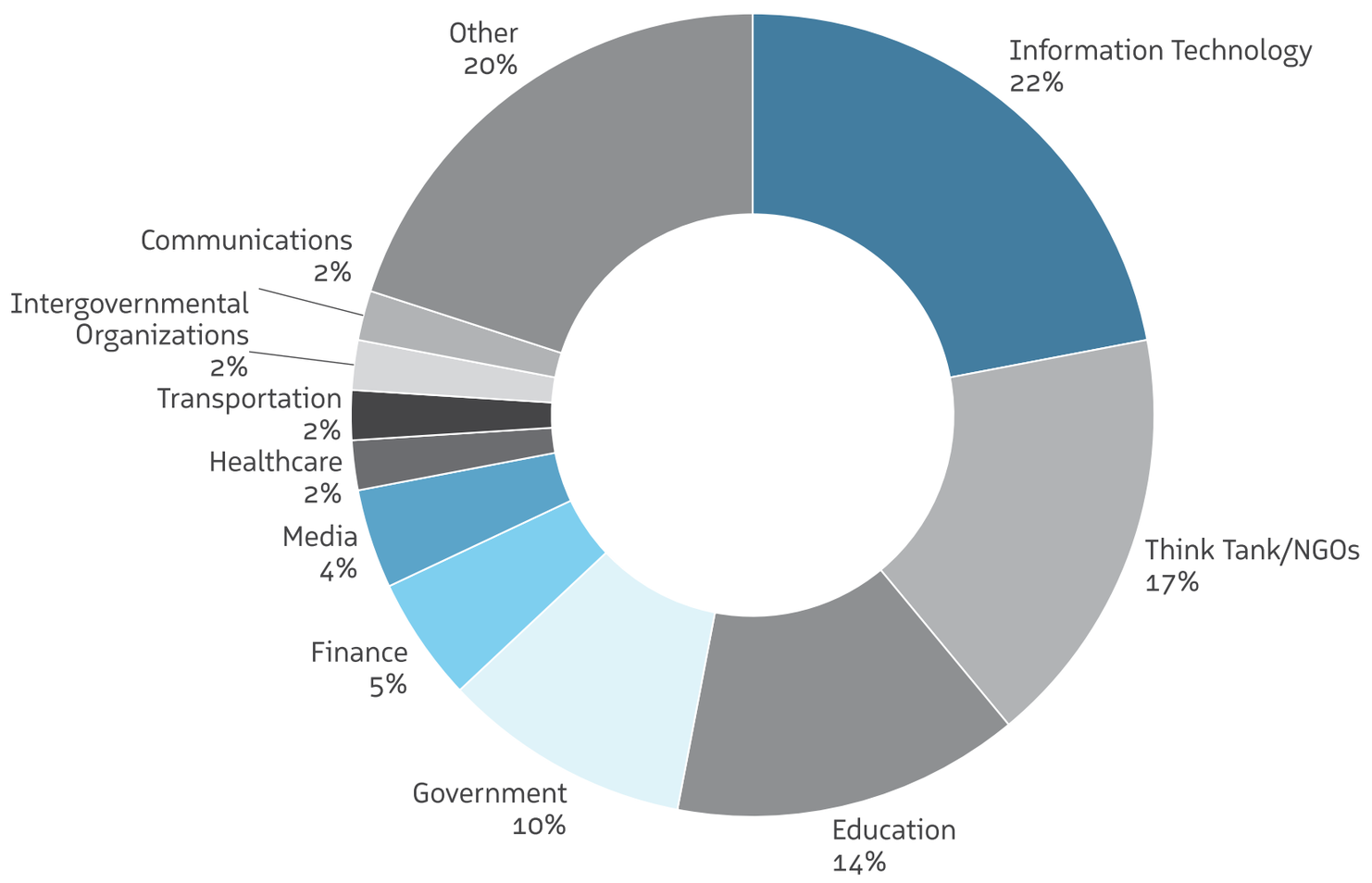
Figure 9: Speed and scale of cyber vulnerability commoditization

On average, it takes only 14 days for an exploit to be available in the wild after a vulnerability is publicly disclosed. This view provides an analysis of the timelines of exploitation of zero-day vulnerabilities, along with the number of systems vulnerable to the given exploit.



Source: Microsoft

Figure 10: Industry sectors targeted by nation-state actors with cyber intrusions



Source: Microsoft

THE SOLUTION

A new approach to cyber arms control.

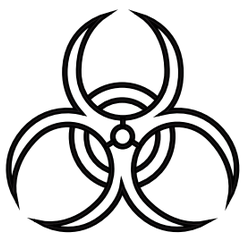
There is an opportunity to address the proliferation of cyber weapons through an intervention similar to that applied to other weapons capable of indiscriminate devastation – an arms control treaty.

Global agreements in the nuclear and chemical domains have enabled close to 90% reductions in weapons inventories.[128] Such treaties have proved to be instrumental in reducing the risks associated with these weapons – including indiscriminate attacks on civilians and, in the case of nuclear weapons, mutually assured destruction. We all now benefit from the global norms that have emerged out of these agreements, recognizing the use of nuclear, chemical, and biological arms as unacceptable.

A cyber weapons treaty could similarly define a new era of shared international norms of acceptable behavior with respect to the use of offensive cyber capabilities, while helping curb the proliferation of cyber weapons. However, a number of unique features of cyberspace render this solution not fully adequate.

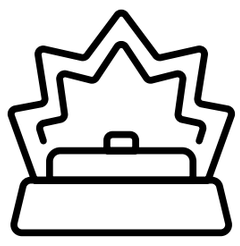
Arms Control Successes

Historically, arms control treaties have been adopted across a range of domains and weapons categories and have produced notable results:



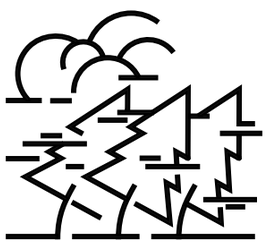
185

States party to the Biological Weapons Convention, representing an almost universal level of membership.[129]



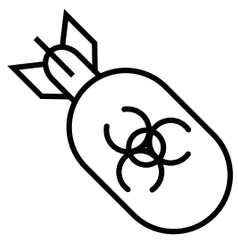
165

Countries that have ratified or acceded to the Mine Ban Treaty, an accord that has led to the destruction of millions of mines and to the clearance of thousands of kilometers of land.[130]



88%

Reduction in American and Russian nuclear weapons inventories from their respective Cold War peaks over the last 50 years, due to the Nuclear Non-Proliferation Treaty.[131]

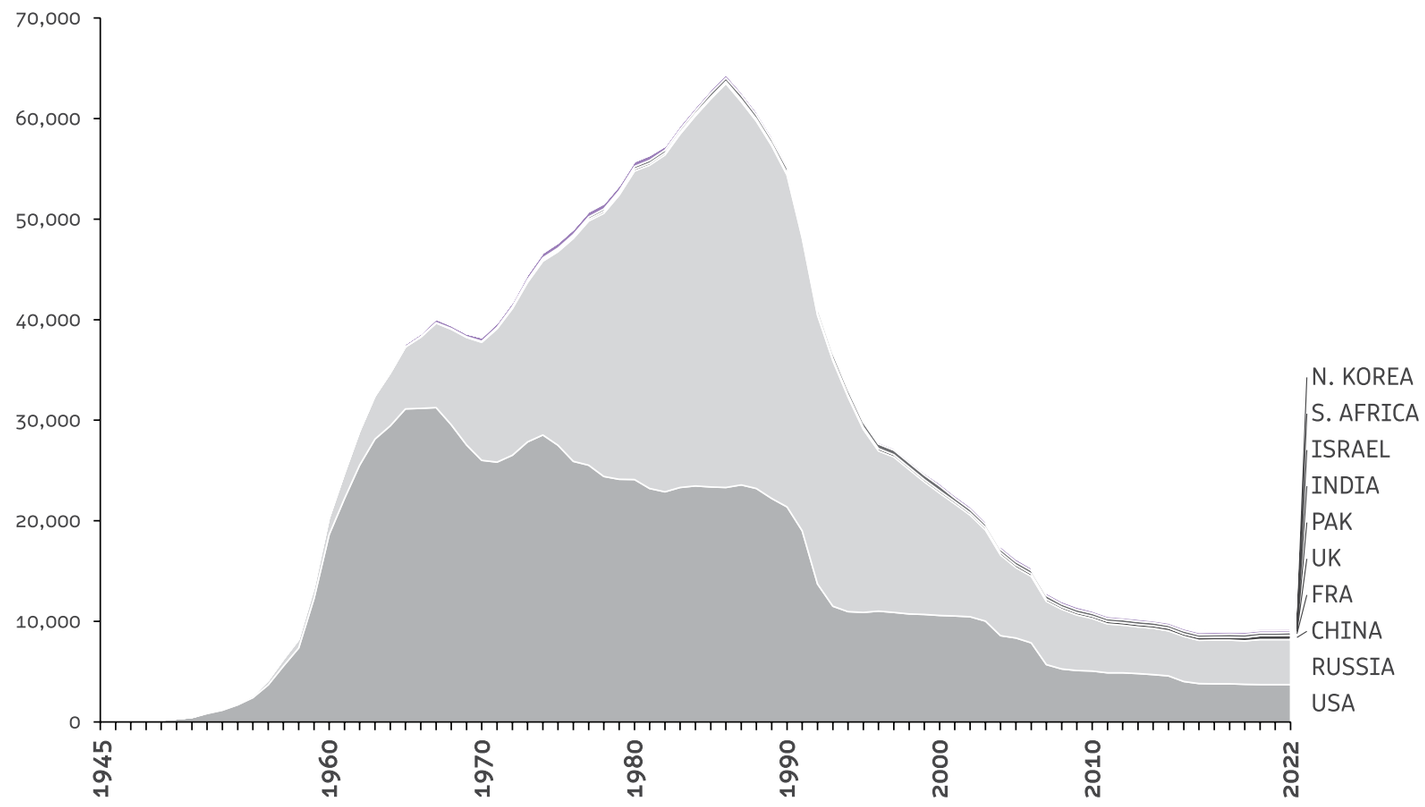


72,304.34

Metric tons of stockpiled chemical weapons that have been destroyed since the Chemical Weapons Convention (CWC) came into force in 1997.[132]

Figure 11: Estimated nuclear warheads stockpiles, 1945 to 2022

Stockpiles include warheads assigned to military forces but exclude retired warheads queued for dismantlement



Note: The exact number of countries' warheads is secret, and the estimates are based on publicly available information, historical records, and occasional leaks. Warheads vary substantially in their power
Source: Our World in Data

THE OBSTACLE

Overcoming the cybersecurity dilemma.

For any weapon that represents a potential source of strategic advantage, an international agreement that restricts its development will run contrary to the perceived national security interests of some states. In order for leaders to overcome the natural incentive to maximize their individual strategic advantage, they need an alternative shared path that demonstrably leads to better outcomes. In cyberspace, this alternative path has yet to be defined, and for most, it is unimaginable.

The difficulty of defining a truly effective arms control regime for cyberspace is heightened by the opacity of the operating environment. It is notoriously difficult to attribute cyberattacks, given the ease with which perpetrators can cover their tracks in the cyber domain – a non-physical and borderless ecosystem.

The rapid technological development[133] that characterizes the constantly shifting cyber landscape further hinders the practical ability to apply and enforce any such treaty in a manner that is sufficiently flexible. Though the attribution of attacks may be becoming more feasible in certain circumstances,[134] the widespread use of proxy groups and mercenaries enables states to assert plausible deniability and degrades trust between states.

In such an environment – devoid of good-faith relations and without the tools to effectively verify cyber weapons control – there are no clear incentives for cyber powers to relinquish their strategic advantage. For non-state actors, the exceedingly low rate of prosecution for malicious cyber activities – by some estimates, less than 1%[135] – severely weakens any deterrent value of such laws.

THE TRANSFORMATION

Illuminating – if not eliminating – the black market.

The unique characteristics of cyberspace and the secrecy with which weapons can be deployed in this domain severely undercut the viability of a cyber arms control treaty. Yet, these very same characteristics offer an alternative solution to limiting the development and spread of cyber weapons.

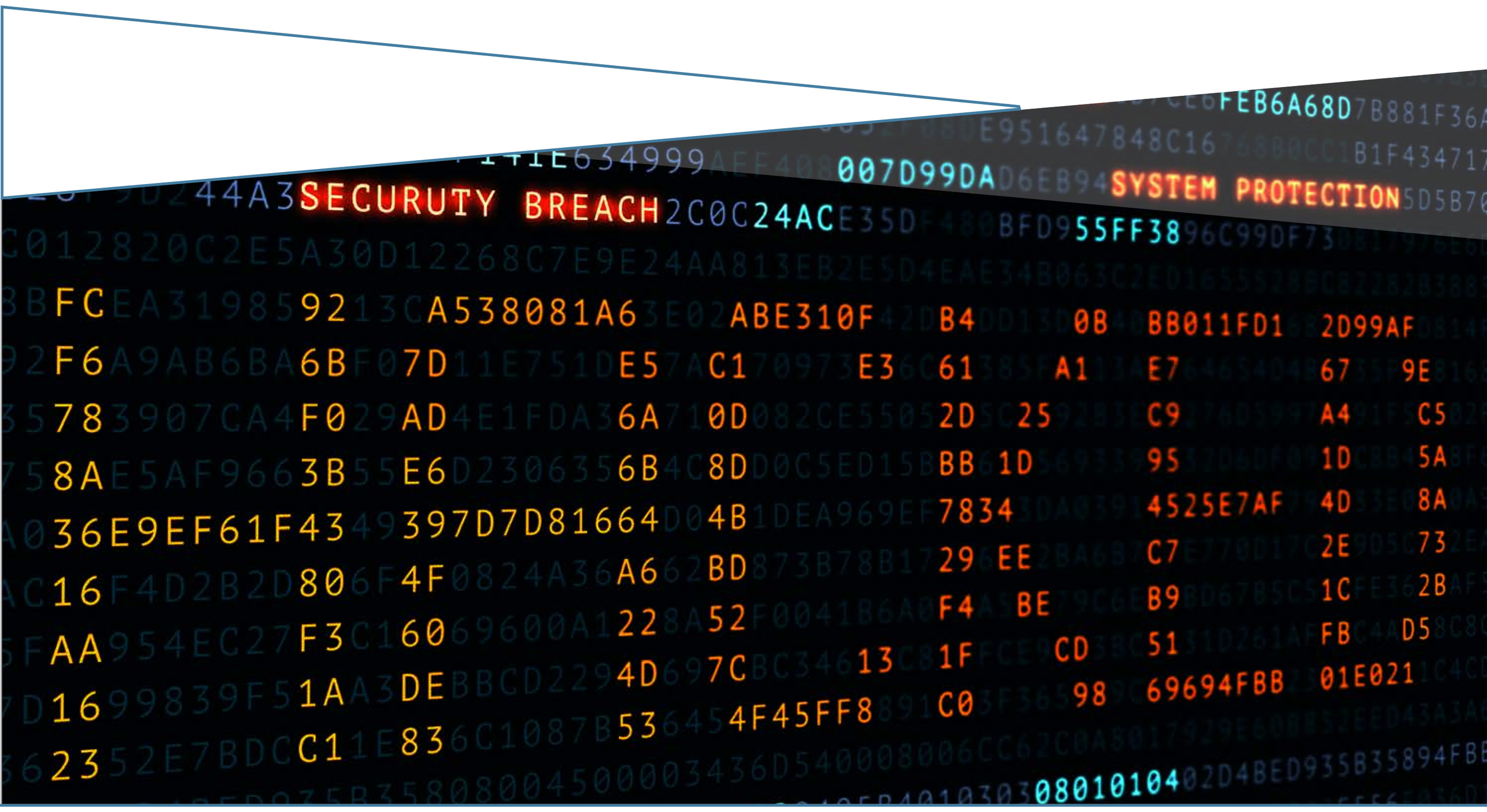
One of those characteristics is the relative concentration of advanced cyber capabilities in a small set of countries, several of which have demonstrated a willingness to use them.[136] This creates an incentive for the majority of the world's nations to collaborate in efforts to prevent an arms race they have little chance of winning.

