Adaptive Solutions for Food, Health, and Prosperity in a Disrupted World

2023 GLOBAL ACTION REPORT

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The Global Action Summit is the ideal forum to address with one another how to achieve these solutions, how to achieve the kind of common action that is sought, and build a world that is safer, more sustainable....

— Fareed Zakaria, CNN

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Solutions for a Disrupted World

Dr. Scott T. Massey
Chairman and CEO

The cover for the 2023 Global Action Report features towers in a city with largely blank windows. The ambiguity of the image seems a fitting metaphor for the COVID pandemic lockdowns, isolation, and disruptions from which we continue to emerge, as well as a haunting suggestion for what still lies ahead.

For over two years, the entire world shut down. The change was so marked that seismologists report that the vibration of the earth's surface measurably declined from the cessation of human activity; the skies were clear of planes and vapor trails; streets were eerily empty and quiet. People across the world locked themselves in; afraid of contact with others, and perhaps drawn closer to family and private thought than before. The change was profound.

In the midst of this silence, simmering issues of equity erupted across the world. In the silence and the pause, those who had suffered injustice, those who had not benefitted from globalization and technology, those most vulnerable to the pandemic's impact on food, health, and economic security found voice and a new hearing. This too was and is profound.

Just as recovery and renewal was beginning from these events, a ground war in Europe and new challenges to the global order added new levels of disruption. How do we comprehend and respond responsibly to these two profound events?

Global Action Summit and 2023 Global Action Report
At the end of 2021, Global Action Platform convened 70 international leaders and experts from the corporate, academic, investment, government, and NGO sectors and

a cross-sector audience of one thousand leaders from across the world to address this question. The Summit was developed in partnership with major corporations, universities, and agencies to synthesize the lessons of the past two years of COVID and to make recommendations for how to begin to move the world forward in a more resilient, sustainable, and equitable manner.

The challenge we posed to the leaders who were tasked with creating the program was simple — how do we consolidate knowledge gleaned from the global pandemic on food, health, and economics and other disruptions to create a plan of action to improve.

The 2023 Global Action Report presents the remarkable synthesis of findings and recommendations for action from some of the world's most knowledgeable and influential leaders. From a systemic reimagining of food, nutrition, and wholesale reversal of market drivers; to a reimagining of health in the context of the environment and a global health ecology; to a reimagining of economic goals and metrics for human wellbeing that reshape business and economic strategy — across all sectors, dynamic changes are underway, and sustainable values are being integrated in innovative ways to create new solutions.

Overarching editorials on food, health, and economics provide a scaffold for the more detailed findings and recommendations in the report. Fareed Zakaria's opening keynote frames the discussions in the light of global trends and the need to re-balance speed, openness, and stability, with a new emphasis on stability. At the center

How do we consolidate knowledge gleaned from the global pandemic on food, health, and economics and other disruptions to create a plan of action to improve?

of the editorials is the challenging report from GALLUP and Jon Clifton about the dramatic decline in human wellbeing and how leaders missed it — a sober lesson to inform all action plans moving forward. Chancellor Daniel Diermier's closing editorial on the role of a university during the time of COVID offers insights within a major academic community on how to respond responsibly and with care.

Third Wave of Disruption: Invasion of Ukraine

As we began publication activity for the Report, the Russian invasion of Ukraine occurred. As the scope and scale of this crisis unfolded, we determined that focus should remain with that event. We decided to postpone the completion and publication of this report to 2023.

The Global Action Summit conducted in December 2021 and this 2023 Global Action Report were conceived in the context of making a pivot from the disruption of COVID and war to action for an improved world. The implications of the invasion of Ukraine, however, made the idea the world was prepared for a positive pivot appear almost quaint. To the profound impact of the pandemic and social equity issues, a new challenge emerged that seemed to threaten the very foundations of the rules-based order and the globalized system built upon it.

While the global order of integrated markets, finance, communications, and technology had mostly survived the stress test of COVID through the virtual systems enabled by technology, the invasion of Ukraine presents a new challenge of a different type and in the real world, on the ground. The rules-based order under threat by Russia and also by China has been built upon the attractive power of American and Western ideas and values, underwritten by American hard power. The invasion is a direct test of both forms of American power and the existing global order it has generated.

For many years, international analysts have speculated about the decline of US hyper-power and the rise of a multi-polar world, with the EU and China as two additional poles. There has been a loose consensus that a transition from an American order to a post-American order could be smooth and integrative. That assumption, or hope, now seems implausible. There appears to be no alternative to American order, or more precisely, the alternative presently to American order is post-American disorder.

A Holiday from History?

It is tempting to think that the integrative global progress of the past thirty years has been a holiday from history, and that the world is now returning to its real state. This temptation, while understandable, undervalues the effort that created the past thirty years and distracts from the creative responses possible and necessary to sustain it.

Perhaps it is helpful to think of the past thirty years, not as a holiday from history, but as the beginning of real history. Perhaps for the past thirty years, the world had just begun to experience what happens when everyone in the world begins to think they should be able

to flourish, have access to knowledge and economic opportunity, to be healthy and well-fed, to have a life of dignity and freedom. Thanks to social media and technology, for the first time in history, almost everyone alive could see in real time what these values looked like, could see real people enjoying them, and could imagine having them themselves. That seems more like a beginning than a holiday.

The past thirty years did not spring out of nothing. The global order and its fruits grew out of generations of sacrifice, hard work, deep thought, and Herculean efforts of compromise and collaboration, especially by leaders in the years after WWII and later, after the collapse of communism. The past thirty years were not an accident or a holiday — they were the result of committed effort and intentional strategies sustained across sectors, across political parties, across nations, and across generations.

Renewed Culture and Commitment

To prevent the achievements of the past thirty years from melting away as a dream, efforts of similar sacrifice, prudence, collaboration, and strength will be required. Without the availability of a post-American order, a renewal of American culture and commitment are needed. In this renewal, business and financial executives are needed who exhibit discipline, self-control, and prudent stewardship; leaders who can lead profitable businesses delivering valuable services within a framework of ethical discipline. Financial scandals, rampant greed, glamorization of excess, and corporate overreach have eroded the trust and respect the private sector enjoyed as a force of good in the first half of the past set of decades. Restoring that trust through a renewed ethic is essential.

On the public sector side, a renewed political culture is needed that promotes effective governance. To sustain progress, the world needs governments with capacity. Like the statesmen who emerged after WWII, a new generation of political leaders is needed who understand ambiguity and complexity and can actually work together in statecraft to construct frameworks for a better world, both internal to their nations and internationally across regions and borders.

Generally, the trend to distrust and devalue institutions — institutions of government, of faith, of knowledge, of family, and civic culture — need to be reversed. The renewal of institutions and institutional life across the private, public, and social sectors is paramount to a renewal of creative culture.

Global Action Platform is a platform for leaders and innovators who are working toward such renewal. We seek to convene leaders who share these values, to advance solutions for abundance, and to increase the impact of such work.

The 2023 Global Action Report is dedicated to these efforts and to these goals.

Masthead

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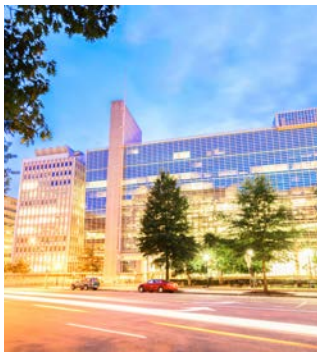

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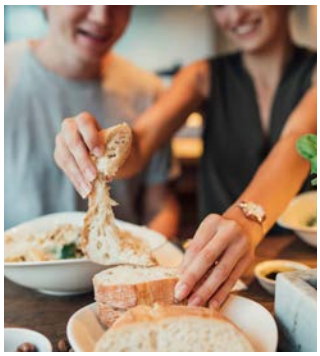

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Perspectives

SUMMIT ADVISOR'S NOTE

A World Beyond COVID

Fareed Zakaria, CNN

The pandemic probably is the largest global event we have lived through and may live through in our lifetimes.

When compared to catastrophes such as 9/11 or the Global Financial Crash, it's important to recognize the limited geographic scope, as well as temporal limits. For example, with 9/11, if you lived in Japan or in Brazil, the event had little impact on you. It was something between the United States, maybe some Western countries, and parts of the Islamic world, primarily the Arab world. Other than new security protocols in the airports, such as scanners, 9/11 did not have a transforming effect on your life.

Likewise with the Global Financial Crisis, large parts of the world that were not connected to the highly securitized financial services system of Western economies found themselves going through life basically as normal.

But the pandemic has affected the population of our entire plant. There are very few events with that scope of impact. Almost every human being on the planet has in some way been affected either by the pandemic, the public health issues that derived from it, the economic issues that came out of it, all of which comprise the geographical scope of the pandemic. There is also the temporal impact, since the pandemic has gone on for more than two years and its effects are likely to go on for several years more in the future.

Understanding that the pandemic is the biggest global event the human population has lived through and continues to live through is crucial to realizing that adjusting to a post-pandemic world will not happen instantly.

Collectively, we are still struggling through what it means to move out of the pandemic, then for some countries to move into something closer to an endemic situation, and then further move to normalize the other elements of society around it. All of these phases of adjustment involve adopting parts of the new, pandemic response that has now become normal.

For example, virtual conferences, like the 2021 Global Action Summit, will continue to exist, even as we return to in-person conferences. Suddenly, we find ourselves in this space with a mix of the old and the new. We may call it the hybrid world, but the most crucial point is that we continue to struggle to embrace living in our new reality.

As we think about the pandemic in terms of historical parallels, the most extraordinary feature of this pandemic — which sets it apart from every other pandemic in history — is the vaccine. The vaccine arrived essentially nine months after the pandemic began, which is itself an extraordinary feat. Only 20 years ago when SARS was first identified, it took months to simply sequence the virus. With COVID-19, sequencing the virus took hours and, within days, scientists were working to develop a vaccine. In fact, the mRNA vaccine, which is an extraordinary scientific leap, was produced within a few days. The majority of the time before the vaccine was widely available was spent in testing phases.

Having a vaccine is not the only factor that separates this pandemic from other. We have experienced a twin reality of a digital economy that was able to flourish and a physical economy that shut down, and the two are related.