For these countries, a clear alternative to engaging in the race becomes evident: Establish an open market that would pay hackers to share their zero-day exploits, undercutting the entire rationale of the black market.

While such an approach carries its own risks, there is proof of its viability. Several private sector organizations, such as Microsoft, already pay hackers to share exploits.[137] A program or organization modeled on this approach, reaching scale large enough to offer sums to hackers on par with current rates, would fundamentally alter the market for sellers.

This market would require clear processes by which the vulnerabilities and exploits sold could be verified – both in terms of their potential severity (in order to set fair prices), and to ensure they have not already been sold elsewhere. It would also require a high level of transparency and joint oversight in order to establish an adequate level of trust.

This includes trust among all buyers and sellers involved, but it also must include a certain level of trust among the general public, which may be wary of sales of such weapons to a diverse group of countries, some of whom may not be seen as allies.



For the vast majority of governments lacking any meaningful leverage in the cyber domain, this effort would result in little or no loss of strategic advantage. Rather, it would represent an unprecedented chance to level the playing field by reducing the global arsenal of cyber weapons.

For private sector software developers, whose codes are often the unwitting vehicle for cyber-attacks, such a market could be invaluable in generating knowledge of any vulnerabilities – long before any zero-day exploit impacts their systems and reputations.

Even the cyber powers themselves may choose to participate in such a regime, for the simple reason that they are also the nations that have the most to lose from zero-day attacks. Theirs are the economies and societies most reliant on digital networks, and theirs are the militaries most likely to be targeted by rogue actors. In short, their very capabilities are what make them uniquely vulnerable – and therefore perhaps amenable to joining an arrangement that seeks to bring this black market into the light.

Though such an effort would not be able to wholly eradicate the use of digital mercenaries or overcome the unique challenges of the cyber domain with respect to verification and attribution, undercutting the black market could be a first step toward disarming and disempowering malicious actors altogether.

THE OUTCOME

Securing the global digital domain.

Nonproliferation agreements and weapons verification protocols have proved their value in other domains of weaponry. Given the untraceable nature of so many actions in cyberspace, traditional arms control approaches have so far failed to yield similar outcomes.

However, there is meaningful opportunity to overcome this challenge. Other distinct aspects of cyberspace, particularly its globally shared nature and near universal accessibility, hold the answer to addressing this rampant proliferation.

Through efforts for global collaboration and transparency, countries can curtail proliferation at the source and dismantle the black market from the foundation up, helping to bring about a more stable cyber domain and geopolitical order.

1 2 3 4 5 6 7 8

SOCIETAL POLARIZATION

RESTORING MUTUAL TRUST:

Systematic disruption of the cycle
of dehumanization and polarization

THE CHALLENGE

Polarization and dehumanization threaten stability and progress.

Societies around the world are becoming increasingly polarized along political, economic, and social fault lines. According to Edelman's annual Trust Barometer survey of 27 countries, 53% of global citizens say that their country is more divided than in the past.[138] A median of 65% of adults across 19 surveyed countries say there are strong or very strong conflicts in their country between people who support different political parties.[139]

This polarization exacerbates divisions, reinforces identity politics, and drives outright fear of the partisan "other side." The result is a rise in mutual dehumanization among political partisans.[140]

The cycle is self-perpetuating. Research has found that when people perceive they are dehumanized by another group, they respond with reciprocal dehumanization, creating a cycle of fear and aggression.[141] Those who dehumanize other groups are more likely to support discrimination, military aggression, or, in the most extreme cases, acts of genocide.[142]

Physical and online spaces have become increasingly divided, reflecting (and contributing to) the segmentation of identities and perspectives within societies. Individuals have separated themselves by social, cultural, and political affinity – through the selection of the neighborhoods where they choose to live; the stores and restaurants they frequent; the houses of worship they attend; and the places where they or their children go to school.[143] The causality runs both ways: On the one hand, likeminded people cluster together or with other likeminded people; and on the other hand, such clustering together makes people even more likeminded.[144]

Over the past two decades, and particularly since the takeoff of social media, this growing sense of physical self-separation has been replicated online – indeed, the growing engagement with digital space has exacerbated polarization and accelerated its effects in the physical world.[145] In one worldwide survey, 44% of internet users said they believe that social media platforms have influenced polarization in their national politics.[146]

Without effective countermeasures, a rise in polarization and mutual dehumanization will lead to the continued breakdown of national dialogues on policy and intensified partisan violence, pulling countries apart and putting the stability – and forward progress – of society at risk. Nearly two-thirds of political extremists (65%) used Facebook to communicate their views and encourage action between 2005 and 2016.[147]

Polarized Societies

56%

The percentage of Britons as of 2020 who felt that they could trust other people in their neighborhood, down from nearly 70% in 2011-2012.[148]

30%

The percentage of respondents who said they would help someone in need, if they knew that person "disagreed with their point of view," in Edelman's Trust Barometer survey of 27 countries.[149]

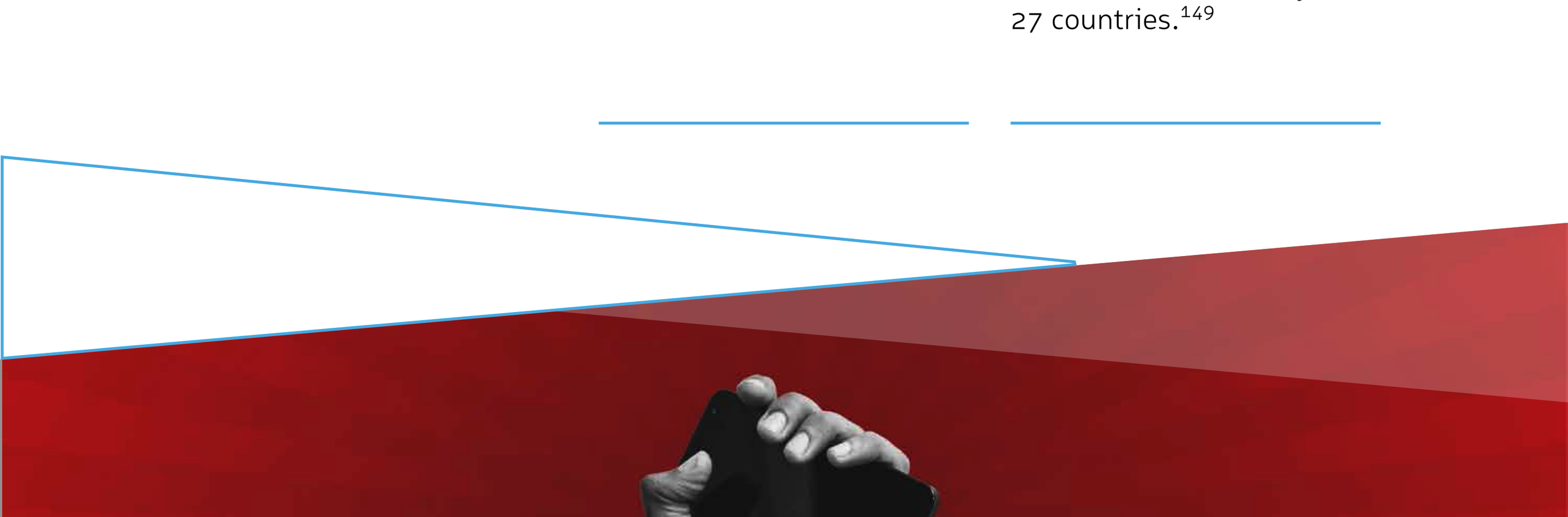


Figure 12:
The 2023 Edelman Trust Barometer found that six countries are now considered to be "severely polarized"

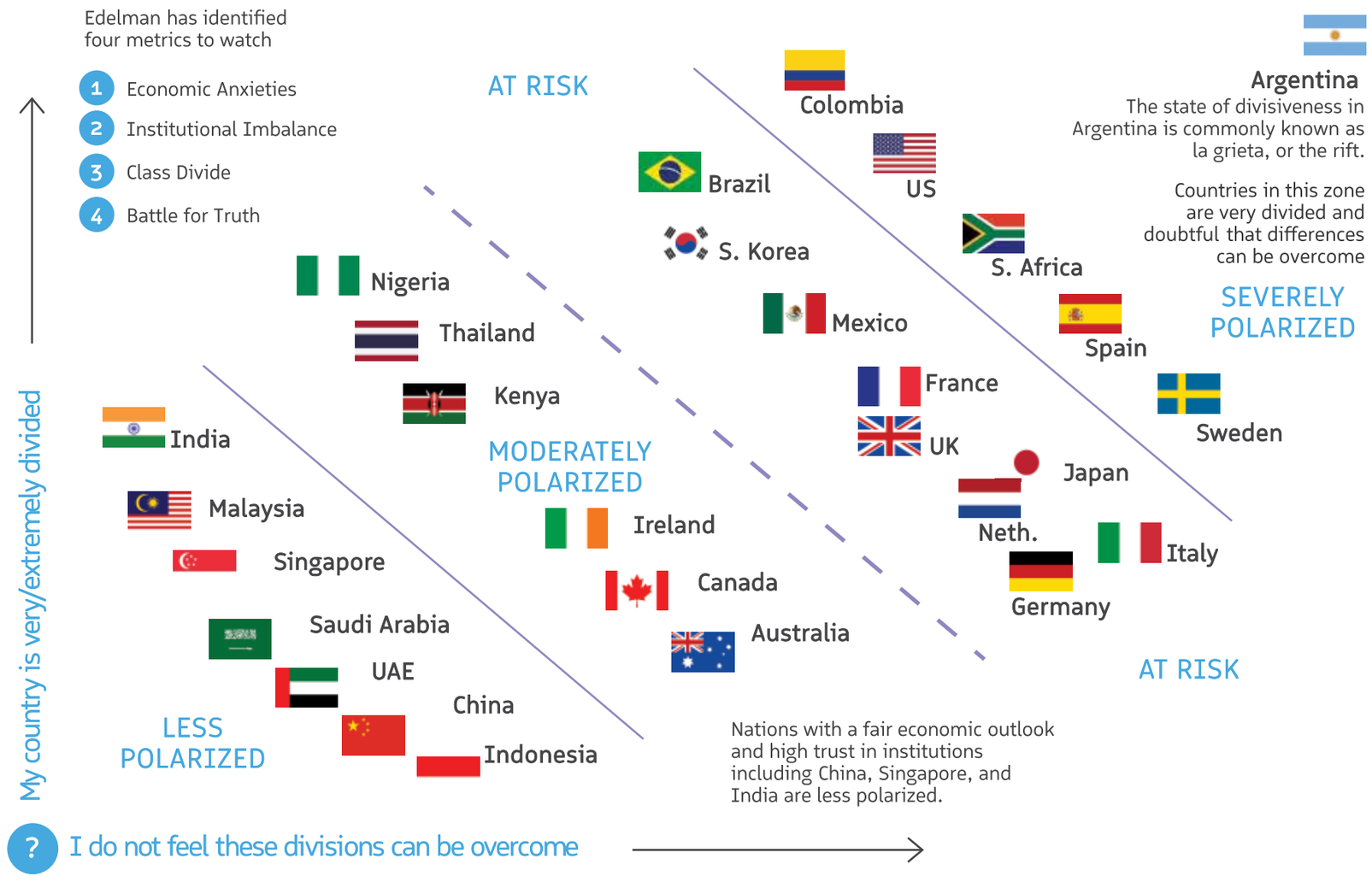
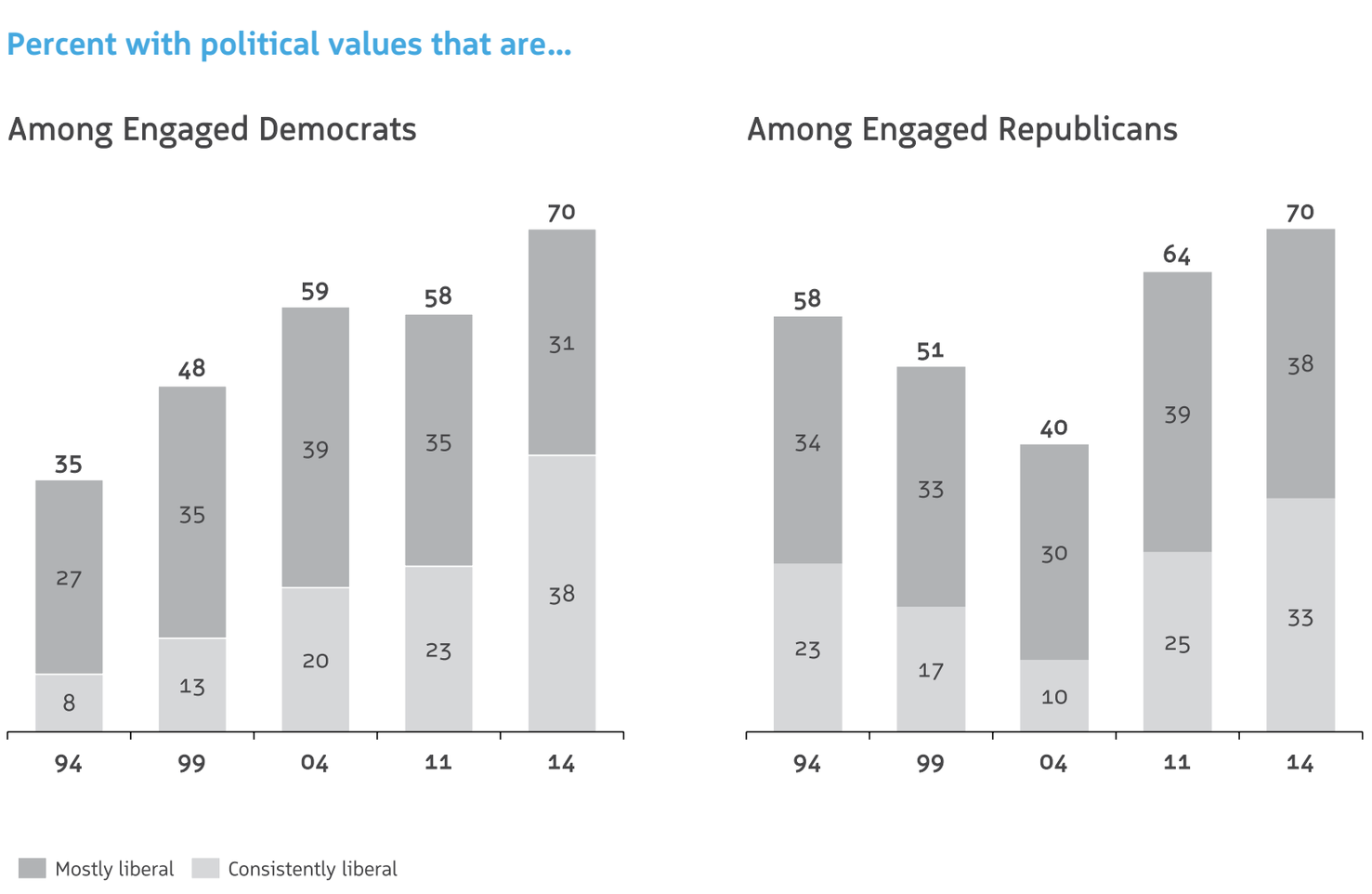


Figure 13:
Growth in ideological polarization sharper among politically engaged



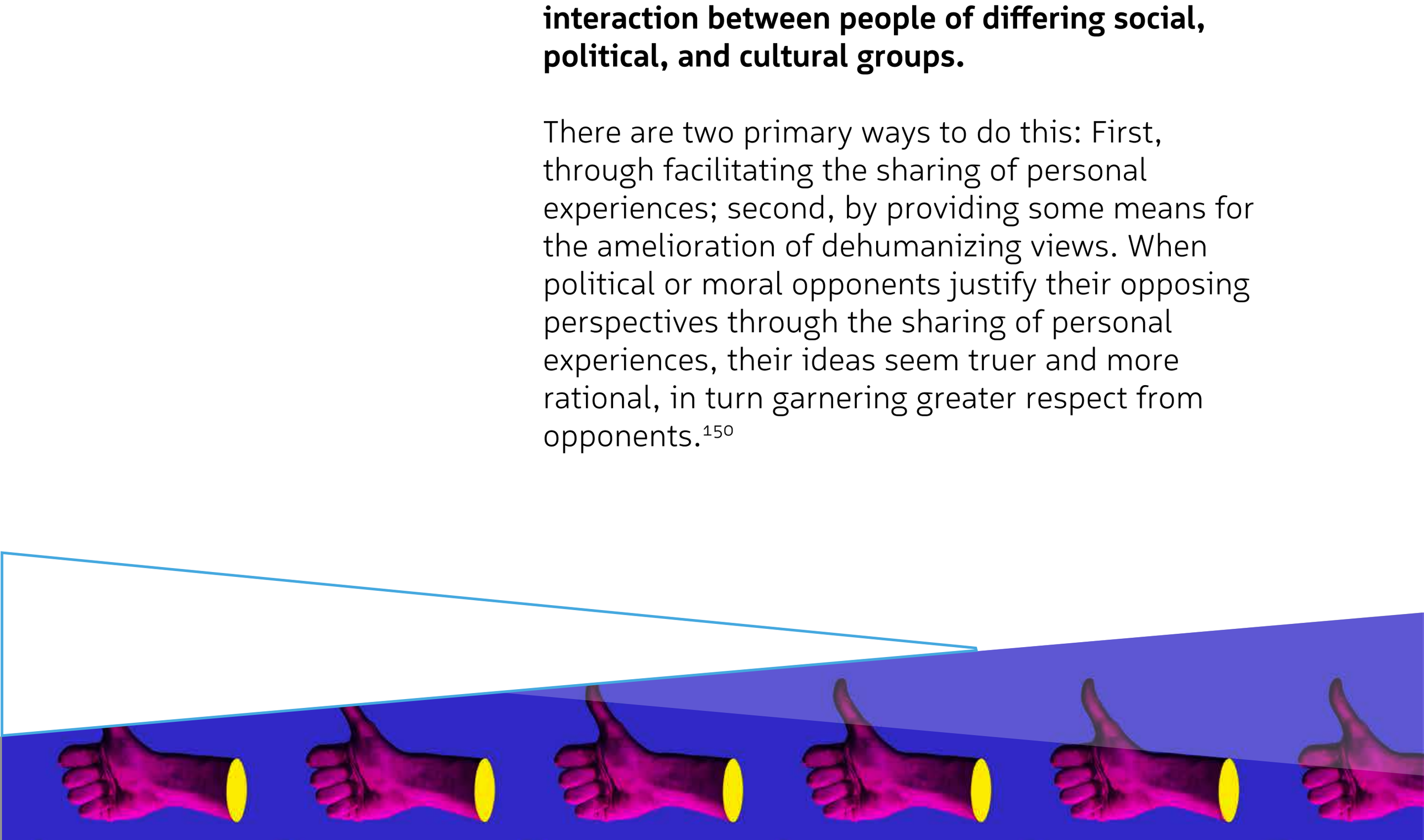
Note: Republicans include Republican-leaning independents; Democrats include Democratic-leaning independents
Source: Stony Brook University

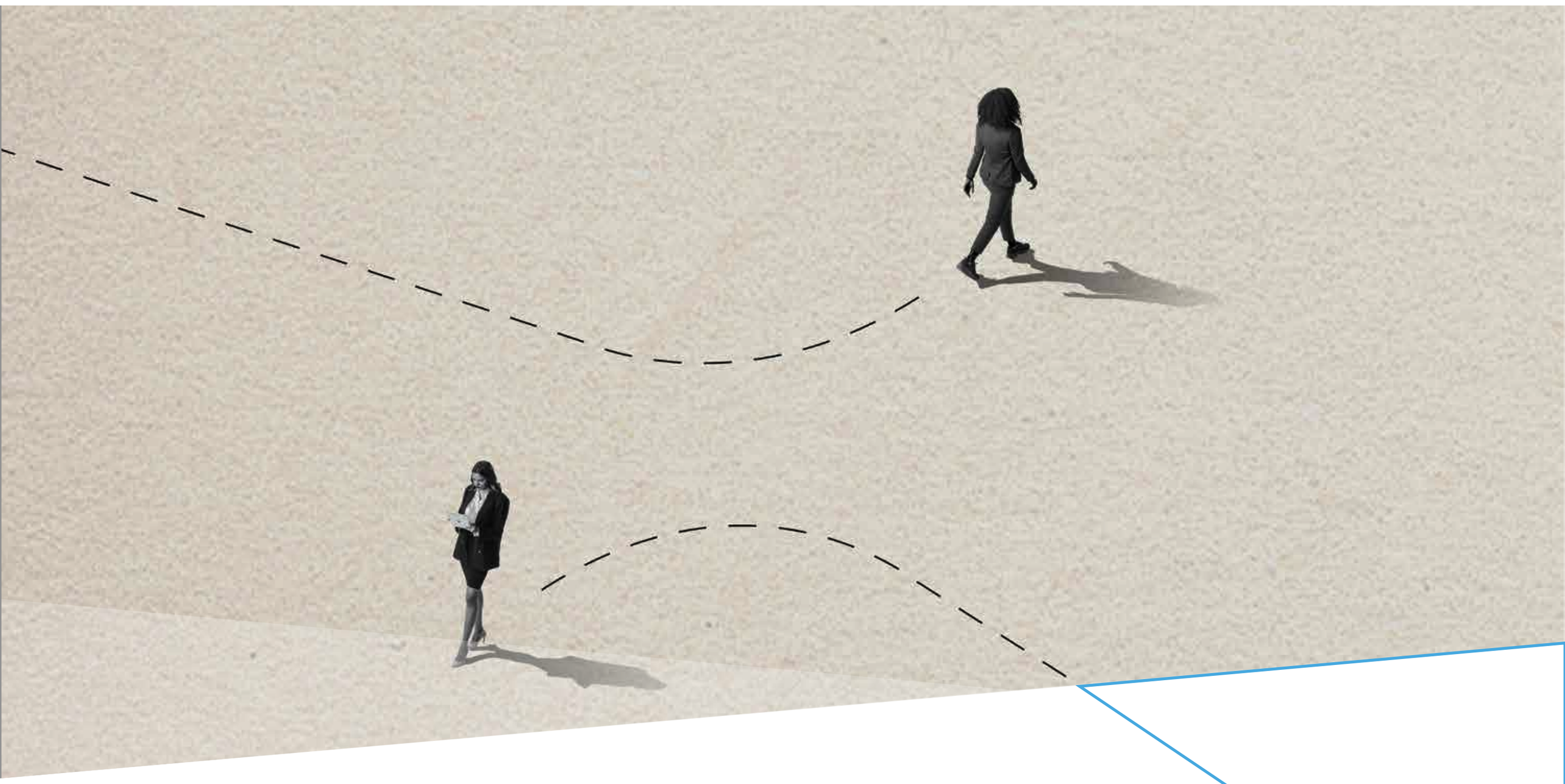
THE SOLUTION

Rehumanizing the other side.

In order to overcome the challenges posed by increasing polarization, it is critical to find productive ways to encourage meaningful interaction between people of differing social, political, and cultural groups.

There are two primary ways to do this: First, through facilitating the sharing of personal experiences; second, by providing some means for the amelioration of dehumanizing views. When political or moral opponents justify their opposing perspectives through the sharing of personal experiences, their ideas seem truer and more rational, in turn garnering greater respect from opponents.[150]





The American social psychologist Jonathan Haidt wrote, “The most reliable cure for confirmation bias is interaction with people who don’t share your beliefs.”[151]

This general principle was affirmed by a comprehensive Stanford study of the sources of polarization and political violence, which found that the most promising approaches to reducing partisan animosity are interventions that present people with views different from one’s own in a “relatable, sympathetic” light, or that call attention to “a common cross-party identity.” Sharing personal experiences is a powerful means of reducing political conflict because it gives adversaries a common currency for understanding one another.[152]

In parallel, correcting exaggerated dehumanization has been shown to mitigate cycles of fear and aggression. When subjects were informed that rival partisans dehumanized them less than was believed, they significantly reduced their own dehumanization of the other side. Self-recognition and increased social awareness are critical to interrupting the cycle of dehumanization and reducing polarization.[153]

South Africa's Truth and Reconciliation Commission (TRC) and Rwanda's National Unity and Reconciliation Commission (NURC) provide real-world illustrations of the potential for and impact of reconciliation efforts.[154]

The NURC was established in order to work towards a reconciliation of the conflicting parties involved in the Rwandan genocide, with the eventual goal of reunifying the country's citizens. One core mandate of the NURC is to carry out research; organize debates and other interactive sessions; disseminate ideas; and produce publications on the promotion of peace and the unity of Rwandans.[155]

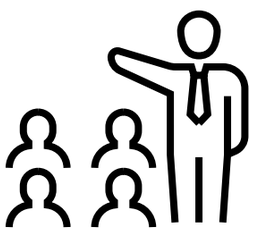
The efforts of the NURC have resulted in measurable improvements in social cohesion among Rwandans. According to a study conducted by the NURC in 2020, 94.8% of Rwandans state they are likely never to commit genocidal acts again, compared to only 60.1% in 2010.[156]

In South Africa, many credit the TRC with the nation's relatively peaceful transition between an apartheid government and a new multiethnic democracy. The TRC was designed to foster forgiveness by enabling victims of the former regime to testify publicly and allowing perpetrators of crimes to confess and apply for amnesty. On an individual level, the TRC made it possible for perpetrators and victims to coexist and to be reintegrated into one community.[157]

Imperative – and Potential – for Rehumanization

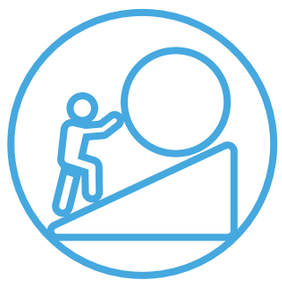
40%

Decline in empathy among young people, particularly since 2000, according to research conducted at the University of Michigan.[158]



186%

Increase in percentage of out-partisans perceiving they are being dehumanized more than they actually are, according to a nationally representative sample of Democrats and Republicans in the US – illustrating a clear potential to correct such misperceptions.[159]



THE OBSTACLE

The growing tribalization of physical and digital space.

The obstacle preventing the mutual rehumanization of opposing groups is twofold. First, people's physical communities, surroundings, and lifestyles are likely to be relatively fixed geographically, thereby limiting practical opportunities for social interaction. It is not immediately clear how to address polarization at this tangible, "real-world" level.

In the near term, however, our more malleable spaces are online – in the websites, chat rooms, social media channels, and streaming services where humans now receive so much of their information. However, here too, the challenges are formidable.

Online spaces are no less ideologically divided than our physical spaces – and, in many ways, may be even more so. Increasingly polarized content and communities, however, drive online engagement and in this way, also drive profits for tech and digital media companies.[160]

Profit-maximizing algorithms serve to fuel division even further, promoting the development and dissemination of content that is increasingly polarizing, driving partisans to self-isolate further with increasingly extreme views and interactions online.

THE TRANSFORMATION

Reversing polarization through public media.

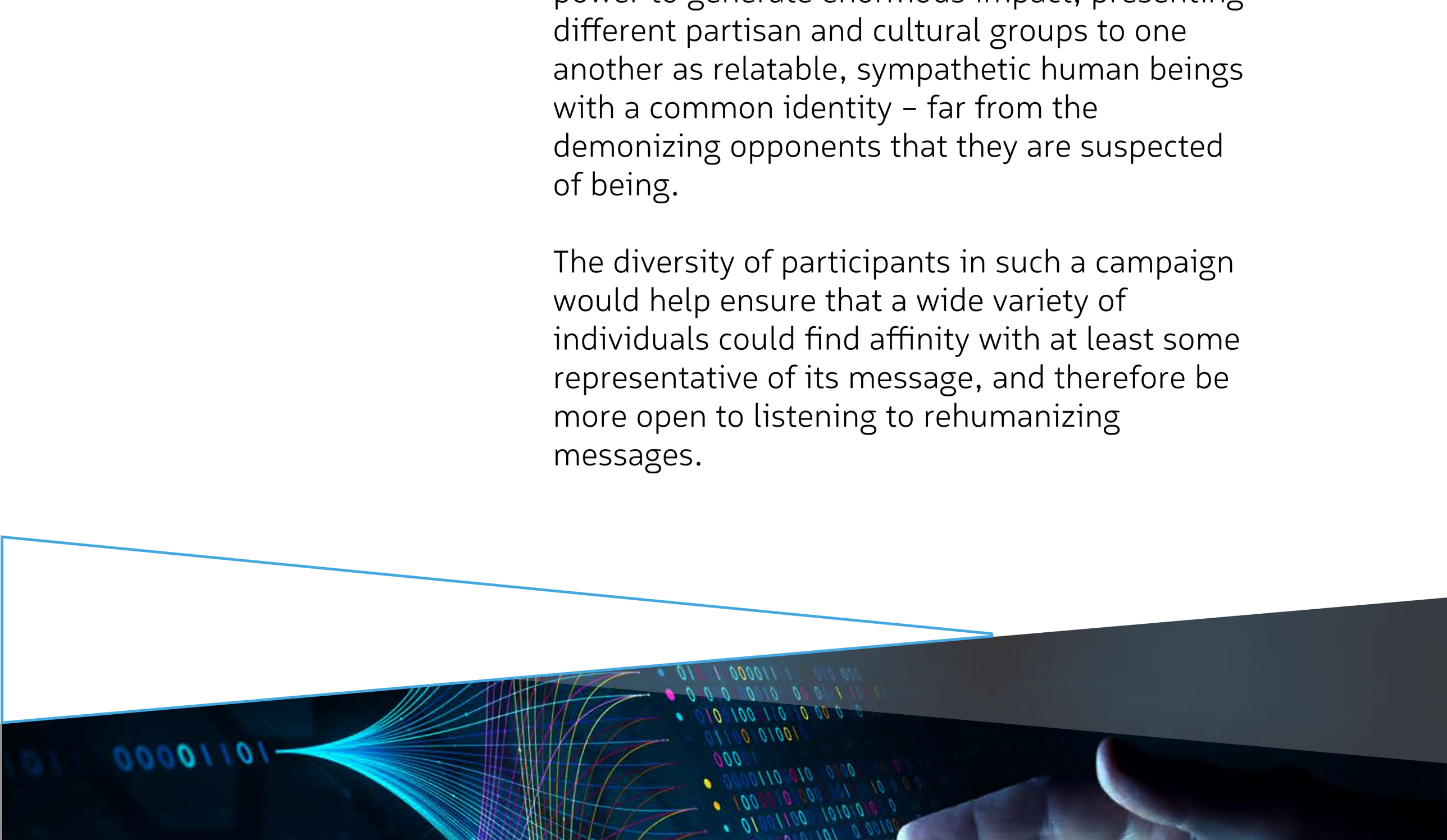
Though media spaces are currently deeply divided, a reflection of our physical world, they need not stay that way. While the near universal access to online resources contributes to the challenge, it also offers a potential solution. Using lessons from the reconciliation practices of South Africa, Rwanda, and other countries around the world – and applying more recently developed digital capabilities – we can begin to break down societal polarization.