> *The biggest lesson of the pandemic is that the world is spinning extremely fast. Understanding that the pandemic is the biggest global event the human population has lived through and continues to live through is crucial to realizing that adjusting to a post-pandemic world will not happen instantly.*

The 1957 Pandemic, the Asian Flu, in many ways resembled COVID-19. The number of people infected, even the numbers of people dead, are not so far off from current pandemic totals, although COVID-19 eventually will kill more people. But the enormous difference is, in 1957, the economy did not shut down at all. No schools shut down, no stores shut down, no businesses shut down. The reason everything stayed open is because there were no alternatives. There was no digital economy that could continue to survive and thrive. We can see how the pandemic has mixed together new features of our world with unintended consequences that

that we could not have imagined. Because we can work digitally, we stopped the physical economy, which had many kinds of follow-on effects.

The biggest lesson of the pandemic is that the world is spinning extremely fast. Since the collapse of the Soviet Union, the end of the Cold War, we have created a modern global order, a system that is open, very dynamic and very unstable. It is incredibly open in the sense that capital goods, people, ideas and culture flee fast and furiously throughout the world. It is dynamic because we have had, in addition to that globalization revolution, a technological revolution that has tied the globe together at an ever increasing, ever accelerating pace. But the third piece is, as any computer scientist would tell you, you can have systems that are open and fast, but they are not stable. Of those three qualities — open, fast, stable — you can usually choose two of three. Our global systems are open and fast, but unstable.

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If you think of 9/11, the Global Financial Crisis, the tech bubble bursting, the housing bubble bursting, the emerging markets bubbles bursting, the Russian crash and the Mexican crash, all of these are about a system moving amazingly fast and then collapsing every now and then. It's as though we built the fastest race car in the world, one that moves beautifully and extraordinarily, and at great speed, but, every now and then, you have a crash. We then try to fix it, patch it back together and move forward.

In a sense, the great challenge we have to figure out is how to create a world that has a greater degree of security, a greater degree of stability, a greater degree of resilience. We still want the openness, we still want the dynamism, but we have to find a way of pushing in some measure of security, stability, and resilience.

Stability is important for a number of reasons. Not only is it difficult to deal with these kinds of crashes like the pandemic, but they are expensive and, psychologically, they are exceedingly difficult for people to live with.

The speed and suddenness of these types of crises creates a politics of backlash that then transforms the entire system itself. The rise of populism, nationalism, and protectionism around the world has been, in some sense, a backlash to these various crashes of high-speed technology, high-speed globalization, high-speed politics.

The pandemic has revealed to us also that we are now going so fast enough that we are provoking natural responses. The most important one, of course, is climate change and the warming of the planet. But within that one term — climate change — many ecological changes are being produced.

Envisioning ways to create greater degrees of resilience, security and stability is crucial, especially as we consider what likely will be the next pandemic. Another pandemic is certain, given the degree of global communication, interaction, and travel. We see that at some fundamental level, the more human beings encroach on nature and natural habitats and the natural habitats of wild animals, like bats in this case, the more likely it is that diseases in animals, zoonotic diseases, will jump to human beings. Most of the viruses seen in the last 25 years result from this reality. SARS, MERS, Avian Flu, Ebola, AIDS are all zoonotic diseases that jumped from animals, often wild animals, to human beings.

A likely scenario for the next pandemic is factory farming. In these farms, tens of thousands of animals are herded together closely, often in unsanitary conditions and pumped full of antibiotics. These factory farms produce an environment in which a virus can jump and jump, gaining strength as it jumps from animal to animal, and finally becomes strong enough to jump from species to species. These viruses may even be resistant to bacteria and to antibiotics, perhaps even resistant to most vaccines. The possible scenarios are endless.

The bottom line: We are living dangerously. We are, however, gaining a lot from living dangerously. We have the benefits of speed, openness, and in many cases, prosperity.

At the same time, it is crucial to turn more attention to stability, security and resilience. Not only do more secure and stable paths of action allow for more sustainability going forward, but they also create conditions for a more manageable politics. Further,

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increasing stability allows for a lessening of the strains on the planet, perhaps a lessening of inequality. All these goals are emerging priorities elevated above simply speed, growth, and GDP. While speed, growth and GDP are important, there are many ways to grow.

While there are many ways to grow, there are also many speeds at which to grow. In India, for example, which is a very poor country, speed, growth and GDP are the only ways you can alleviate poverty. The tradeoffs can be made in a way to balance some of these other elements along with that type of growth. We need to imagine solutions, such as farming in a safer

and more sustainable way. It is possible to achieve the same results but in ways that are sustainable and more secure and do not, perhaps, invite the next pandemic.

As a global community, we have an opportunity to share best practices and collaborate. It is perhaps most important that work be done globally because this is a global issue. We will not solve it in any one nation. These issues spill over onto all of us, so there is no advantage to hoarding solutions. This is not like a patent for a product. There actually are greater and better effects for everyone if we share our knowledge.

The Global Action Summit is the ideal forum to address with one another how to achieve these solutions, how to achieve the kind of common action that is sought, and build a world that is safer, more sustainable, more pandemic proof. The Summit is the ideal forum to address with one another how to achieve common action that can build a better world in which people can live through periods of incredible dynamic change without feeling overwhelmed, without seeming transformed, and thus preventing the kind of political backlash that is in some ways the most dangerous change of all.

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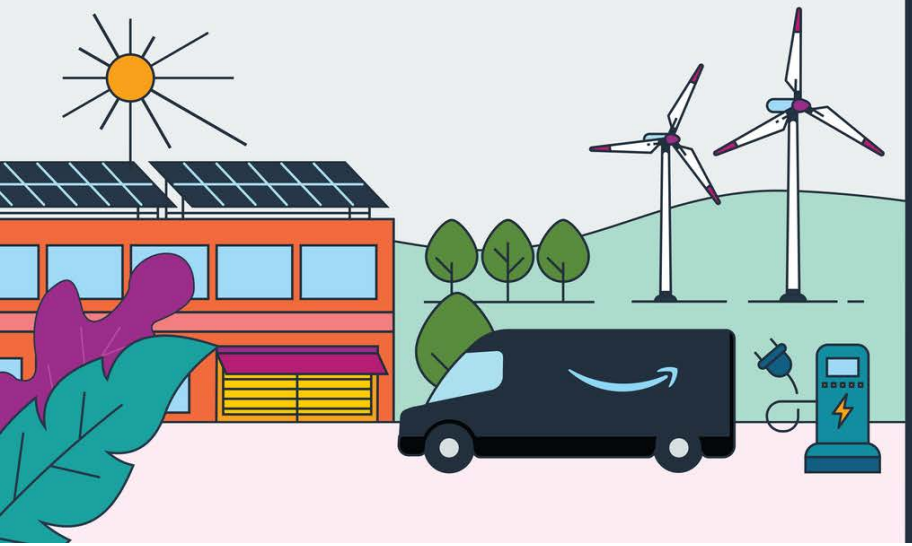

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Blind Spot: The Global Rise of Unhappiness and How Leaders Missed It

Jon Clifton, Global Managing Partner, GALLUP

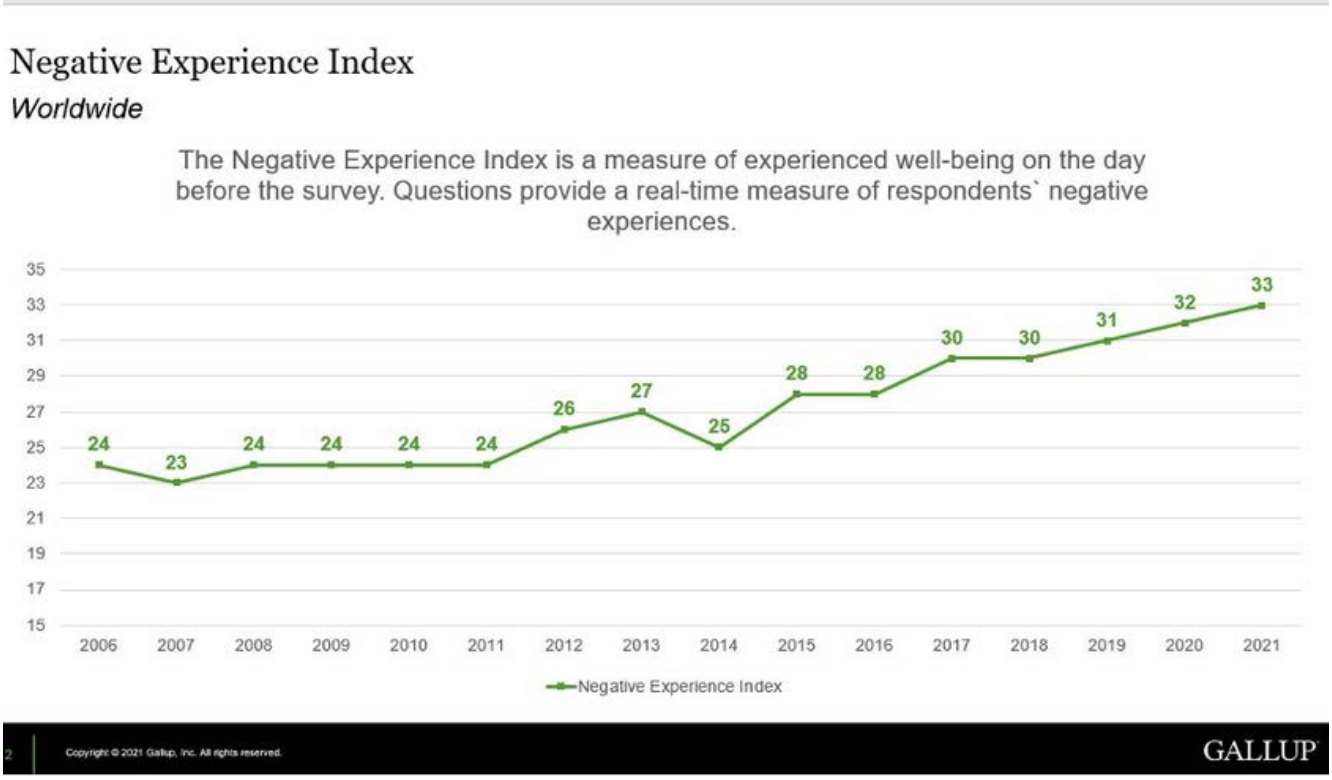
Unhappiness is on the rise, creating a reality in which the new global inequality is wellbeing inequality. Gallup has discovered that people report feeling more stress, more sadness, more physical pain, more worry and more extreme anger than at any point in the history of its tracking.