Sociologists note that the South African Broadcasting Corporation (SABC) was the "vanguard of visible change" in the country, playing a crucial role in helping the nation achieve its transition to a more open and integrated political society.[161] SABC held programming just before and after South Africa's first democratic elections in 1994, addressing major issues in the lives of ordinary citizens and openly discussing past injustices. With today's technologies, this sort of humanizing media content could be scaled, relatively affordably, into a campaign of enormous reach.

Sophisticated data analysis capabilities can be applied to effectively target the relevant messages to the communities where they will resonate the most – and may be most needed. Such targeted digital messaging has been employed in political campaigns for well over a decade now, with Barack Obama's 2008 US presidential campaign paving the way.[162]

Applying the same approach to a societal campaign rather than a political one has the power to generate enormous impact, presenting different partisan and cultural groups to one another as relatable, sympathetic human beings with a common identity – far from the demonizing opponents that they are suspected of being.

The diversity of participants in such a campaign would help ensure that a wide variety of individuals could find affinity with at least some representative of its message, and therefore be more open to listening to rehumanizing messages.



Politicians, athletes, celebrities, and everyday citizens will be presented together via brief online advertising content or television programming – not to hash out the very opinions that divide societies but to compellingly show the common experiences that connect and humanize us rather than divide us.

There are numerous potential partners for such an effort. For example, More in Common is an international organization that focuses on working across lines of difference and promoting narratives about shared experiences. They do so by publishing reports on applied and contextualized research and by partnering with organizations around the world to design and test depolarizing initiatives.[163]

The organizers of such a campaign would have to be extremely mindful of how the initiative is perceived and to ensure that it has support, involvement, and sponsorship from credible entities on both sides of the partisan divide.

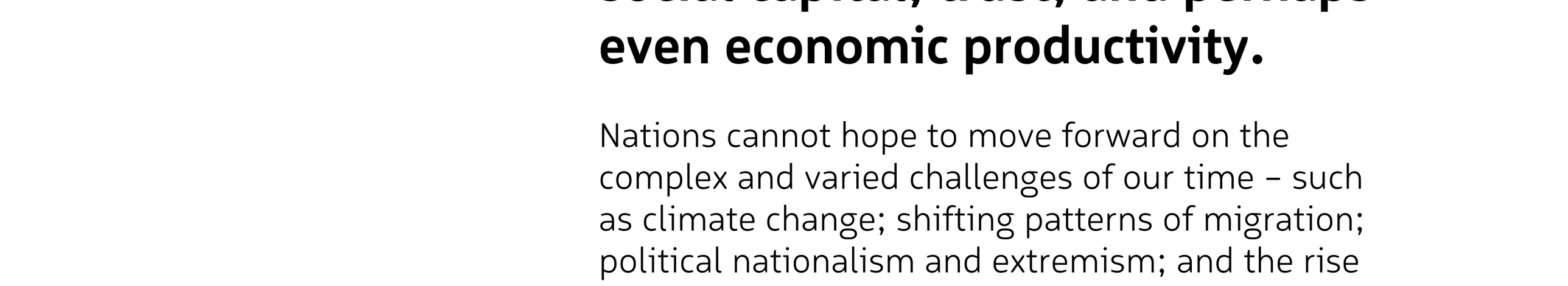
If it is seen as a government project, those who favor the opposition party may dismiss it as self-serving propaganda. Nevertheless, the stakes are too high to justify inaction. If we continue to stand by, we run a very real risk that our societies will continue to be torn further apart.

THE OUTCOME

A step toward good-faith dialogues.

The mitigation and reversal of polarization would not only create an opportunity for constructive, evidence-based dialogue on policy topics – it would also lead to an increase in social capital, trust, and perhaps even economic productivity.

Nations cannot hope to move forward on the complex and varied challenges of our time – such as climate change; shifting patterns of migration; political nationalism and extremism; and the rise of increasingly potent and disruptive technologies such as AI – without establishing at least some ground upon which to understand, discuss, and resolve them. A large-scale effort to reduce societal polarization is a critical first step in that direction.



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YOUTH PSYCHOLOGICAL WELL-BEING

NURTURING THE PSYCHOLOGICAL WELL-BEING OF CHILDREN AND ADOLESCENTS:

Algorithm-based research to understand and reverse mental health spirals

THE CHALLENGE

Failed detection amid a youth mental health crisis.

Anxiety, depression, incapacitating stress – these are some of the ailments that increasingly plague children and adolescents in the 21st century. Concerns about the COVID-19 pandemic, geopolitical conflict, climate change, and political polarization have all contributed to a mental health crisis among today's youth.[164]

Over the last 10 years, the total number of young people who experienced feelings of persistent sadness and hopelessness – as well as suicidal thoughts and behaviors – increased by approximately 40% in the United States.[165]

Excessive time spent online, including overuse of social media, has had a particularly detrimental effect.[166] Studies have found that people who use social media the most are up to three times more likely to develop depression over the subsequent six months compared with those who use it the least.[167]

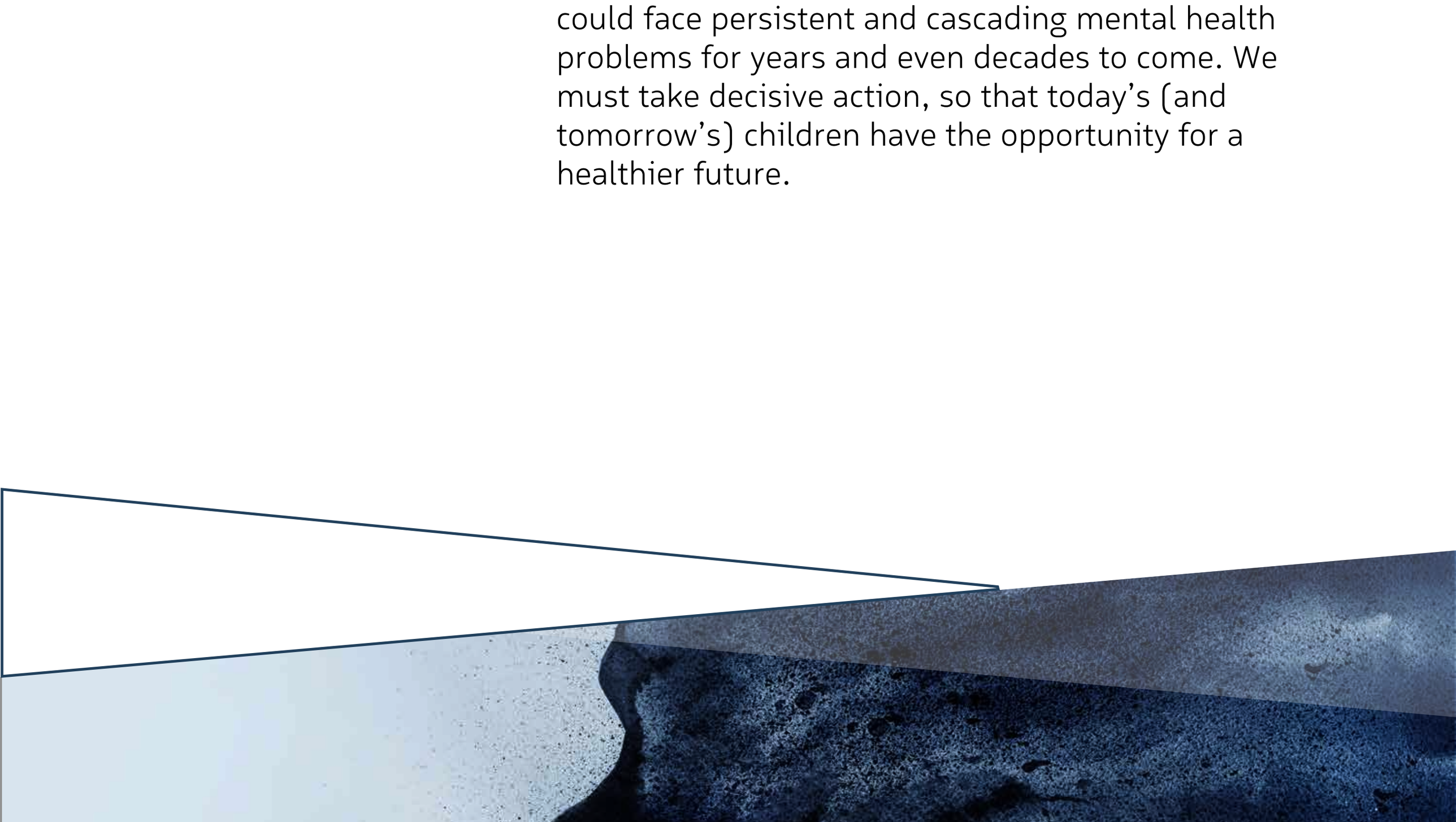
Parents, anxious about the effects of screen time on their children, are increasingly setting tech limits and screen time restrictions.[168] There are powerful dynamics that complicate this picture. Many parents, in single-parent and two-parent homes alike, are under extraordinary stress themselves and setting such limits is often easier said than done.

In addition, many parents quite reasonably worry that excessively strict limits on screen usage could cause harms of their own, such as impairing children's relationships with digitally connected friends.[169] Parents also worry that limits could place children at a disadvantage in an economy that confers ever greater benefits on those who are at the leading edge of tech adoption and expertise.[170]

Despite mounting public pressure and policy debate, policymakers and technology companies have yet to take the steps necessary to promote safer online environments or to identify, diagnose, and treat mental health disorders related to excessive screen time.

Our societies are running an unprecedented real-time experiment on the near-term and lifetime effects of constant online immersion on children. Never have children been intentionally exposed at such scale to a phenomenon so removed from the prior lived experience of their own parents, teachers, medical caregivers, and political leaders.[171]

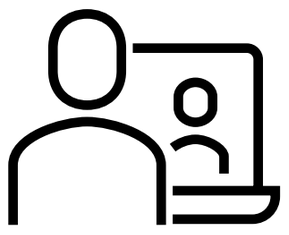
Critically, we lack a foundational understanding of how these technologies affect human development and mental health. Now, an entire generation is at risk. Without greater action, it could face persistent and cascading mental health problems for years and even decades to come. We must take decisive action, so that today's (and tomorrow's) children have the opportunity for a healthier future.



Social Media Usage and Depression

3X

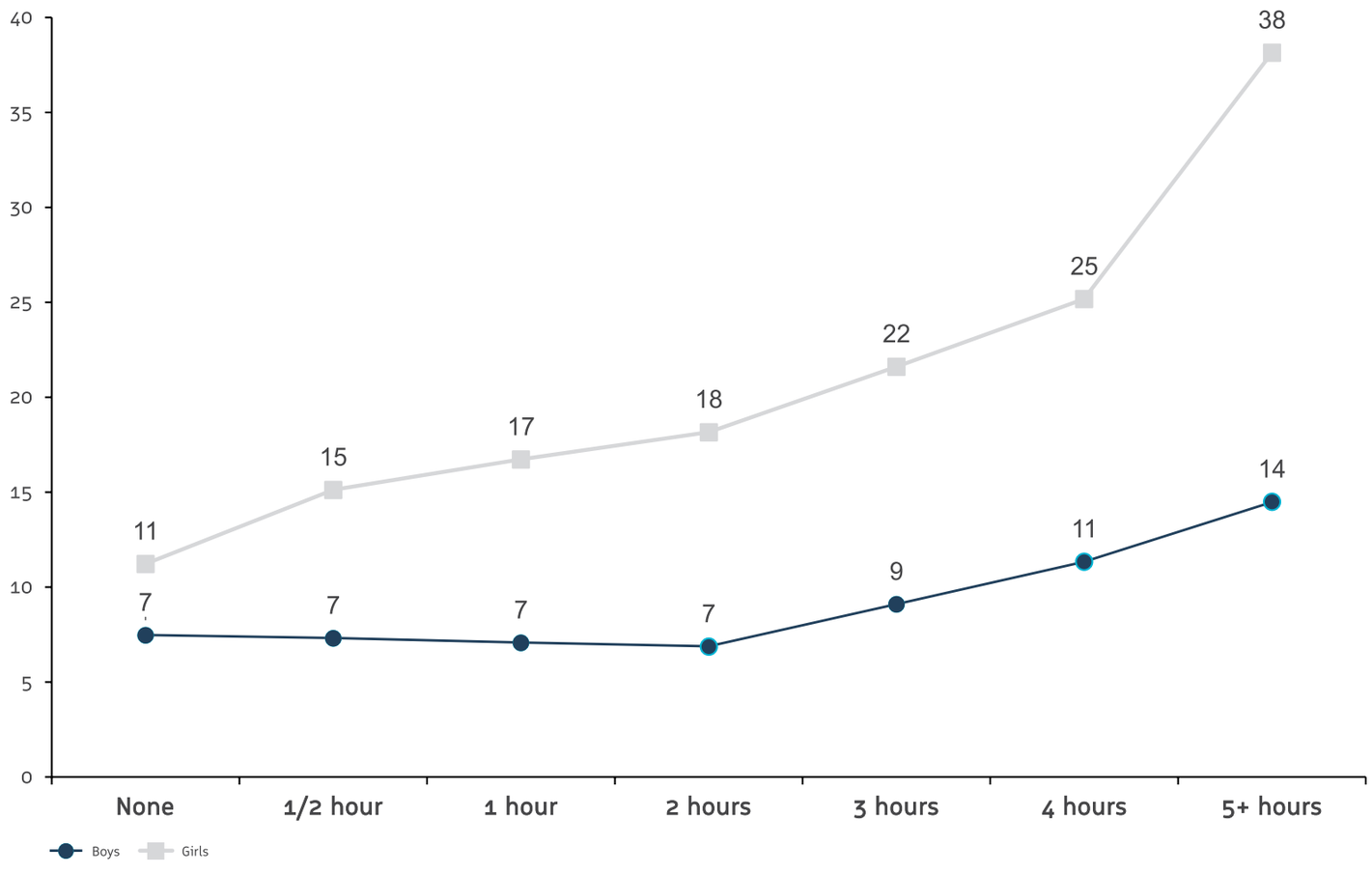
People who use the most social media are up to three times more likely to develop depression over the next six months compared with those who use it the least.[172]



66%

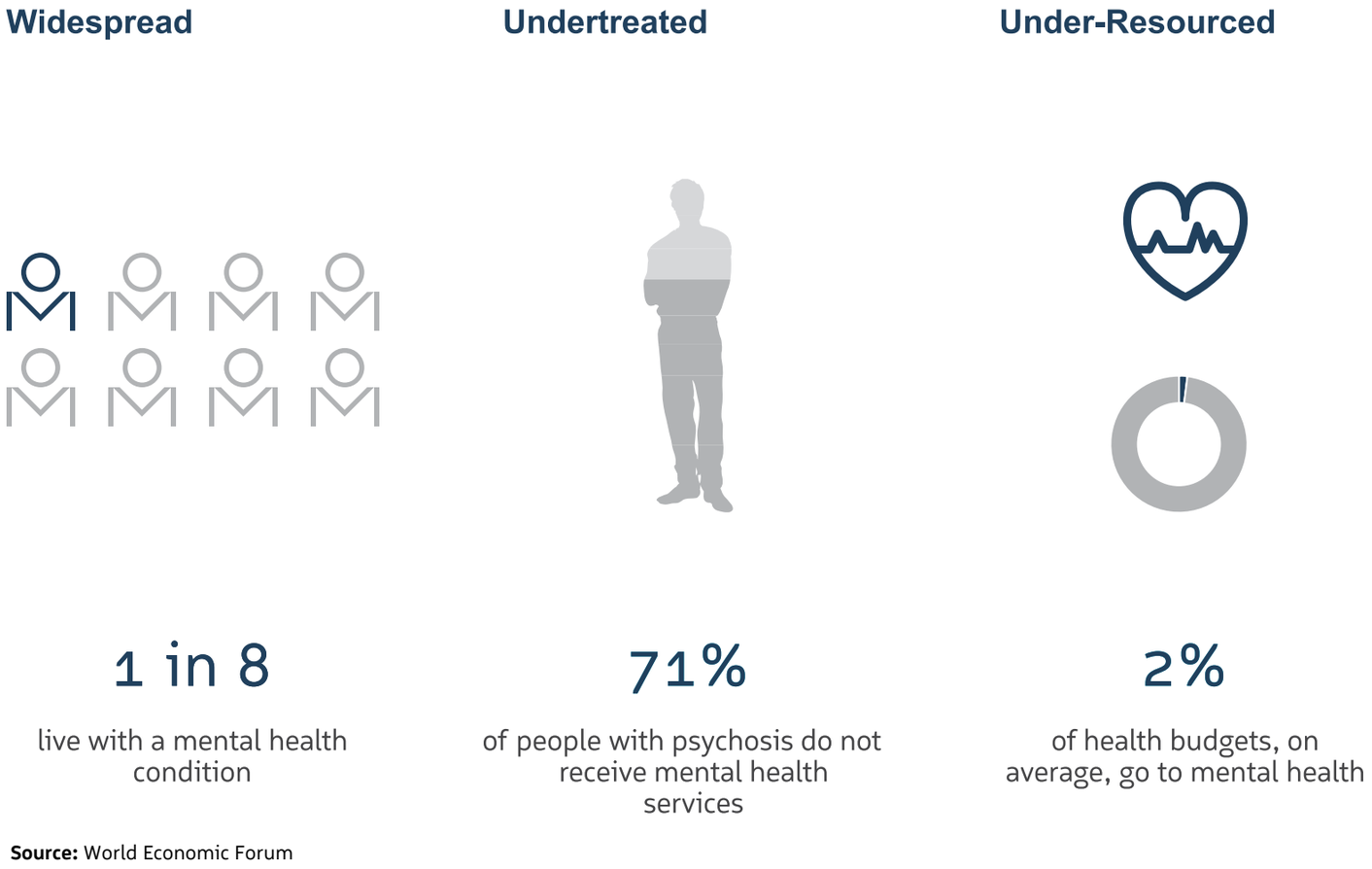
The percentage of parents that say they are concerned about their teen spending too much time online, while 57% report setting screen time restrictions for their child in one way or another.[173]

Figure 14:
Percent of UK teens depressed as a function of hours per weekday on social media



Source: Macmillan Learning

Figure 15:
Mental health conditions are widespread, undertreated, and under-resourced



Source: World Economic Forum

THE SOLUTION

Building a diagnostic map for online engagement – and expanding access to treatment.

The datasets companies use to fuel their business models could prove to be an invaluable resource in generating a better, more granular understanding of the effects of screen time on mental health.

In a 2021 report on protecting the mental health of children, the United States Surgeon General's office called for "an integrated, real-time data infrastructure" for understanding youth mental health trends.[174] The report highlighted the urgent need for a far more comprehensive emphasis on generating as much useful research as possible on the relationship between tech usage and mental health, particularly for children and adolescents.

This requires a new level of cooperation between tech and social media companies and public health researchers, building data assets that are both targeted and disaggregated to the most precise extent possible.

1 2 3 4 5 6 7 8

This would enable a far more sophisticated and nuanced understanding of just what kinds of screen usage – and what amounts of usage – could truly be considered threatening to mental and emotional health for young people of distinct age categories, socioeconomic backgrounds, and other demographic groupings. Similarly, such an effort could be designed to meet the need for a granular understanding of the effects of different forms of tech usage, from social media to video games, and from graphic content to hate speech.[175]

With this enhanced understanding of the impacts of online engagement, technology could then also be of service in addressing the mental health crisis that it has done so much to exacerbate. There is a severe shortage of therapists, and the demand for practitioners capable of working effectively with children and adolescents is especially high.[176] The World Health Organization estimates that there are fewer than 0.1 child and adolescent psychiatrists (CAPs) per 100,000 youth across all income levels globally, except in high-income regions, where that number rises to approximately 1.19 CAPs per 100,000 youth.[177]

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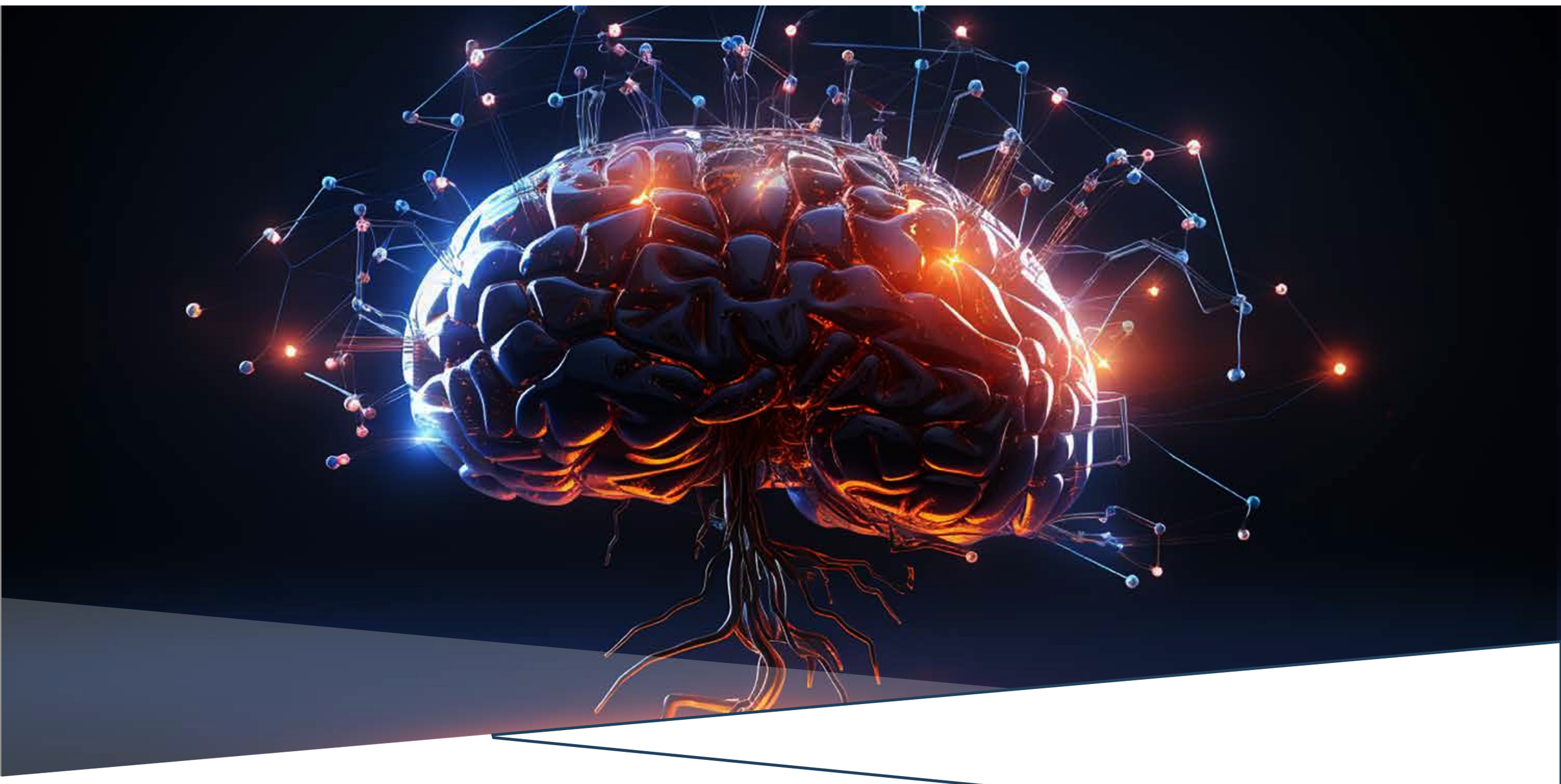


One potentially fruitful means of facilitating access to care would be by accelerating current research into, and deployment of, novel tech-based mental health treatment modalities, such as Zoom-style video therapy sessions, or the innovative use of avatars, chatbots, and perhaps eventually AI itself (initially on a very limited, human-supervised trial basis) to give children radically improved access to therapy.

These technologies already exist on a smaller scale. For example, Mindspa is an AI-based chatbot and mobile application for therapy that aims to help its users through emotional health education and mood tracking.[178] However, for mental health monitoring tools to reach people worldwide, it is critical to ensure everyone has fair access to digital resources – reinforcing the need to bridge the digital divide.

The Need for a Scaled Technology-Based Solution to Address a Global Crisis

ONE IN SEVEN

10- to 19-year-olds globally estimated to be experiencing some form of a mental disorder, accounting for 13% of the global burden of disease in this age group.[179]

14

Number of child and adolescent psychiatrists (CAPs) per 100,000 children in the United States; state-level ratios run as low as 4 per 100,000.[180]

THE OBSTACLE

The business of addictive algorithms.

While understanding and addressing the mental health impacts of online engagement is crucial, it only addresses a symptom, not a cause.

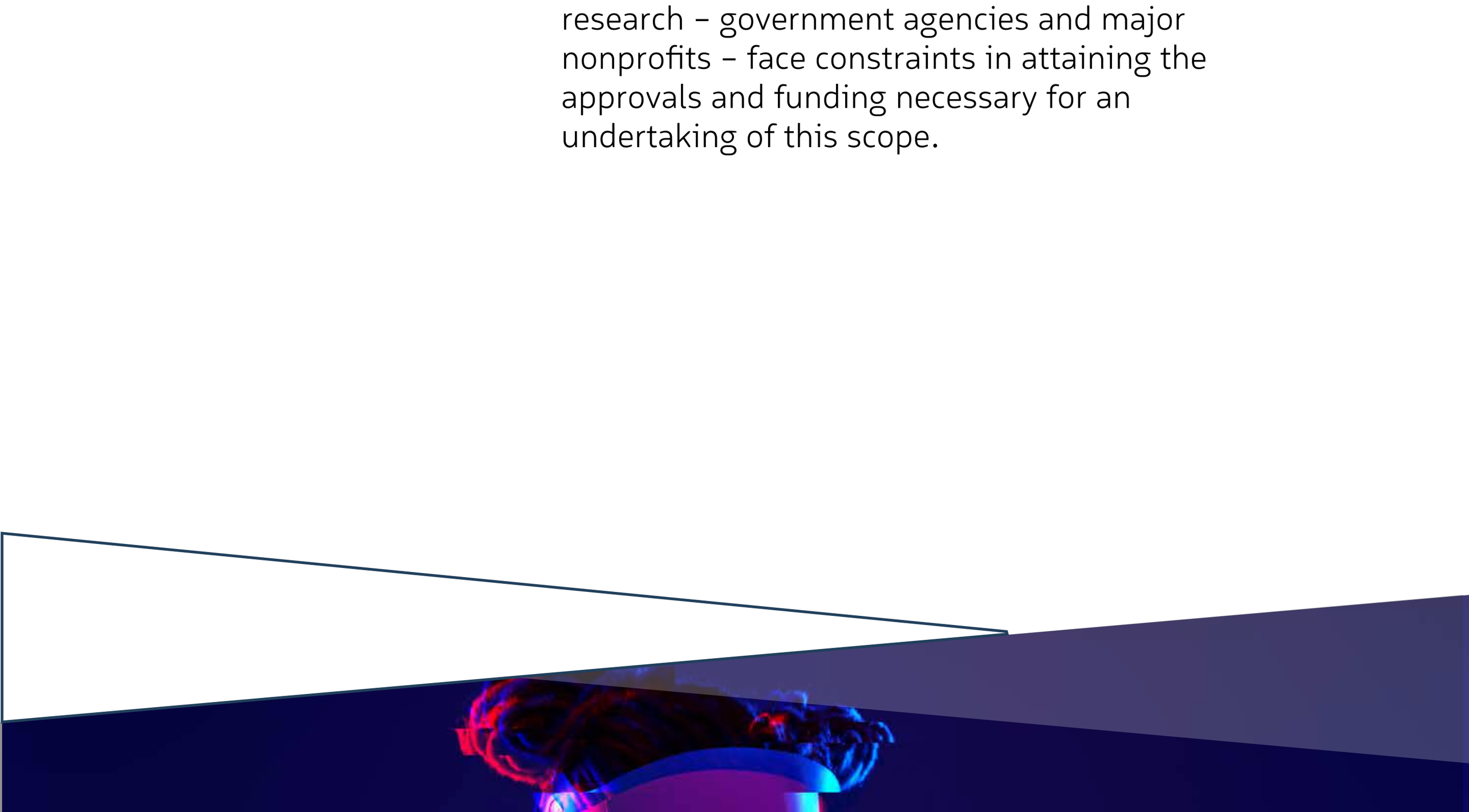
The ad-revenue-driven business models of social media and many online companies are fundamentally predicated on keeping individuals clicking and scrolling.[181]

Rising levels of screen usage can in large part be attributed to the use of increasingly sophisticated algorithms that are engineered precisely to keep users as engaged as possible, for as long as possible. Studies have shown that scrolling social media releases dopamine and sets off a pleasure-and-reward cycle in the frontal cortex of the brain, impairing impulse control with an effect similar to that of drug use.[182]

1 2 3 4 5 6 7 8

The current structure of incentives for social media and technology companies has led to a general reluctance to pursue the interventions necessary to protect the mental health of social media users, particularly children. Simply put, technology companies have limited incentive to alter the addictive nature of their algorithms.[183]

In addition, the execution of research at the speed and scale required would demand significant financial resources and technological expertise. The entities likeliest to act as catalysts for such research – government agencies and major nonprofits – face constraints in attaining the approvals and funding necessary for an undertaking of this scope.