While the findings may not seem surprising given that the world has suffered for more than two years from its worst pandemic in 100 years and its worst economic contractions ever, the trend is not entirely due to the pandemic.

Negative emotions, including extreme anger, stress, sadness, physical pain and worry have been rising for 10 straight years. Unfortunately, leaders across sectors have missed the trend, resulting in a total blind spot in recognizing how people feel.

Global misery is on the rise and the trend is concerning.

In recent history, Gallup has seen similar trends in individual countries. For example, during the time of the Arab uprising in Egypt, many indicators said that life was



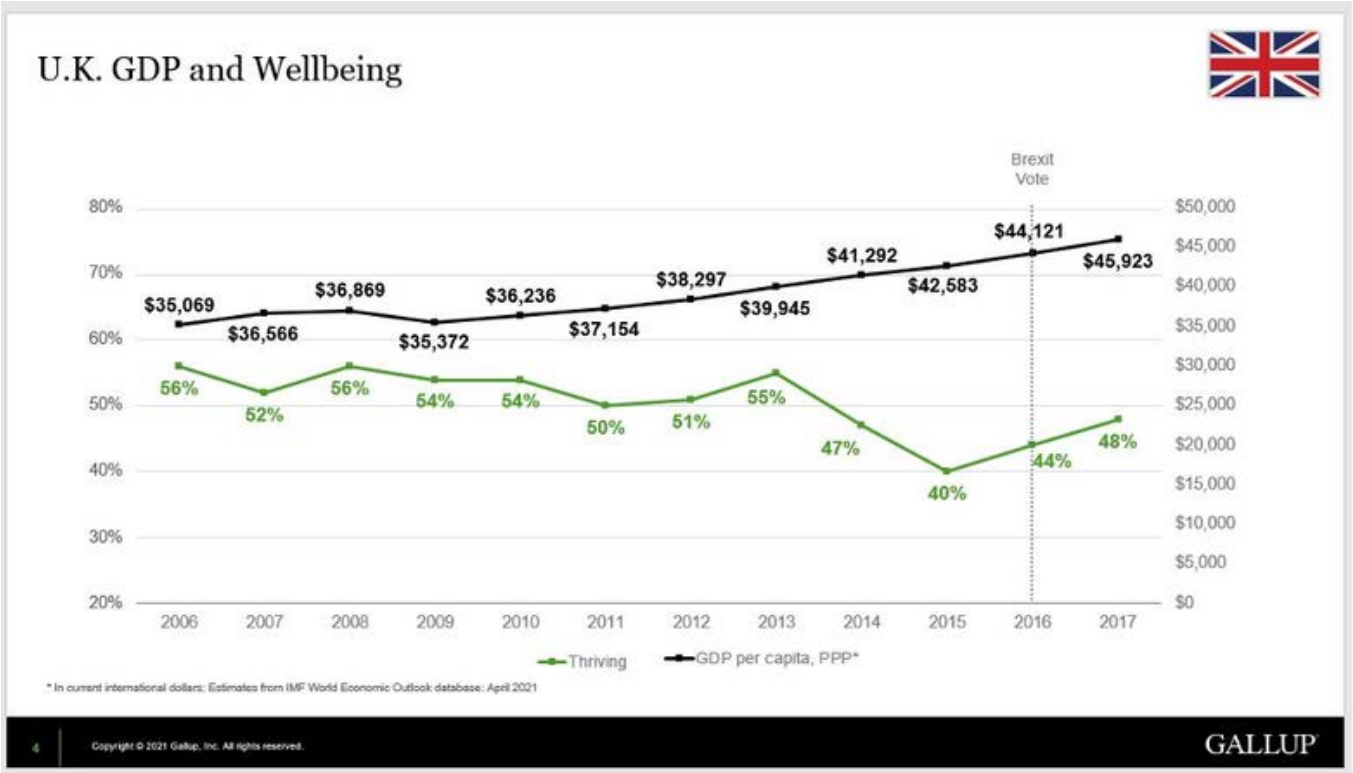
OK in Egypt. The GDP per capita was growing in a perfect linear fashion. But the way that people's lives were trending did not match the GDP growth. According to Egyptians, 28% of Egyptians were thriving in 2006, but that declined to nine percent in the lead up to the Arab Spring, putting Egypt on par with the Palestinian territories.

> *The new global inequality is wellbeing inequality.*

Tunisia experienced the same decline. And these trends aren't isolated to just the Middle East. The U.K. saw a similar trend right before Brexit. In a similar way to Egypt, the GDP per capita was up in the U.K. before Brexit. The economy was growing steadily; unemployment was low. Britons, however, were unhappy. Gallup found one of the largest declines regarding Britons' wellbeing in the history of its tracking just before the Brexit vote.

Paying attention to how people felt in Egypt, Tunisia, and the U.K. mattered, just as paying attention to how people around the world feel matters today.

The new data, however, is more concerning than the data collected in Egypt, Tunisia and the U.K. Today's trend indicates the worst kind



of emotions, emotions that are driven by inattention to the multi-dimensionality of a great life.

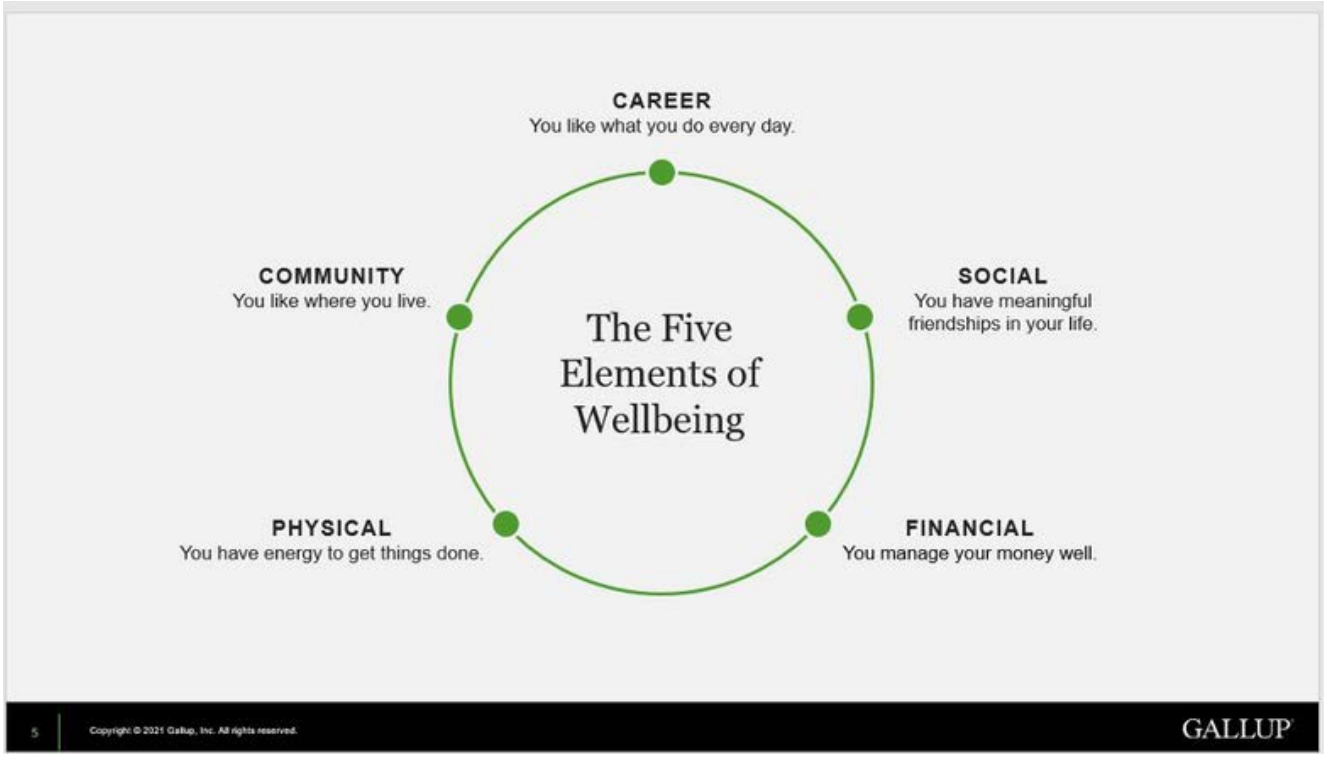
Often, leaders focus on money and jobs, with a lack of attention to the quality of jobs or the quality of relationships. Because of these blind spots, Gallup has found that 22% of the world say they do not have a single friend or family member that they can count on in times of need; and 3 billion people are currently miserable in the global workforce.

There are five elements to a great life, Gallup has learned: work wellbeing, social wellbeing, financial wellbeing, physical wellbeing and community wellbeing.

Looking at what makes a great life, data says that 20% of the world is getting more of a great life, and 20% of the world is getting more of a miserable life, based on how people rate their lives. This divergence is creating a new inequality in the world — the inequality of a great life. Money is no longer the only separation between the haves and the have nots. The new global inequality is wellbeing inequality, which is the inequality between those who have a great life and those who don't.

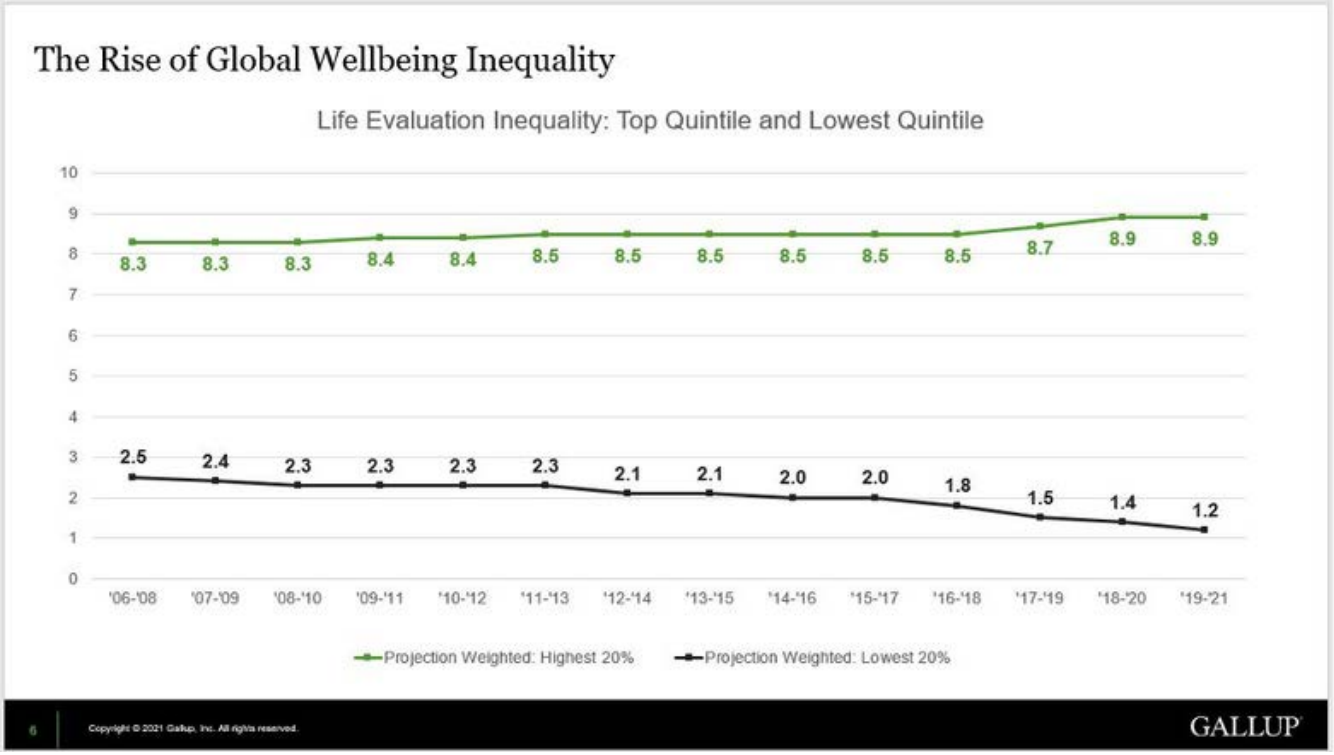
> *22% of the world does not have a single friend or family member that they can count on in times of need.*

The people who rate their lives the best are rating at the very highest marks, while, conversely, the people who rate their lives



the worst could not ratet their lives much lower. Unfortunately, social media not only contributes to but also deepens the divide, as the people who rate their lives worst are watching those who are having it better across social media platforms, making the have nots even more miserable.

Paying attention to trends, such as the global rise of unhappiness, is crucial if we are going to work toward a world where all people enjoy wellbeing that leads to a great life. We cannot improve the world if we do not know how the world is doing. While we may want to blame the global rise of unhappiness on the pandemic alone, this hasty deduction may make the unhappiness worse. It's important that we take the time and pay attention to all the areas of inequality affecting our world.



A Post-COVID World for Abundant Food, Health, and Prosperity: A Call to Action from the World Bank

Julian Lampietti, Manager for Global Engagement, Agriculture Global Practice, World Bank

For two to three years, the world has experienced tremendous disruptions to global food, health, and economic systems as a result of the COVID-19 pandemic. These complex disruptions are rooted at the human-ecosystem interface, and they illustrate the complex interconnections among food, health, and economics. The World Bank joins Global Action Platform in seeking to understand and advance solutions at this crucial intersection and to advance strategies centered on healthy people, healthy economies, and a healthy planet.

From the outset of considering how we build a better world post-COVID, we need to acknowledge that we have an absolutely amazing food system. The existing food system produces more than enough food to feed eight billion people. At the same time, COVID-19 has put a very bright light on problems with the system. The pandemic caused disruptions to food supply systems, which led to significant shortages at grocery stores, rampant food price inflation, and at the same time, led to farmers smashing eggs and plowing under their crops.

While these problems capture the headlines, the underlying causes and problems are much deeper in the food system. Today, approximately one-third of the global population cannot afford healthy diets. Obesity is on the rise with two billion people overweight, and hunger is on the rise for the first time in years, despite having plenty of food.

> Today, tragically, feeding the world's people is a leading cause of loss of biodiversity, deforestation, and land degradation.

In terms of economics, today there are massive pockets of rural poverty all over the world. Agriculture and the food system have extremely low paying jobs, farms are going out of business, and essential workers are barely making the minimum wage. As for the health of the planet, 33% of the global greenhouse gas emissions come from the food system. Today, tragically, feeding the world's people is a leading cause of loss of biodiversity, deforestation, and land degradation.

In the light of these challenges, to create more resilient and sustainable food, health, and economic systems in the future, we at the World Bank are making a call to action.We are working to bend the arc — to bend it away from the terrible things that we have been doing when we feed ourselves, to doing really good things. We can produce healthy, affordable diets, we can reduce the number of hungry people, we can have a food system that produces good jobs and livable incomes, and we can make the food and agricultural system benefit the planet at the same time.

The food system can be a major sink for greenhouse gases through soils, the food system can be a home to biodiversity, and it can produce significant environmental values. But to bend the arc toward this goal will require investment. One potential source of the investments needed to improve agriculture can be found by repurposing existing public investments in food. For example, a billion dollars go into the agriculture sector from the public sector every year. This money often goes to do things that do not improve the food system, like sugar or fertilizer subsidies. Such funds that could be redirected to support crops that are good for human health, soil health, and improved practices that are good for the environment.

As leaders and societies, we will need to take a hard look at how money is being spent in the food sector.How can we repurpose expenditures to deliver a better triple bottom line for healthy people, a healthy economy, and a healthy planet.

The World Bank is working toward this goal along three lines, among others. First, we at the World Bank, along with the UK, have launched the Policy Action Agenda Cop 26. The Agenda convenes likeminded countries to learn from each other on repurposing expenditures. We believe this is a very promising initiative that can change the impact of public investment in the food system.

Second, we are bending the arc through new uses of open data. It is often said that data is the new oil. The impact of data on farm productivity is enormous, as illustrated by Precision Ag. Data can impact food systems with the stroke of a pen, as in 2008 when the Landsat data was made free of charge. Amazing improvements can be achieved by making more data available for things like soils and so on.

Currently, however, data are expensive and difficult to collect for companies interested in getting into this space. There is a wonderful opportunity for governments to change policies to provide free, open access to more data.

The third way to bend the arc is through innovation. Leaders need to imagine how to deploy repurposed public money and open data to create an environment in which trillions of dollars of private sector money can invest to accelerate bending the arc of the food system to produce good things for the world.

Agriculture has seen a lot of innovation, such as the green revolution, but today, digital technology is rapidly changing the way innovation takes place in agriculture. Previously, innovation started at the farm and then moved in various directions up the food chain. With digital technology, innovation can occur at every single point up and down the food chain.

Imagine connecting six-hundred million farms with eight billion consumers — think about the amount of data that could be exchanged through such a system. One of the beautiful things about digital technology is that it turns marginal costs of transactions to zero. In the case of a capital-intensive business like farming, digital cost savings create interesting possibilities for more efficient markets. The massive information asymmetries among farmers, food producers, and consumers can also be corrected at almost zero cost by digital technologies.

So, we at the World Bank firmly believe that repurposed public money and open data can generate massive innovation in the agriculture, food, and health space. Such innovations will allow us to bend the arc of the food system and deliver healthy people, a healthy economy, and a healthy planet.

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The University in the Time of COVID

Daniel Diermeier, Chancellor, Vanderbilt University

Vanderbilt University, during the COVID-19 pandemic, faced challenges that were typical of those faced by many universities. As the pandemic began, the institution's overall model of operating faced a tremendous challenge.

Universities have operated in a similar fashion for a millennium. Since the founding of the University of Bologna in 1088, universities have had seminars, lectures, labs. We have seminars, lectures, labs. They may have had alchemy there. We're doing more interesting things these days, but fundamentally, the way we learn and research as part of a living, learning community has not changed dramatically in a thousand years. These methods are tried and tested and still work effectively. But the challenges caused by the global pandemic forced us to change our operating model overnight.

Over one weekend, the university had to move towards a full online education. I am proud of how everybody — staff, faculty and students — came together to make this change happen so quickly.

After this pivot, we faced the challenge of how to manage the pandemic long-term. It quickly became clear that one of the main challenges presented by COVID was a lack of information, which brought tremendous uncertainty. The facts around the pandemic were changing very rapidly, which created profound and persistent uncertainty.

As the university adapted to this new reality, we chose to return to our mission, to the purpose and values of Vanderbilt as a university, and then adopt decision-making and communication processes that were most closely aligned with our mission in the light of persistent and profound uncertainty.

In terms of mission, Vanderbilt University is a leading research university with a strong belief in the power of residential education. For the purposes of research, our mission demanded opening our labs as quickly as possible. By April 2020, with safety protocols in place, such as physical distancing and operating at about a third capacity, Vanderbilt labs were operational. The University's strategy to open these labs quickly led to many of the breakthroughs that are helping in our fight against COVID-19.

Vanderbilt has always been distinguished in dealing with infectious diseases. Dr. Barney Graham, who was instrumental in leading to the development of the Moderna vaccine, is a

faculty member at Vanderbilt. Dr. Mark Denison played a particularly significant role in developing some of the antiviral drugs that are now in use. Dr. Jim Crowe was one of the leading researchers in antibody therapies. Both are involved in the fight against COVID-19. The antivirals from Dr. Denison's labs and the antibody therapies from Dr. Crowe's labs are especially important tools in the fight against COVID-19. Vanderbilt is also renowned for our clinical trials. So, following our purpose as a major research university played a crucial role in combating COVID and impacting our world.

On the other side of the university, Vanderbilt is a leading residential college. We believe in the power of residential education to help our students realize their full potential. With that mission in mind, we decided to invite all of our students back on campus. The University created protocols to allow 85% of our students on campus with more than 50% of our classes taught in person. The remaining 15% of students who could not join us were largely international students who could not gain entry into the United States because of visa restrictions.