THE TRANSFORMATION

Algorithm-informed interventions.

There is an opportunity to take the very algorithms that technology companies already use to interpret user preferences and inform and design a new solution to the behavioral health problems that those users are increasingly facing.

The transformation is twofold. First, technology companies can leverage user data to identify early warning signs in a privacy-assured manner. Second, the addictive nature of algorithms must be addressed as the public health threat it is and urgent action taken to reverse negatively reinforcing algorithms. This will require an unprecedented public-private health partnership and a radical reimagination of the role that technology plays in our lives.

With a more nuanced and detailed understanding of the public health implications of online engagement – generated with the aid of an integrated data infrastructure – tech companies and public health entities can jointly identify the interventions needed to address the online drivers of the youth mental health crisis, from both the technological and psychiatric perspectives.

There are precedents for this idea. For example, a growing number of doctors and academics are partnering to leverage data from platforms like X (formerly Twitter) and Facebook for advanced textual analysis to determine what our choice of words reveals about ourselves in real time.[184]

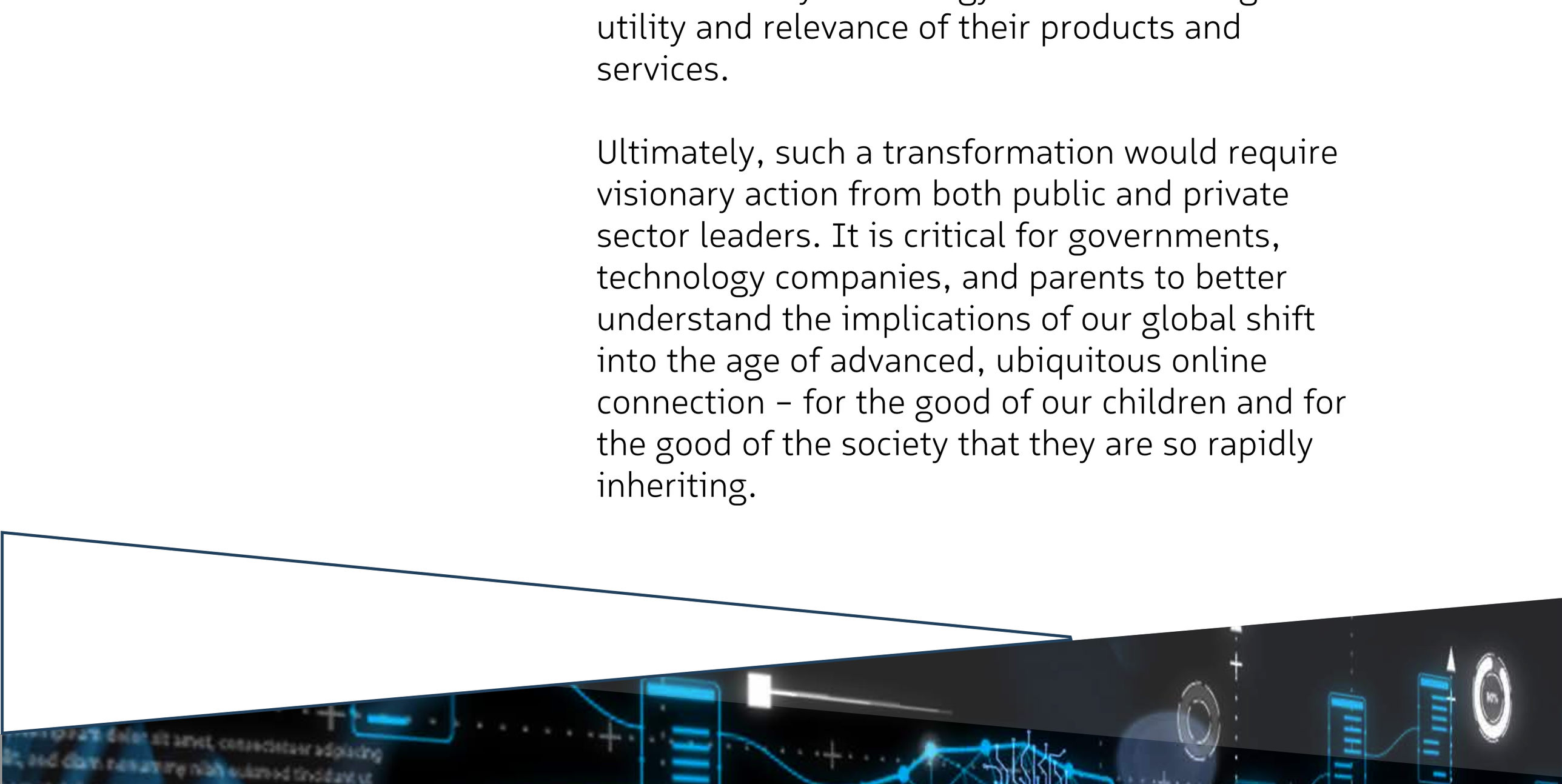
With this information, it is possible to draw upon many of the capabilities and algorithms that are currently employed to encourage the usage of these technologies. The very incentives that can contribute to a downward spiral of increasingly dark content are just as capable of driving users toward content consumption and social interaction that can enhance, rather than degrade, mental health.

1 2 3 4 5 6 7 8

Tech firms could gain significantly from their involvement in such research. The findings can potentially reveal the temporal thresholds and forms of usage that constitute safe digital engagement for young people under varying circumstances, and these findings could assure parents and school systems that usage within those levels is unlikely to cause harm and may even confer certain cognitive or emotional benefits.

Viewed in this light, such an effort would be an investment by technology firms in the long-term utility and relevance of their products and services.

Ultimately, such a transformation would require visionary action from both public and private sector leaders. It is critical for governments, technology companies, and parents to better understand the implications of our global shift into the age of advanced, ubiquitous online connection – for the good of our children and for the good of the society that they are so rapidly inheriting.



THE OUTCOME

Healthy minds in a safe online environment.

Through engaging in comprehensive, granular research on the effects of various kinds of digital activity on different segments of the youth population – drawing upon the same algorithmic research now used to drive such activity – we can devise more effective treatment measures to minimize the negative impacts of social media and other screen usage on youth mental health.

Parents, technology companies, policymakers, and medical providers could leverage such research, along with new modalities for increasing access to therapeutic treatment, to reduce the incidence of mental illness in children and adolescents globally. In turn, these efforts can lead to a safer, healthier, and more welcoming online environment for all users.

1 2 3 4 5 6 7 8

CRISIS OF MEANING AND PURPOSE

BUILDING PATHWAYS OF PURPOSE:

Work for impact to instill a sense of meaning

THE CHALLENGE

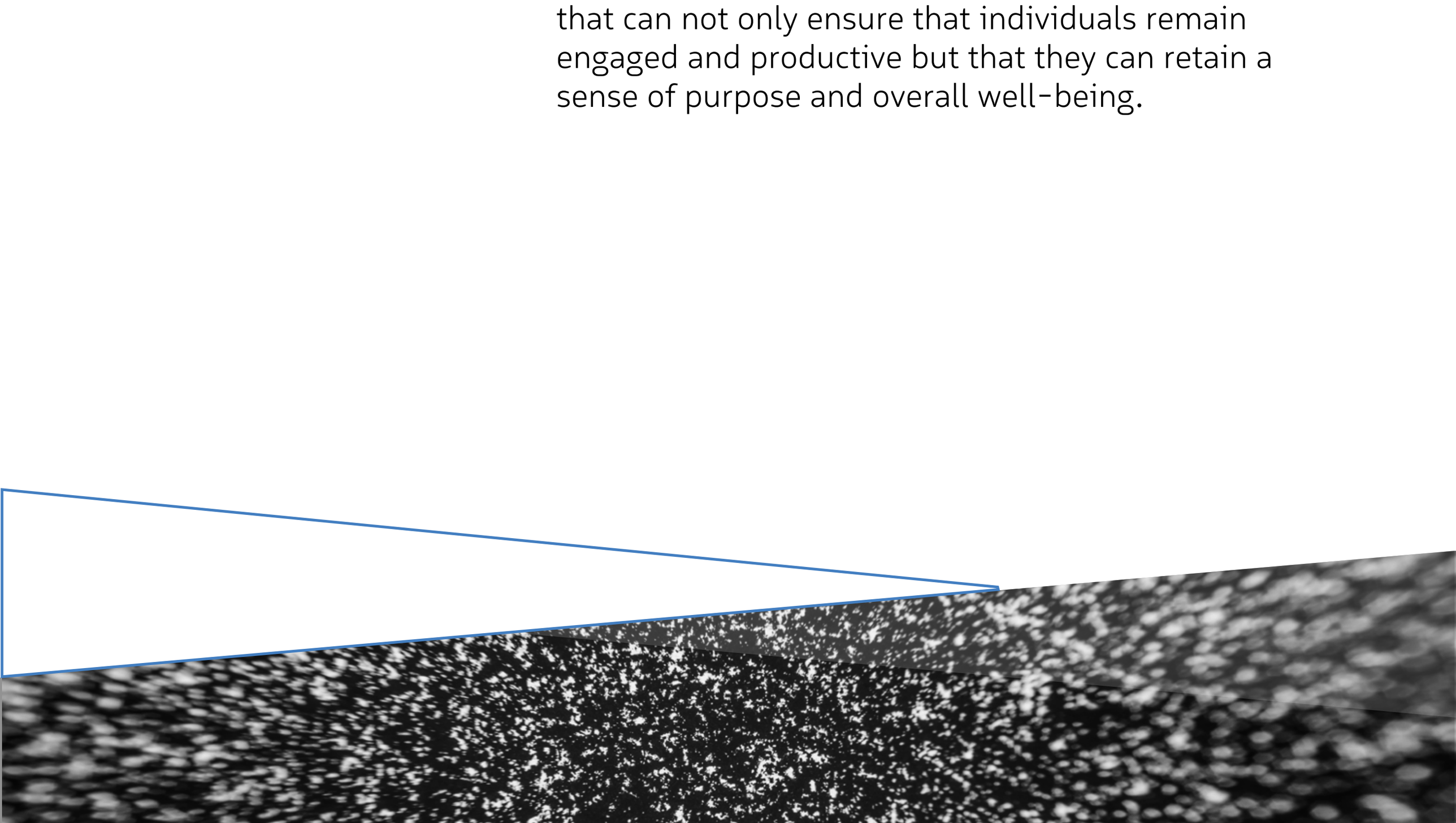
Disengagement and the crisis of meaning and purpose.

A sense of disengagement, despair, and loss of purpose are at historically high levels, across different age groups and demographic categories.[185] This can be attributed to a wide range of factors. Among the most commonly cited are the COVID-19 pandemic; a rising sense of economic uncertainty and vulnerability; accelerating climate change and the increasing tempo and severity of natural disasters; political and social polarization; and anxiety over the economic and existential ramifications of artificial intelligence and other rapidly advancing technologies.

This crisis has reached the workplace, which for many in contemporary society is a primary – if not the primary – source of meaning and purpose in life. People report being less fulfilled by traditional careers and increasingly see work as purely transactional.[186] For instance, in the United Kingdom, 43% of workers surveyed in 2023 reported that their work is "just for the pay" – a notable rise from 36% in 2019.[187] Seven in 10 Gen Z employees in a global survey reported spending increased time evaluating their life priorities.[188]

The consequences of this crisis of purpose are clear. There are negative health outcomes associated with “diseases of despair,” characterized by the increased rates of mortality and illness that accompany feelings of hopelessness and lack of purpose.[189] Changes in levels of social and emotional engagement also translate to changes in productivity. Low worker engagement is estimated to cost the global economy $8.8 trillion, or 9% of global GDP.[190]

For both the prosperity of our society and the health of its members, it is vital to find solutions that can not only ensure that individuals remain engaged and productive but that they can retain a sense of purpose and overall well-being.



The Costs of a Decline in Purpose

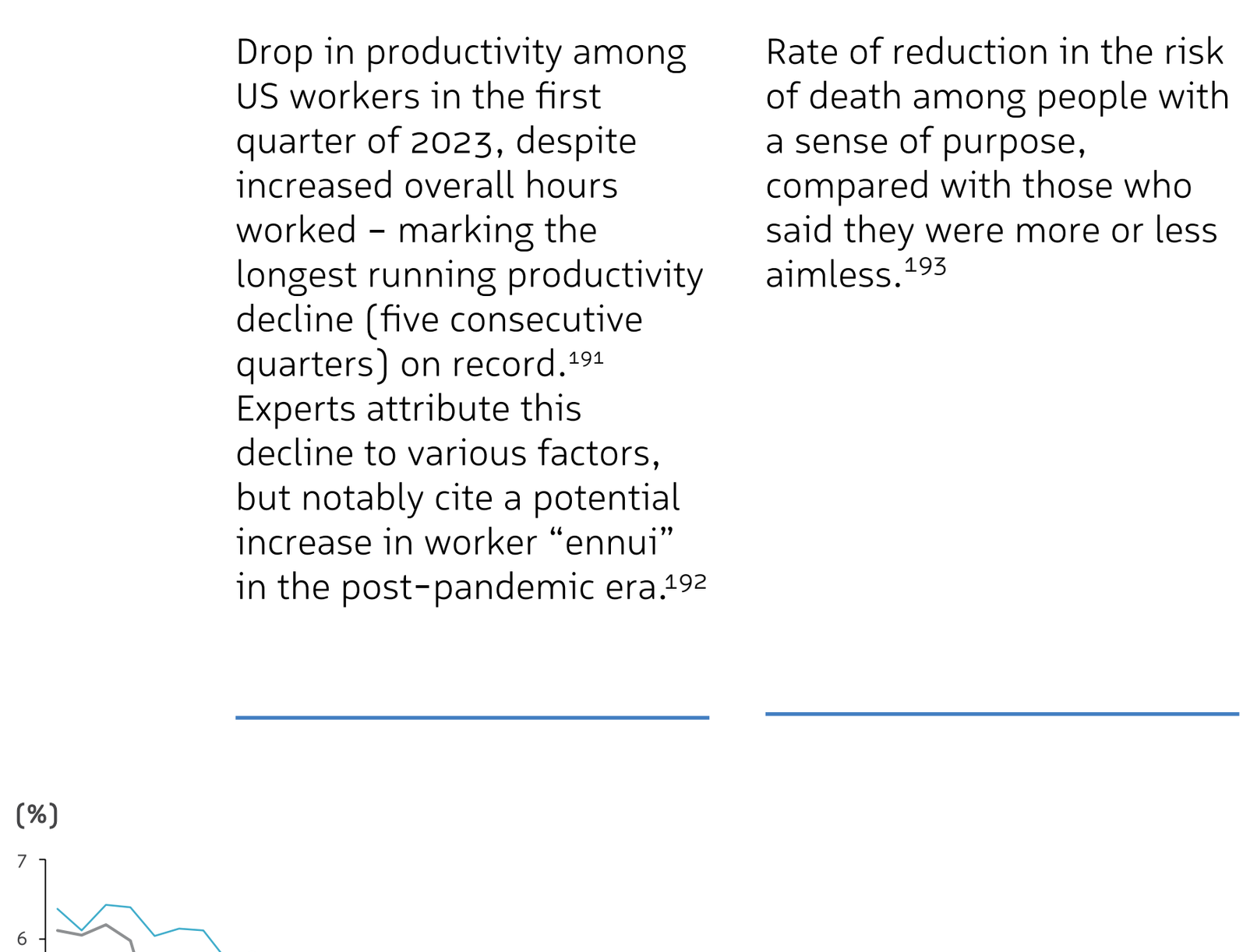
2.1%

Drop in productivity among US workers in the first quarter of 2023, despite increased overall hours worked – marking the longest running productivity decline (five consecutive quarters) on record.[191] Experts attribute this decline to various factors, but notably cite a potential increase in worker "ennui" in the post-pandemic era.[192]

15%

Rate of reduction in the risk of death among people with a sense of purpose, compared with those who said they were more or less aimless.[193]

Figure 16: Prolonged decline in labor productivity growth



Source: Bank of Finland

THE SOLUTION

Connecting people with purposeful work.