Bringing our students back on campus required us to have an entirely different approach. We had to change how they were housed in residential colleges and residential halls. The University had to design a system with one-way streets and roundabouts.The approach to dining changed, moving from a cafeteria model to "grab and go" model. All of this, of course, required an entire community to come together with total focus. Staff worked countless hours. Faculty

had to prepare two types of classes, in person and online, and then switch back and forth, if necessary, adjusting teaching techniques to accommodate both online students and those in person. All of this was unprecedented.

> *The challenges caused by the global pandemic forced us to change our operating model overnight.*

We challenged our students to step up and be committed to doing the right thing. At the time, setting a high standard of student responsibility during a pandemic seemed to pose perhaps the greatest challenge. In August 2020, the media coverage about universities reopening was extremely negative. However, the Vanderbilt student body and community demonstrated that with a strong commitment to a common purpose, a university could still operate safely and effectively in its core mission.

Throughout the entire pandemic, Vanderbilt University was the safest place in Tennessee. For example, the university never had a single case of transmission in the classroom.

In addition to being true to mission, we understood that effective communication would be critical. Knowing and understanding that people were and would be fearful and concerned, we focused on communicating with transparency. We focused on understanding the types of questions that our many stakeholders had, including our parents and students, and our faculty. We engaged in town halls, we engaged in a lot of conversations on the ground, via Zoom. We led these critical conversations, and then we did it all over again when students returned to campus in the fall of 2021, as we confronted the American Delta variant. So, transparency was a top priority.

Another priority concerned expertise. In this regard, the University's partnership with the Vanderbilt University Medical Center and the Vanderbilt School of Nursing, were essential. Dr. William Schaffner, an infectious disease professor at Vanderbilt, was an incredible partner, as was Dr. Jeff Balser, head of the Vanderbilt University Medical Center. We worked together with these institutions and their experts to assure alignment in our approach and that our approach to the pandemic was always based on science and the best health information at the time.

As we navigated the challenges, we at Vanderbilt were committed to finding solutions. That did not mean that solutions were always available right away, but we

worked tirelessly to find solutions to emerging problems, which we found; and we communicated constantly about our progress.

During the pandemic, we also learned to focus on empathy, which sometimes is underestimated. It is important to realize that people are afraid, that many have lost loved ones and they may be concerned for other family members. The pandemic was an exceedingly challenging time, with stress on all members of the University community.

For leaders, it important to connect at a personal level with those around you. For example, I frequently joined staff meetings (via Zoom) unannounced to thank people for their tremendous work, followed by a couple of minutes for discussion and questions. I was touched by many of the stories I heard during these meetings.

In summary, Vanderbilt University mounted an agile response to the disruptions of COVID through a strategic framework that included the following four point of the compass:

- transparent, constant communications,
- engagement of expertise,
- commitment to finding solutions, even though the solutions might not be found immediately, and
- empathy in the face of fear, loss, and uncertainty.

Further, the University created an adaptive decision making process to manage the rapidly-evolving understanding of the disease. For example, the University changed testing regimes multiple times and made it clear that these changes did not constitute mistakes or problems, but rather smart adaptations to reality.

In an environment of tremendous uncertainty, volatility, and change, decisions must be subject to change. In such rapidly evolving situations, leaders must be allowed to look back and assess candidly and accurately what works and what does not work and adapt accordingly. Patience is also needed. We learned to make decisions when necessary, to take time to learn from others, to watch for new evidence, and not to act too early.

In the time of COVID, Vanderbilt University became more agile and adaptive. Administrators learned to be ever more intentional in communication and decision-making. The University created new ways to operate; and at the heart of the matter, driven by our mission and purpose, Vanderbilt research emerged to help end the pandemic and our residential colleges sustained the life of inquiry that defines the university as an institution.

As Chancellor, my tenure at Vanderbilt began as the COVID-19 pandemic began. The great lesson that I want to take from this time of trial is that everything we do as we move forward continues to be based on the effective communication and decision-making practices built, and above all that we continue to be fundamentally guided by a powerful sense of purpose and mission.

Five Pillars to Reimagine the World's Food

Rob Dongoski, Partner, Agribusiness Lead, Ernst & Young

Over the coming decade, the global food system will transform dramatically, both structurally and systemically. The change will impact food security, nutrition, revenues and profits, markets, and supply chains. The COVID pandemic, no doubt, is a driver of change, having increased food insecurity and showing weaknesses in current systems. But in addition, prior to the disruptions of COVID, other forces of change were already at work.

To understand the dramatic changes reshaping the food sector, think of the food value chain as a series of interconnected gears, with farmers with annual crop cycles functioning as big gears at the top of the system, and consumers at the other end as smaller and more numerous gears. Until recently, the food system was driven by the big gears, from the top down, from producers to consumers. But that is about to change.

Given current trends, the food value chain will potentially reverse direction, with consumers driving the conversations and change. The small gears move fast, with preferences changing daily, weekly, monthly, and these rapid consumer shifts are pushing change all the way through the system from the bottom up.

From changing diets, to urbanization, population growth, consumer interest in healthier food and transparency, all these consumer interests are driving what farmers and the other actors in the value chain have to think about. As result, leaders inside and outside the food system, from primary actors, equipment manufacturers and suppliers, financial services, energy or other related enterprises, all have to reimagine the food system and the roles they play.

The Food System Reimagined Bureau has been created by Ernst and Young to take a forward look at how the food system will evolve over the coming decade as a result of consumer-driven change. Based on two years of analysis and intensive discussions with leading companies, investors, academics, and agencies, the Bureau has identified Five Pillars for a Reimagined Food System, which are summarized in this article.

There are three key assumptions at the foundation of the analysis. First, the Bureau believes that consumer interest will be at heart of the change. Consumers have spoken and they say they want to get involved with the food system, more now than ever.

Second, we believe the food system will shift to much more planet-friendly practices. Some would argue today that agriculture and food can become a poster child for sustainability. There are many opportunities in this area.

Third, the food system will become more connected. The food system, of course, is already connected today, but in the future, its connectivity will be less liner and more networked, more ecosystemic.

> *Given current trends, the food value chain will potentially reverse direction, with consumers driving the conversations and change.*

The Bureau has constructed the “Ecosystem of Tomorrow” as a construct for a new food system. The Ecosystem of Tomorrow will include many innovations, such as self-driving tractors, tractors that may be driven from somewhere else in the country or, perhaps, somewhere else in the world. The Ecosystem also includes alternative energy on farms, such as windmills, turbines and solar panels powering the farm and, potentially, moving energy off the farm into the broader grid system.

The Ecosystem includes robotics and automation on farms. Farming today faces a labor challenge, which is nothing new. During the pandemic, many industries faced labor challenges, but the issue is acute in the agriculture and food space. There are not enough people to harvest and there are not

enough people to plant. So, automation and robotics will become necessary, both in animal agriculture and plant agriculture.

While rural areas experience labor shortages, urban populations are soaring, with projected urbanization rates possibly reaching 60% of the world's total population.Ironically, as more people are moving into the cities, they want their food grown locally. The people moving from rural communities into cities could be producing the local, fresh food wanted by the people in the city. This is one of the paradoxes leaders in the food sector face.

Controlled environment agriculture (such as indoor, vertical, rooftop, and greenhouses) is an innovation that can help address this paradox. These environments offer the opportunity to grow food in the city, next to the people who want it grown locally. Moving forward, we will see food growing in places we never thought of in the past.

Aquaculture will continue to be a major protein source. The feed conversion-rate in aquaculture is more efficient than most, if not all, protein sources. Innovative ways to raise aquaculture in terrestrial farms, versus pulling fish out of the seas and the oceans, are coming online and offering ways to expand this source of nutrition.

Food innovation will be focused at the convergence of health and food. Cannabis as a hemp alternative and as medicinal marijuana — when does that show up in a pharmacy next to aspirin and other pharmaceuticals?

What does grocery store of the future look like? What will restaurants look like in the future? Groceries and restaurants are where consumers interact most directly and personally with food outside the home. Because of the pandemic, shopping for food moved more online, with curbside pick-up or home delivery. People could not go inside the grocery stores. Faced with this challenge, Baby Boomers and Gen Xers, who were seen as less tech-savvy than Gen Zs and Millennials, adapted quickly to "click and collect" and liked it. These changes are now seen as a viable opportunity going forward.

The shift to "click and collect" or "deliver at home" moves several foods into a back room supply center or "dark store" from which these things are shipped. Traditionally, ninety-nine percent of consumer choices happen at the shelf in the grocery store. Shopping for food from these "dark stores" may affect the relationship between the big brands and the consumer.

At the same time, consumers will continue to want to pick out fruit, vegetables, meat, and dairy in person, in a "live store." The live

store of the future may have more services, such as a restaurant, pick-up meal kits, or ways to cook a meal inside the store and take it home. There are many opportunities for the live store. The emergence of a live store and a dark store format in the grocery will be a major disruptor over the next decade.

In the future, proximity will matter. Where food is grown, where it is sourced and where it is sold will matter. Consumers want local and fresh. They also want to see who and where it came from, as well as learn more about their food and its cycle.

Restaurants will follow suit. Restaurants will continue to want to source locally and provide more transparency in the food they are putting in front of their customers. "Ghost kitchens" are not a fad; ghost kitchens will be a major player in the future, creating major disruption, particularly in quick serve restaurants.

Looking at the Bureau map ten years ago and looking at it ten years from now, the big axes look the same, but the moving parts are changed dramatically, which is exciting.

There are many opportunities for leaders across the food system, both traditional and nontraditional contributors, to respond to these changes.

The Five Pillars for a Reimagined Food System we identified are:

1. **Trusted Food** built through transparency, sustainability, traceability, food safety, and food accessibility
2. **Connected System** not only with technology but connected supply chains, bringing small farmers into the conversation to bring food directly to consumers
3. **Innovation-led Experience** for both consumers and customers and all employees across the value chain
4. **Reimagined Growth** that differs from the traditional mode of incentivizing producers to produce as much as possible and then figure out what to do with it. Today there is an opportunity to rethink where growth comes from and determine what markets to serve
5. **Efficient Operations** must stay at the forefront, serving all stakeholders from a long-term value standpoint, and shareholders specifically

The food system is facing dramatic changes, and it is changing quickly. Those who move quickly and adapt can seize the opportunities that are in front of them. In the midst of this rapid change, you're either at the table, or you're on the table.