The root causes of this crisis of purposelessness and despair are too numerous, and too nuanced, to be solved by any single policy formula. However, one approach may hold significant promise in helping more people live lives of deeper purpose, greater connection, and a more robust sense of overall well-being.

Core to this solution is a national-level program that matches individuals to a broad range of opportunities to do meaningful work. Such a program could expose large swaths of the population to public and private organizations that are on the frontlines of providing service and community support. There is statistical evidence that such service work can significantly improve one's overall well-being: Where 70% of volunteer youth report very good or excellent health two years following their volunteer period, the rate for non-volunteers is 62%.[194]

1 2 3 4 5 6 7 8

Multiple national service initiatives offer examples of how this vision might be realized. AmeriCorps, a federally funded program in the United States, places volunteers in roles aligned with national priorities. Nigeria takes this one step further, with a mandatory year of service in the Nigeria Youth Service Corps (NYSC) for university graduates.

Each program provides participants with a stipend and a start in the job market – for AmeriCorps volunteers, a year of practical job experience that can often be leveraged into a next position, and in the case of the NYSC, a Certificate of National Service entitling graduates to be employed in Nigeria.[195]

While AmeriCorps and other national programs are open to older volunteers, the traditional national service model is largely grounded in an assumption that the search for one's true path and purpose is largely conducted in one's teens or early 20s.[196]

This model no longer serves the realities of our society. We increasingly live in a culture where the search for purpose, meaning, and true vocation is a motif throughout our career, and few workers expect (or, indeed, want) to end this search at a young age.[197]

New approaches to such service programs must explicitly target those seeking purpose even in late middle age or in their senior years. The United Arab Emirates offers a program aligned with this intent. The government's Entrepreneurship Leave for Self-Employment empowers federal employees with a paid sabbatical year to pursue entrepreneurial endeavors.

The program seeks to build the capabilities of federal employees and enhance their skills in various fields while contributing to the growth of the private sector economy. At the same time, it enables federal employees to pursue interests they may not otherwise be able to invest adequate time or resources in to bring to fruition.[198]

Private sector entities are also increasingly offering purpose-driven opportunities. For example, Nextep, a US-based professional employer organization, strives to empower employees through internal platforms that amplify their own community service causes, "as opposed to the company limiting their choices."[199]

The overarching idea supports an enhancement of workers' sense of purpose, either in conjunction with their current work or as a sabbatical from it – or even as a blend of both approaches.

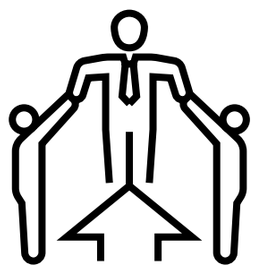
Private sector organizations that participate in such programs are ultimately investing in the future potential of their employees and their businesses, in a manner similar to that of advanced degree sponsorships. Many studies have shown that volunteer programs boost productivity, increase employee engagement, and improve hiring and retention.[200]

By providing diverse, purpose-driven opportunities for individuals of all ages, organizations can contribute to a more fulfilled, purpose-driven, and resilient workforce.

The Advantages of Purposeful Work

100
HOURS/YEAR

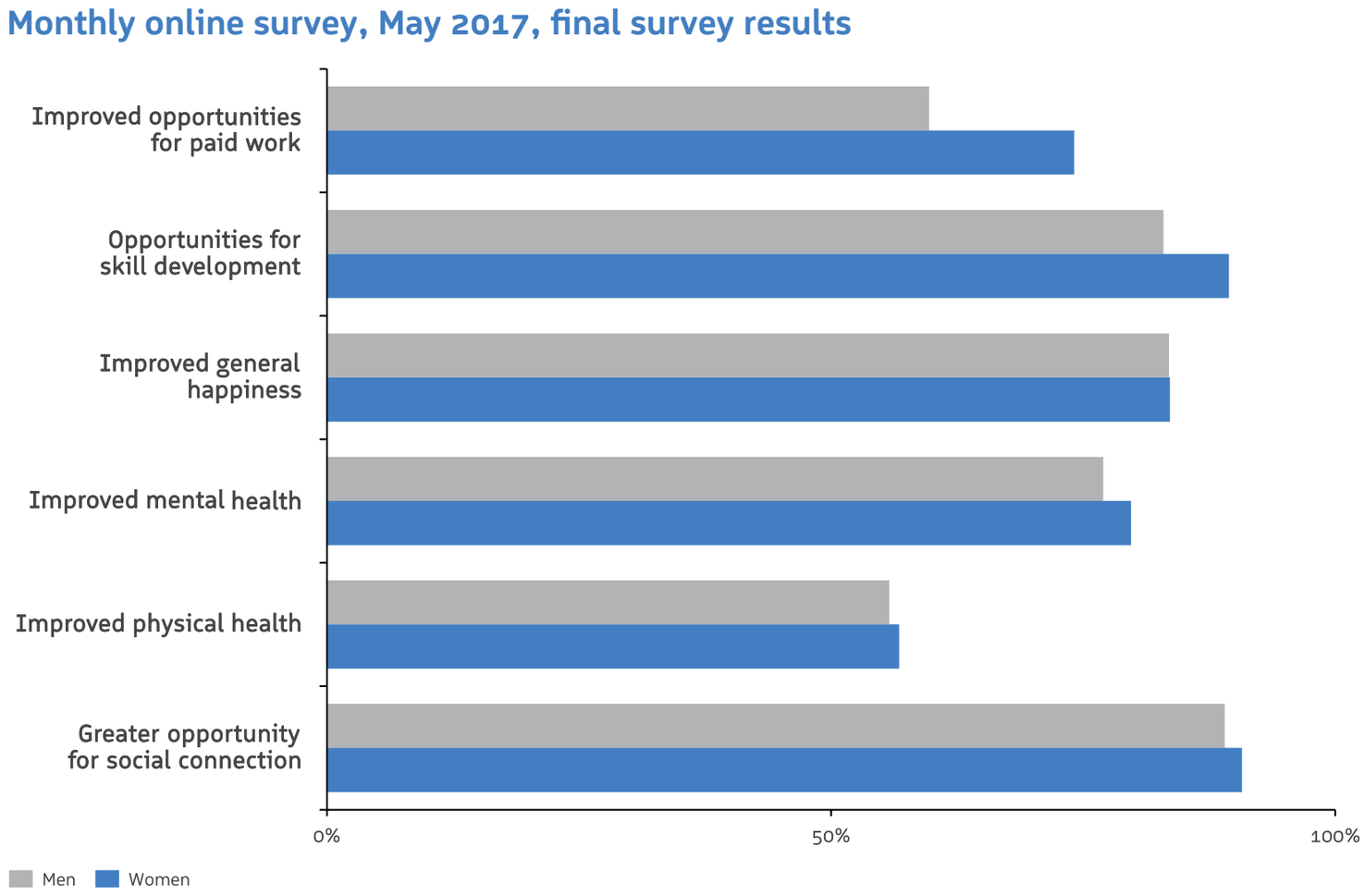
Number of volunteer hours found to confer a reduced risk of mortality and mental and chronic illness, including addiction.[201]



$34

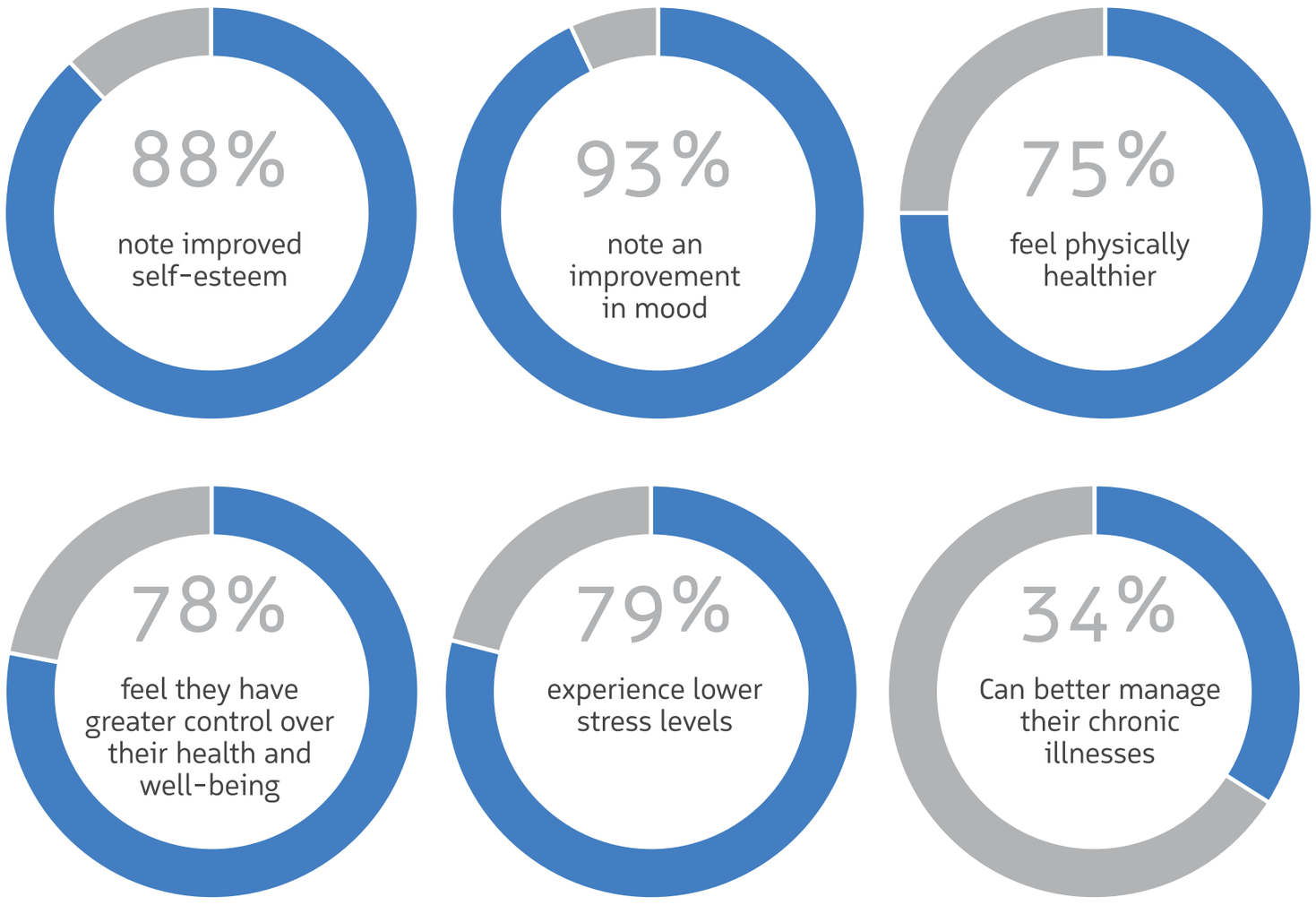
Return on investment of AmeriCorps programs for every government dollar spent, while also elevating wages; decreasing unemployment; fostering economic growth; and increasing tax revenue in served communities.[202]

Figure 17:
Perceived personal benefits of volunteering



Source: Relationships Australia

Figure 18:
Of people who volunteered in the past 12 months...



Source: SamenVoorEindhoven

THE OBSTACLE

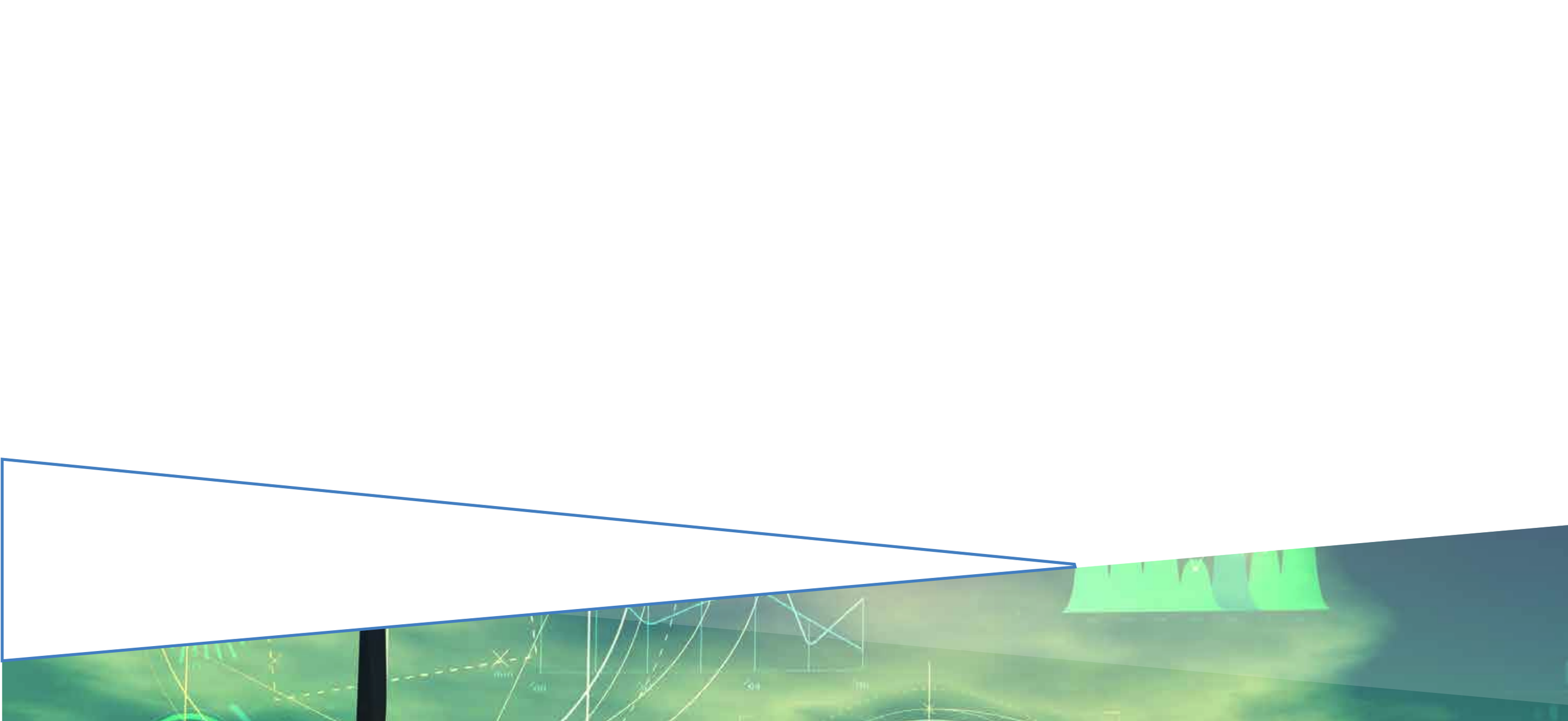
Short-term benefit rather than long-term potential.

While traditional national service programs are often very effective in delivering localized impact and addressing immediate community needs, their scope and scale are limited.[203] Moreover, for volunteers and participants, the experience often fails to translate into sustaining a long-term, purpose-driven life. However, that is not the primary aim of such programs.

Though national service programs are recognized to benefit both the community and the individual engaging in the program, their emphasis has, in many countries and cases, become focused more singularly on benefit to the community.[204] Without an explicit focus on member development, volunteer or service activities become less attractive – and inconsequential national service experiences fail to inspire long-term recognition or pursuit of purpose.

1 2 3 4 5 6 7 8

For the primarily government actors who lead such programs, this drift toward focus on measurable community impact is understandable. To justify the substantial financial and organizational resources required to drive such an undertaking, governments seek to quantify the number of school lunches served, students tutored, or public waterways cleaned. Yet, by failing to adequately center the development of each individual, they are undermining the long-term success of their efforts. The experience of the participant becomes a year of altruism, when it could instead be a pathway to a life of purpose.



THE TRANSFORMATION

Deploying a platform linking individuals to purposeful service opportunities.

To transform national service will require a reimagination of the service model, with an expanded program that connects individuals with organizations – public or private – that offer the possibility to explore purpose-driven opportunities that serve not only their communities but also their own development.

This could be most meaningfully realized through the development of a national public purpose platform – a centralized, digital market connecting individuals with passion to community and society-serving opportunities. For countries or communities with limited digital penetration, the same concept can be deployed in more traditional means, disseminated through public media and in-person organizing.

Central to the success of this model is a societal shift toward a view of service as a valuable means of accelerating career growth, economic success, and personal satisfaction. This involves moving away from the traditional volunteering model (in which individuals often need to allocate unpaid free time to causes they care about) toward a paid "work for impact" model (in which many participants get paid to do purpose-driven work within an otherwise regular job).

Such a shift not only recenters individual development in national service but also, crucially, creates greater inclusion in purpose-driven work. In current volunteer-driven models of public service, participation can be limited by an individual's financial means; living on a small stipend is not a viable option for many with familial obligations, student debt, or other economic obstacles. When purpose-driven work becomes a true, economically lucrative career option, it becomes more available to a greater range of individuals.

The recently launched American Climate Corps[205] – an initiative that seeks to empower young people with the skills necessary for well-paying jobs in the clean energy economy – starts to approximate this approach. However, such an approach can be made even more impactful by integrating deeply with the private sector, providing both learning opportunities and long-term purpose-filled careers.

Several corporations already have volunteer programs of their own. For example, through an internship program, employees of the clothing company Patagonia can volunteer for up to two months with an organization of their choice while receiving their usual benefits and compensation.[206] For employees, this instills a long-lasting sense of purpose and mission and has contributed in part to Patagonia's high levels of employee satisfaction; while the average rate of employee turnover in the US is 57%, Patagonia's is only 4%.[207]

Even more powerful will be a truly symbiotic relationship between employers of highly skilled labor and domains of need – from poverty alleviation to countering climate change. If the proposed platform can, with government support, more evenly distribute both skill and opportunities, the potential for affecting real change – while opening doors for individuals – is endless.

A combined public-private approach could make it easier for governments and the private sector to jointly fund the program. It could also greatly enrich both the quality and range of the service opportunities offered.

It is critical to note that an individual's sense of purpose can be fleeting and that self-actualization factors often change with both time and circumstances.[208] A reimagined national service program is not intended to serve as a definitive, permanent solution for all citizens. Rather, it is envisioned to provide a unique opportunity to realize one's talents and potential – in particular for those who lack the resources to otherwise explore their passions.

THE OUTCOME

Toward a renewed sense of mission.

Transitioning from the traditional volunteer-work dichotomy means moving toward a work model that combines elements of both domains, enabling more people to have life-changing experiences that generate both near-term opportunities and a long-term sense of deeper purpose and meaning.

The benefits go well beyond greater individual satisfaction or employee productivity. By making a greater number of purpose-driven opportunities in more domains available to a greater diversity of people, we will also more comprehensively integrate our societies and help to reverse the self-sorting that has contributed to the polarization of our ideologies and communities.

Ultimately, national service can and should be much more than a brief opportunity to serve more than oneself. Such an integrated approach can help foster a more dynamic labor market, a healthier society, and a populace more apt to look upon the future – and itself – with optimism.

CONCLUSION

The world has entered a fragile and disorientating period of transition.

Following the relatively stable decade that followed the end of the Cold War, the current phase of transition arguably began with 9/11 and its aftermath, followed by the global financial crisis and the COVID-19 pandemic.

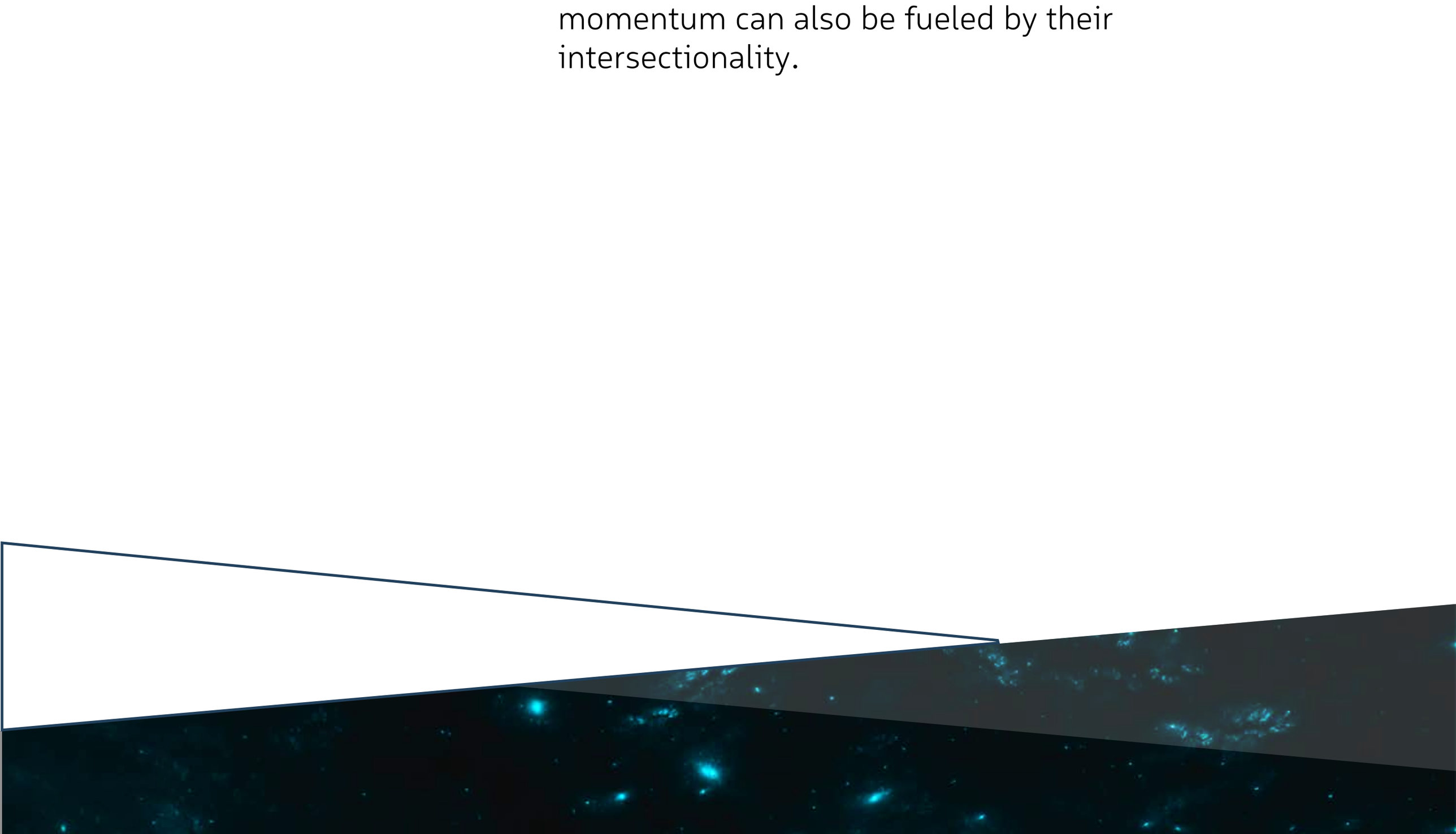
Below the surface of these strategic shocks – and shaping the global operating environment even more fundamentally – have been the inexorable advance of environmental change, the diffusion of geopolitical and geoeconomic power, and the relentless advance of technological innovation.

Like all critical junctures, this one is characterized by pervasive volatility, institutional fluidity, and deep strategic uncertainty. It is also characterized by vast opportunities for transformative action – a period when human agency is most needed and most possible, particularly given the advance of technology.

For government leaders, this period is exceptionally difficult, not simply by virtue of the scale and complexity of the challenges but also because many leaders must address these challenges in the context of diminished citizen trust, widening social and political polarization, and the very real risk of their people losing faith in the power of collective action to drive the human progress we so desperately need.

At the same time, government leaders now have access to unprecedented technological power. Technology demands focused attention because of its dual potential as both a source of disruption and novel threats, and an unrivaled engine of transformative solutions. It is for that reason that, in every chapter of this report, technology plays a central role – as the source of the challenge, the core of a solution or, in many cases, both.

The eight chapters of this report are intended to serve as blueprints for progress against some of the most daunting challenges facing our societies. They outline pathways of transformation in areas where there is potential to generate palpable momentum toward the future we want. That momentum can also be fueled by their intersectionality.



Shared truth is a critical foundation. Enabling a more evidence-based map of reality can help restore our collective capacity for unified effort. In our digitally mediated world, this imperative makes securing cyberspace an ever more primary national and global priority.

Building from these cornerstones, we can advance the coherence of our collective action by disrupting polarization, improving healthspan, repairing the psychological health of our youngest citizens, and creating meaningful pathways of work for them in a world transformed by technology that urgently needs their productive, engaged creativity. And finally, beyond our national efforts, we require new approaches to the global challenge of environmental change that can align the interests of all actors, harness our vast collective capacity for innovation, and drive measurable progress at global scale.

By not ignoring or avoiding our most difficult challenges, but rather seeing them as the markers of our path forward and transforming the forces that drive them into the engine of progress, we can restore our collective momentum and our shared faith that we can create the future we want.

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About the National Transformations Institute

Kearney's National Transformations Institute is dedicated to helping senior government and business leaders anticipate and drive the diverse and accelerating transformations underway globally. The Institute's work centers on the application of the formal techniques of strategic foresight; policy design and analysis; and economic modeling.

The lead NTI team for this report of Rudolph Lohmeyer, Brenna Buckstaff, and Cole Grumbach would like to thank Michele Longhi, Raunak Kalra, Hassan Ayaz, Dillon Baker, and Haya Kamel for their valuable contributions.

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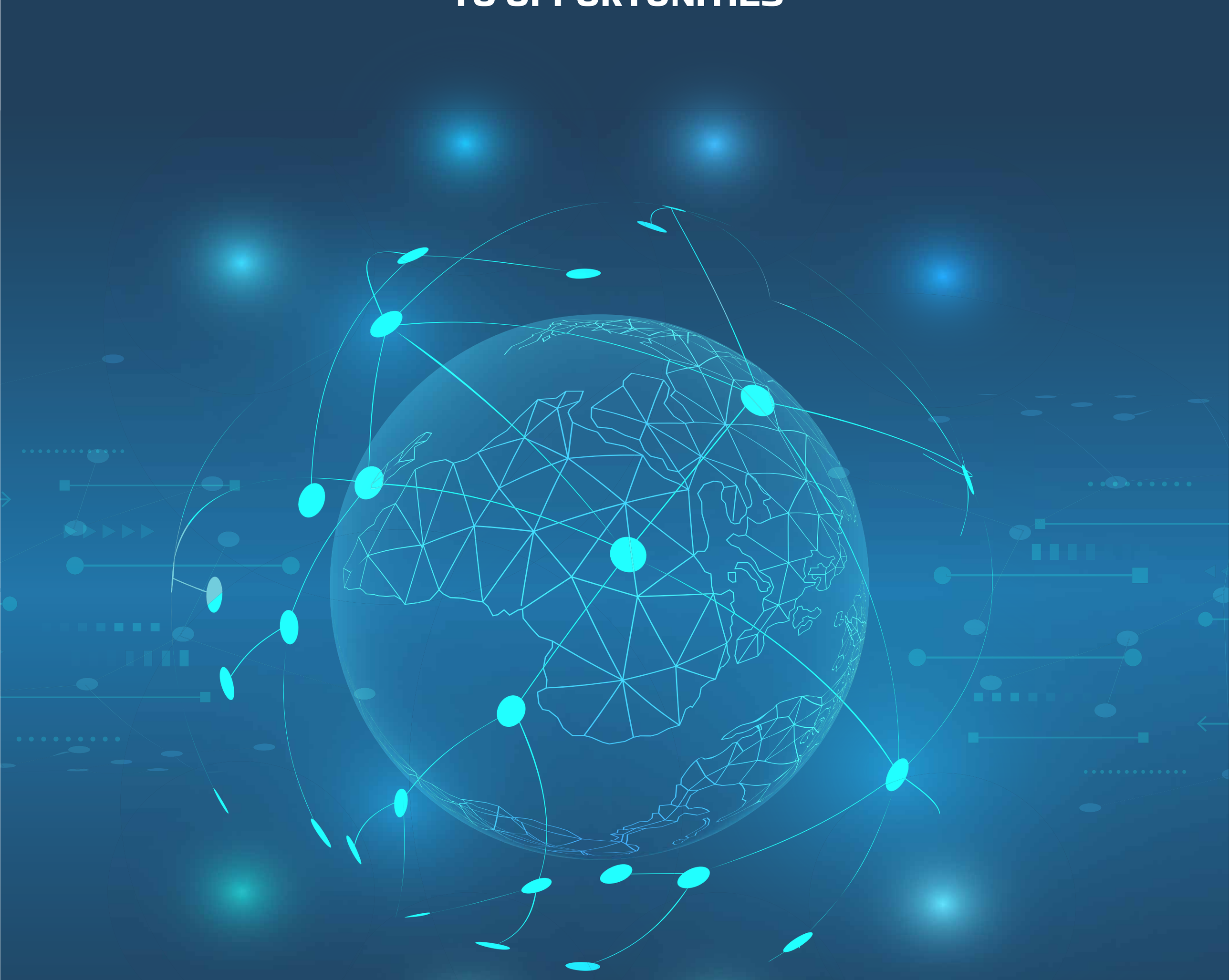
8 TRANSFORMATIONS

FROM CRISES
TO OPPORTUNITIES



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