The big question is, how will you adapt your role to eliminate hunger and meet the changing demands of consumer-led food innovation?

Reimagining a World of Human and Environmental Health

Bob Martineau, Senior Partner, FINN Partners

As the ongoing pandemic has taught us, U.S. public health issues are pervasive. An airborne illness has fundamentally disrupted life as we know it. Identification of the Omicron variant proves COVID will be with us for the foreseeable future. Its impacts are affecting not only our health, but all sectors of our lives. We were warned of such a pandemic for years, yet we failed to act to limit its impact. However, once the coronavirus was upon us and wreaking havoc, we finally brought to bear the power of human ingenuity to confront it. Cause and effect have been real and demonstrable. We are adjusting and adapting. Today, pharma giants are reassuring the world that should Omicron prove resistant to the existing vaccines, new ones can be developed within months. Governments are coordinating to mitigate the spread in the meantime.

If we can come this far against a pandemic in less than two years, surely we can do the same to address the environmental degradation that also threatens the health and life of every person and every community on this planet. But we must apply the same human ingenuity in a systematic way, even as we adjust and adapt now, before it's too late to save ourselves from ourselves.

Environmental health and human health are inextricably linked. Yet for too long we have talked about them as two entirely different disciplines and lived as if they were two separate worlds. This is a shortsighted

Environmental health and human health are inextricably linked. Yet for too long we have talked about them as two entirely different disciplines and lived as if they were two separate worlds.

mistake. Indeed, according to the World Health Organization, we know that contaminated water causes hundreds of thousands of deaths and diseases, such as cholera and dysentery. But we aren't providing clean water service to a fifth of healthcare facilities in least developed countries.

Similarly, we know that 4.2 million deaths worldwide are due to health issues associated with particulate matter emissions. Yet only 7% of children worldwide breathe air that is considered not contaminated. All told, 24% of estimated global dust are linked to the environment. That's 26 deaths every minute of every day, 365 days a year.

And of course, climate change has its profound impacts from increased flooding, drought, sea level rise, and extreme weather events that destroy lives on a daily basis.

Environmental factors and their impact on public health are also a huge social justice issue. Health impacts from mental factors disproportionately impact lower socio-economic communities and poorer countries.

But the answer does not lie simply in treating the consequences of poor environmental health. We must be at the forefront of addressing and mitigating environmental issues that impact public health, from climate change to hazardous air contaminants to contaminated water sources and more. Preventive healthcare must incorporate preventive environmental care.

How can the business community, in general, and the healthcare community, in particular, help move the needle towards improving environment and public health, or, as I refer to it, eco health?

There are ideas to consider.

As a threshold matter, those in the healthcare community must join with the environmental community and recognize their commonality of purpose: improved life through health and stability. Continuing to treat is not a long-term solution. We must attack the causes of so many health issues, and those are environmental impacts. For example, less than 10% of all cancers are due to genetics. Over 90% can be attributed to environment and lifestyle factors.

The healthcare sector must also model sustainable best practices in its own operations. It uses vast amounts of energy and water and generates massive amounts of waste.

We must also communicate in a way with the public that entices people not only to pay attention but to act. This is not as easy as it sounds. The low vaccination rates in many parts of the United States defied logic when the benefits of the vaccine were clear. Even as some people had family members die from the virus, they remained steadfast in their opposition to getting vaccinated themselves.

We live in an era when the public has a high level of distrust. Distrust in our government, distrust in the media, and distrust of anyone with a different political affiliation. We live in an anti-intellectual era, a sector of society distrusts science, especially if that science contradicts with their preconceived political or social views. And worse, we live in an era of rampant disinformation. Anyone with a Twitter handle or a blog can be an instant pundit and spew misinformation with little or no consequence. The average person therefore has a hard time deciphering fact from fiction.

How can we change behavior if no one knows for sure what the truth is? We can start there, realizing that the messenger is as often as important as the message.

While some of us will listen and follow scientific or political figures standing at a podium and urging us to act, many will not. Therefore, we must seek out messengers that are trusted by our target audiences.

COVID vaccines are a great example. In recent months, we've seen professional athletes, country music stars and pop stars speak out about COVID and the need to get vaccinated. These messengers are landing the message. They're having success increasing vaccination rates. We must apply this same approach to issues like climate change and other forces devastating our environment and our public health.

Beyond understanding the connection and how to better communicate, what actions can companies be taking to advance change? The World Economic Forum and others offer some specific suggestions.

First and foremost, reduce your own carbon emissions. A study in 2019 found that only 23% of the Fortune Global 500 had committed to be carbon neutral by 2030. That was a 400% increase since the signing of the Paris Agreement in 2015, and certainly more companies have made those commitments since then. But still, it's only a small fraction of major companies and does not include smaller businesses.

Second, companies can help reduce emissions upstream and downstream of

of business. Companies can leverage strengths as a buyer of goods to drive down emissions. Work with suppliers to reduce packaging, cluster deliveries and set procurement guidelines for those suppliers. Above all, set some specific and measurable goals, not vague general ones.

Today, more companies are rethinking their basic corporate vision and values, moving from a simple focus on maximizing profit to their shareholders to a broader vision of their role in the community, their impact and their purpose. Data have also increasingly shown that sustainable business operations equate to better long-term financial performance.

Lead from the front. Companies can inspire and motivate others to work towards a more sustainable planet that addresses climate change, rather than resist change by disputing the benefits of addressing environmental degradation. Work with partners in the NGO community, government and other businesses to foster collaboration and innovation to support addressing climate and other environmental factors. Encourage your employees, customers, suppliers to act in concert with you.

The threats we face and their consequences are real and monumental, but there is hope. Humanity is built to solve the problems it faces, especially the ones of our own making.

As a communicator who spent decades developing sound environmental policy at the state and federal levels in the United States, I believe our hope rests in understanding the inextricable links between environmental and human health. We must convey a sense of urgency, bolstered by a can-do attitude. People will act if they believe their actions will result in positive changes in their own lives.

As leaders, we can make the case that people’s families’ health will improve if climate and other environmental catastrophes are mitigated. We need to bring to bear the human ingenuity of our organizations and our institutions that represent the power to take action. And we need to take that action today.

We are the solution we seek. Let us work together to share ideas. And then let's get to work.

Climate, COVID, and Country Progress

Michael Green, CEO, Social Progress Imperative

There is a strong tendency to think of prosperity in terms of dollars and cents. But measuring prosperity in these narrow monetary terms omits much of the reality of how people prosper. The Social Progress Index enables us to think about prosperity in broader terms, to look at things that matter to real people, to account for the real lived experience of people, and measure those dimensions.

In this article, the most recent findings of the Social Progress Index will be used to look at the state of the world, the impacts of COVID, sustainability, as well as an in-depth look at social progress in the U.S.

The Social Progress Index integrates data from three primary areas critical for a prosperous society, namely, basic needs, capacity for wellbeing, and political culture.

1. Basic Needs: Does everyone in a society have the basic needs for survival — food, water, shelter, safety?
2. Wellbeing: Does everyone in a society have the foundations of wellbeing — education, information, health, and a good quality environment?
3. Political Culture: Does everyone in a society have rights, freedoms, inclusiveness, and access to advanced education?

These categories frame a comprehensive set of issues of non-economic measures of a society's performance. This matrix also maps onto the United Nations Sustainable Development Goals. So, the Social Progress Index is a good way to understand how societies are measuring up against the SDGs.

> *The good news: the world does seem to be improving the prosperity of its people.*

The Social Progress Index utilizes existing, secondary data and fifty-three different indicators drawn from trusted sources. By using existing public data, the Index can be used to measure and compare 168 countries in the world with a time series going back to 2011.

2022 Social Progress Index Findings

Starting with good news, the world does seem to be improving the prosperity of its people. Since 2011, the world, as represented by the composite measures of the Index, has improved by 4.63 points and the majority of countries have actually improved by at least one point. Four countries, however, have gone backwards in that time. So, prosperity is improving, but that progress is uneven.

At a more granular level, the Index tracks 12 different components of social progress. Some of the basic factors, like nutrition, basic medical care, and shelter, are where data show the most advances occurred. The data show that issues such as inclusiveness or environmental quality improved least. Social progress, hence, is unevenly distributed in terms of different issue areas within it.

Progress is also occurring at different rates. Since 2011, progress is more rapid for nutrition, basic medical care, water, sanitation, and shelter. There are also rapid gains for access to information and communications through mobile phones and the Internet. But the world is stagnating or going backwards in the areas of safety, inclusiveness and, most significantly of all, personal rights. In these key areas the world as a whole has gone back by nearly six points over the last ten years.

So, while the world as a whole has made measurable progress toward prosperity, the progress is uneven across different issue areas.

Comparing the Index scores of countries with the GDP per capita provides more insight. The best performing country in the world on social progress is Norway, perhaps to no surprise, and at the bottom of the ranking is Central African Republic. Norway is in fact much richer in terms of GDP than Central African Republic. The United States with a GDP per capita very close to Norway's has a social progress score significantly

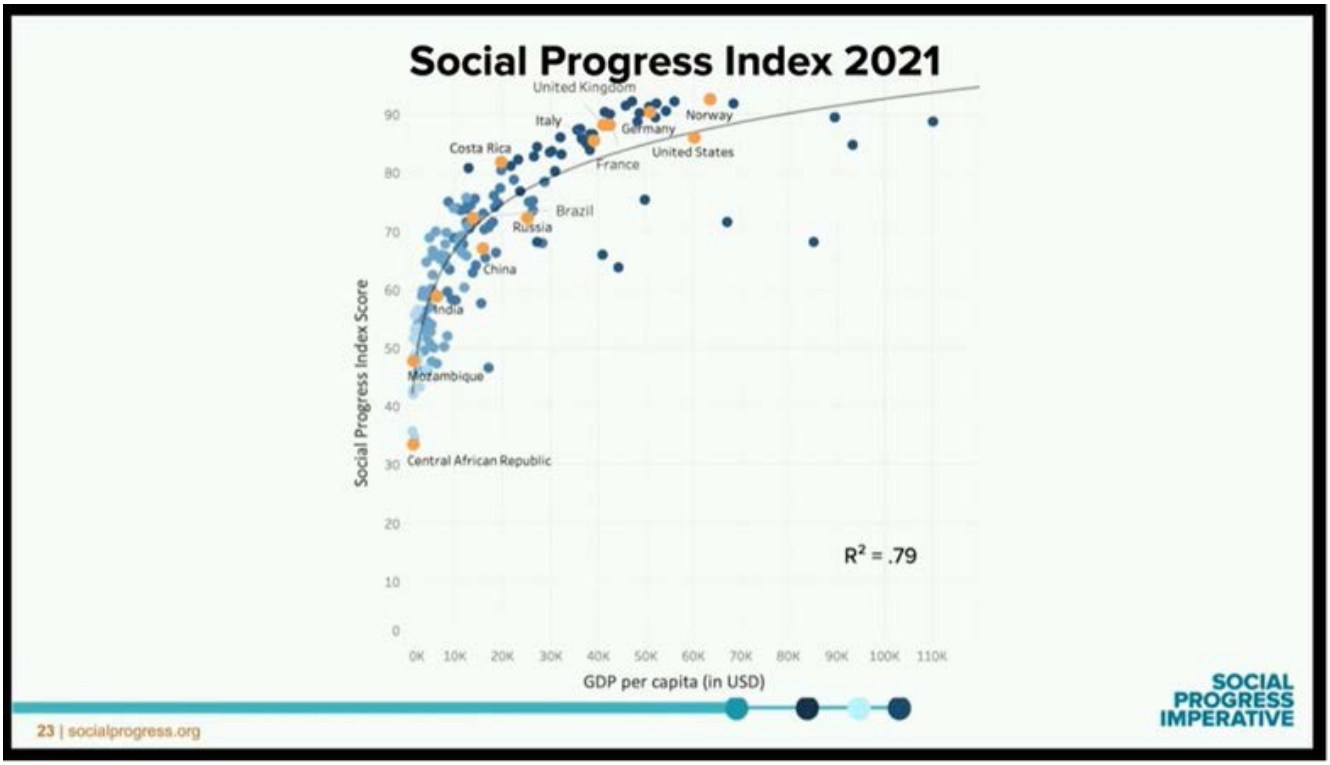
lower. Mozambique, with a GDP very similar to Central African Republic, has a much higher level of social progress.

As these divergences show, GDP does not explain social progress levels. While there is a positive relationship between GDP per capita and social progress, GDP is not the whole story.

Other countries with high social progress scores at the end of 2021 include the European G7 countries. In this group, Germany scores highest of the European major economies, with the UK and France very close (UK may be ahead by a small margin), and Italy is bit further behind. Among the emerging economies at the end of 2021, Brazil and Russia have a similar level of social progress despite Russia having a much higher level of GDP per capita.

China has a similar GDP to Brazil but social progress is significantly less. India has a lower level of GDP and social progress. The chart below maps the social progress of 168 nations.

Globally, the countries that are below the line on the graph below are underperforming on social progress. These countries are not turning their wealth into social progress. Those that are above the line are being more efficient in using their wealth to the benefit of the population. Costa Rica is of note because it has a level of social progress close to that of G7 countries like Italy and the United States, and a very modest level of GDP per capita. Costa Rica is being effective in turning its wealth into social progress. [Detailed scorecards for every country can be found at SocialProgress.org.]



Impacts of COVID on Prosperity

Currently, there are thematic issues facing that world that challenge prosperity. One of these is COVID. Obviously, the health impacts of COVID are going to take some time to work through. What we know is that COVID is a multi-dimensional crisis, with direct health impacts, impact to wellbeing from lockdowns, as well as impacts to economies.

Comparing data from the Social Progress scores with the Stringency Index (which measures the stringency of lockdowns in countries), it is clear that the strictest lockdowns tended to be in middle social progress countries in 2021. Emerging countries tended to lock down harder than the most advanced social progress countries.

This finding suggests that the countries with the highest social progress possess higher levels of resilience in their health systems, and also perhaps in other institutions.These higher levels of resilience allow these countries to avoid locking down as hard as emerging economies. This finding matters because it tells us that the highest social progress countries have avoided some of the wider and worst impacts of COVID lockdowns.

Prosperity and Sustainability

The COP26 conference conducted in November 2021 continued to bring global attention to the issue of climate change as the challenge of our age. Comparing social progress with greenhouse gas emissions (GHGs) per capita currently seems to reveal a positive correlation between social progress and greenhouse gas levels. GHG emissions tend to go up as measures of social progress increase. Does this finding suggest a need to make a choice between sustainability and social progress?

In-depth analysis of social progress data, reveals that with each level of development, some countries are more efficient than others in using greenhouse gases to produce their social progress. For example, Australia has much higher greenhouse gas emissions than Sweden. Sweden is doing better. At the second tier of social progress, Costa Rica is performing better than the United States; Jamaica is not very much better than Kuwait; Ghana is doing much better than Qatar.

What would happen if, at each level of development, every country were performing as well as the best peer performers. In that scenario the analysis showed that the world would achieve a sustainable level of greenhouse gas emissions.

Obviously, the scenario is hypothetical. But on this hypothesis, data suggests that the greenhouse gas emissions crisis, the climate crisis, is about design choices, not the goals of GDP growth and social progress per se. Progress is not the problem. The problem is the models of development that are selected. There are solutions to reach sustainable limits of greenhouse gases while also pursuing economic and social progress.

Social Progress Findings and the U.S.

Currently, the United States ranks 24th in the world on the Social Progress Index. The U.S. is also one of the four countries referenced earlier that went backward on social progress since 2011.

The data show that decreased measures of social progress in the US are the result of reductions in shelter, personal safety, access to basic knowledge, health and wellness, personal rights and inclusiveness. During the past decade, the U.S. has also under-performed in terms of turning its wealth into social progress.

The U.S. is a large, diverse nation. To understand the complexities of the U.S., the Index is compiling regional data to compliment the national scores.

In 2022, new data sets were released on social progress in each of the 50 states and the 500 largest U.S. cities. These new, more localized data sets drill down to the level of communities and census tracts. The local data will enable cities and states in the U.S. to understand the challenges faced by each individual community. Government policymakers, business leaders, and investors will be able to use the data in a wide variety of ways to build the sustainable prosperity needed today.

Food

FOOD

Trusted Food

Issue Facilitators
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Natia Mgeladze, Global Lead, IFC Food Safety Advisory, World Bank Group

Experts:
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SITUATION

The term “trusted food” describes the relationship between consumers and stakeholders in an ever-emerging and evolving food system. As the relationship accelerates at unprecedented speed, it’s important to foster transparency, as transparency is key in building consumer trust.

Transparency extends beyond the desire for food safety; consumers also want data on where food is sourced and the environmental, social and governance impacts of those food sources. Transparency within the international food chain is even more complex, especially when discussing small-scale suppliers, such as farmers in developing countries.

Part of building trusted food relationships involves building consumer relationships. Some companies, especially newer ones, such as alternative protein brands, are listening to consumers and responding to their feedback. Ultimately, establishing customer loyalty will lead to an improved trusted food relationship.

Issues have caused consumers to worry about the certainty and reliability of their food supplies.

QUESTIONS

1. What is the relationship between food and consumers?
2. How do food providers develop trust with consumers?
3. How does a reimagined food system address trust?
4. Do we need to revise existing food systems, or do we need to invest in modernizing the basic infrastructure, to provide the end-to-end integration that creates the needed visibility for stakeholders?

CHALLENGES

Consumers want absolute transparency regarding how their food impacts the planet, society and their health. The information needs to be accurately sourced, convenient and aligned with their nutritional profiles, and consumers want to be able to access that data easily. That's just one aspect of trusted food.

Recent bottlenecks and supply chain shortages, coupled with inflation, have not fostered trusted food. These issues have caused consumers to worry about the certainty and reliability of their food supplies.

However, consumers don't want to think about these factors, nor do they want to take the lead in getting the information — they simply want to see their food arrive when they want it. This reality puts the responsibility for gathering, coordinating and clearly communicating this information on governments, regulators, international organizations and companies. Even with infrastructures in place, blind spots still exist. There may be reliable information as a product enters the supply chain, but details can get lost as the product moves through distribution and logistics. End-to-end visibility does not currently exist, further threatening trusted food.

And, although many companies have robust safety management systems in place to foster trusted food, they encounter challenges when working with suppliers. On a multinational scale, where farmers may be in small villages, it can be difficult to receive sufficient, verifiable information. Though governments may have complex certifications and inspections in place, being able to communicate transparency and traceability across the value chain remains a challenge, especially when considering small producers.

OPPORTUNITIES

Improving digital infrastructure is essential for trusted food: It helps companies share information and create an ecosystem that results in better transparency. Sharing data and feeding consumers' desire for greater trust and visibility requires a connected and resilient infrastructure.

Investing in foundational technology is another opportunity. Basic digitization, where it doesn't already exist, is a key starting point. In some situations, this means moving from pen and paper to a digital format for better data handoff. From here, business model innovations and new growth opportunities will develop for large and international companies, including their local regulators.

Knowledge sharing, knowledge management and capacity building are also important to improve trusted food systems. At a global level, this means teaching and learning from farmers and putting a step-by-step approach into action with technical and practical tools. In some instances, international certifications may not be immediately possible, but the key is to start and progressively build as processes are established.

As previously mentioned, consumers increasingly demand information on food safety, sourcing and traceability, and food's impact on the planet, but few are willing to research it on their own. Even if companies provide this information on their websites, not every consumer will search online.

Data suggests that consumers receive most of their information at the point of sale. Therefore, food packaging offers an easily accessible opportunity to highlight information about the supply chain and how food is arriving to the consumer. Companies must take the necessary steps at every opportunity, from producer to retailer, to build transparency that leads to trusted food.

RECOMMENDATIONS FOR ACTION

1. Add more information on food safety, sourcing, and environmental impact to product packaging to foster trust with consumers who want this information.
2. Show product origins and traceability to build transparency.
3. Develop flexible systems to source, share and monitor food information so farmers with smaller operations are not left out.

The contents of this article are a summary of the Trusted Food discussion at the 2021 Global Action Summit. The views reflected in this article are the views of the author(s) and do not necessarily reflect the views of Ernst & Young LLP or other members of the global EY organization.

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Connected System

Issue Facilitators:
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Experts:
Paul Maass, CEO, Scoular
Christine Daugherty, Deputy Director, Business Development, Bill & Melinda Gates Foundation

SITUATION

The COVID-19 pandemic taught us an important lesson about how connected the US food system is. Pre-pandemic, Americans consumed 50% of their food away from home, according to the EY Future Consumer Index. Then, during the earliest months of the pandemic, 100% of food was consumed at home. Supply chains weren't set up to handle that large shift, and the food industry was tested beyond any hypothetical situations. But even with disruptions and other challenges, the industry kept people fed through a connected system.

The previous disconnect of food, health and prosperity programs is now shifting

from a linear value chain approach to a more interconnected, interactive ecosystem, with improved information flowing between producers, consumers and others. The pandemic reinforced how interconnected the food system is, while also highlighting challenges, such as disruptions to supply chains, climate change issues and how to provide information to consumers.

> *How can we use lessons learned from the pandemic to stay on the path to connected food systems?*

QUESTIONS

1. How can we examine our ecosystems, from forests, to grasslands, to oceans, to effectively address food needs and foster connected food systems?
2. How can we use technology to connect systems and different actors?
3. How can companies connect food systems without impeding food transparency and security?
4. What actions can companies take to improve already connected systems?

CHALLENGES

How can we use lessons learned from the pandemic to stay on the path to connected food systems? Technology and agility are two main keys to a successful, connected food system. It is important for producers to utilize technology, such as artificial intelligence, GPS, satellites and drones. Using these tools can help make farmers more efficient and also provide information that can be shared with customers and consumers. Investment and innovation in technology is needed to help farmers, who bear a significant amount of the expectations, meet a multitude of consumer demands, including transparency on where food comes from and the effect it has on the planet.

When making investments in connected systems, it's important to remember that access to technology differs among continents and regions. While some farmers may use GPS to run large-scale commercial operations, farmers with smaller businesses in developing countries may rely solely on text messaging. The challenges are to make tools that are applicable to the farmer and increase the professionalism of the farmer to confirm long-term viability in the profession.

Food systems also need to be agile to develop partnerships, innovation, new tools and more that are applicable to a specific region; however, even in the same region, soil types and crops can differ. Approaches should be developed with agility in mind: What works in one area may not work in another.

OPPORTUNITIES

When seeking new approaches, stakeholders don't have to work alone; collaborations can take a holistic view and drive modernization and efficiencies throughout the supply chain. Sharing information and resources, even among competitors, can result in innovation.

Moving to a truly connected food system is no easy task. It not only takes a lot of work but also provides opportunities to find tailored approaches that increase agility and transparency. A connected system can also allow food producers to rebalance the relationship between agriculture, ecosystems, climate issues, economic viability and transportation. Bringing together unique perspectives, resources and networks to bridge silos can help food and health programs meet the needs of stakeholders and consumers.

RECOMMENDATIONS FOR ACTION

1. Involve consumers in connected systems — they want to be knowledgeable about where their food comes from and any supply chain disruptions.
2. Address misinformation and disruptions head-on to keep consumers aware and trusting.
3. Make tools for connected systems agile so they are effective and helpful for large and small operations.
4. Collaborate with stakeholders, even competitors, to drive innovation, efficiencies and cost savings.

The contents of this article are a summary of the Connected System discussion at the 2021 Global Action Summit. The views reflected in this article are the views of the author(s) and do not necessarily reflect the views of Ernst & Young LLP or other members of the global EY organization.

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Innovation-led Experience

Issue Facilitators
Rob Trice, Founding Partner, Better Food Ventures and The Mixing Bowl
Eyal Shimoni, Chief Technology Officer and Vice President of Technology, Strauss Group

Experts:
Nanda Puthucode, Chief Investment Officer and Global Head of Ventures, Bunge
Walt Duflock, Vice President of Innovation, Western Growers

SITUATION

Labor, water and food safety have been the three big issues in agriculture for more than a generation. Of the three, labor is the issue that needs the most attention. Service labor in specialty crops throughout the world — fruits, nuts, vegetables — is the biggest line item for the industry, upwards of 20% to 40%. Harvest labor can be more than half of that total. Food safety is the next most important issue, followed by water.

When it comes to solving these challenges, agility, innovation and scale are needed. Typically, great effort is spent on discovering the problems and seeking solutions but less effort is spent on solving issues at scale.

Innovation in agrifood technical systems involves two parts: the role of the incubator and the role of the accelerator. The goal of incubation is to bring an idea to a scalable stage. The danger is falling in love with the technology at the incubation stage rather than falling in love with solving the problem. With incubation, you bring the industry in from day one, and interaction with industry is key. However, incubating has become an industry by itself, with some startups re-incubating their own business models multiple times.

Currently, there are many startups that fail to move beyond the incubation stage. In agitech, more than any other industry, a vertical accelerator is needed for a strong grower connection.

Now, more than ever, funding is flowing into this sector. Many companies spend a great deal of money to learn whether an idea or product has a market fit, but more capital is needed to bring the innovations to scale. Agriculture has that opportunity now, thanks to increased funding.

Regarding innovation, startups have the advantage over large, established companies. Startups and small companies are incentivized to take big risks and a rapid iteration approach to develop the needed innovation, while large companies usually lack the necessary internal environments to do so.

QUESTIONS

1. What are the catalysts to encourage new forms of innovation?
2. How does data play a role in innovation?
3. What are the roles of the incubator and the accelerator in agrifood technical systems?
4. How can existing platforms be used to process existing data so that new platform development isn't required?

> *Typically, great effort is spent on discovering the problems and seeking solutions but less effort is spent on solving issues at scale.*

CHALLENGES

Many challenges make innovation necessary yet out of reach to scale appropriately. While innovation is a critical component to success in agriculture, creating those innovation approaches can be a difficult task.

Many agricultural companies currently spend 80% of their effort solving problems rather than using that time to find scalable approaches. Flipping that ratio to 80% of effort on scaling approaches is necessary for innovation.

Growers can often secure investors for the beginning phases of a product, but there may be a gap between conducting product market research and learning whether the idea is worth pursuing. There are fragmented ideas that have the capital behind them but never make it to scale. The challenge here is to turn these ideas into innovative, scalable approaches. Collating all the available data is also a challenge when trying to innovate. When talking about data and agriculture, there is a chasm between the material world and the data. The need exists for basic rules of engagement protocols and understanding how to fit the data world into the existing material world.

When considering different practices on the farm, innovative models are being put into place to determine the various outcomes and impacts. But the big questions are: what does this mean in terms of economics, and what will the consumer be willing to pay?

Finally, there's the challenge to be more sustainable. But who will pay for farmers to be more climate aware? With carbon farming, as in every value chain, the cost gets passed to the consumer. There is a need to incentivize everybody in the value chain to be able to provide these different practices.

OPPORTUNITIES

Though big companies may lack the ability to successfully innovate at speed, these companies can participate in innovation by buying into the revolution to drive the evolution internally. Rather than owning the technology, large companies can become the first users of the technology by being the first customers.

In terms of opportunities in agrifood tech, it's important to crawl before walking and walk before running: digitize first, then manage the information, measure the data and enhance the process before automating the operation.

Rethinking the innovation model may also improve outcomes. For example, with specialty crops, many startups never get to the finish line because of the massive amounts of capital and time needed. One recommendation is for the industry to follow an 80/10 model to use a common modular architecture and open-source technology stack, with 80% of the roadmap for these technology startups utilizing off-the-shelf robotics.

RECOMMENDATIONS FOR ACTION

1. When innovating, don't get stuck in the incubation stage; keep the solution front of mind and work toward it.
2. Use funding to scale innovations rather than spending funds and time testing the market before scaling.
3. If your large company can't rapidly innovate or afford to take big risks, look to startups and become the first users of their technology.
4. Walk before you run: start with digitizing your operations before looking to automation.
5. Use data properly to address food safety concerns and recalls.

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Reimagined Growth

Issue Facilitators:
Andrew Selck, Partner, Advisory Services, Agribusiness, Ernst & Young LLP
A.G. Kawamura, Former Secretary, California Department of Food and Agriculture

Experts:
Arama Kukutai, CEO, Plenty; Co-founder and Partner, Finistere Ventures
Marc Oshima, Chief Marketing Officer and Co-founder, AeroFarms

SITUATION

This may be the most exciting time to be in farming and the food space. The incoming investments are unprecedented — $22 billion was invested in agrifood in 2020 — and changes are happening throughout the global grocery, retail food service, and quick-service restaurant chains.

There is also the changing nature of the consumer: one who has embraced the idea of a better product, with better flavor. An agricultural renaissance is here.

The COVID-19 pandemic created a world that is now very familiar with food delivery and online food services. The changes led

the industry to reflect on our food system and provided an opportunity to redirect a new path forward. It's a great time for disruption in this space, offering opportunities for both entrepreneurs and investors to reimagine how growth is achieved and where value is created.

One specific area where we need this disruption is nutrition insecurity, another way to say "hunger." We need innovations and approaches to feed a growing global population, which requires evaluation of business models.

QUESTIONS

1. Where is more capital investment needed?
2. In the next three to five years, what area of funding may become more prominent, or what new line of funding may emerge?
3. How does business model innovation drive growth?
4. What role does public policy play in future approaches?
5. How do we make sure those who are most in need have access to the best and freshest food rather than end-of-shelf-life or expired foods?

CHALLENGES

Feeding the planet is an enormous challenge. Unlike some industries that may not address a fundamental need, everyone must eat. Ending world hunger or increasing nutrient-rich diets significantly by 2030 won't happen solely with new technology — we need a wide range of approaches and new thinking about how businesses can create value.

> *The capital available to support emerging technologies is unprecedented and can drive new thinking.*

Around the globe, consumers are changing, wanting new flavors, new tastes, new food experiences and more product choices, while also being concerned about food safety and transparency regarding their food sources.

OPPORTUNITIES

A large opportunity exists for innovative collaborations. Sharing investment learning and research with the broader agricultural community across regions and countries is an ideal way to determine how to scale and accelerate innovations.

A new ecosystem is evolving — one that hasn't existed in the food network before —

with technology-powered food and production supply chain systems. The capital available to support emerging technologies is unprecedented and can drive new thinking.

Community farms give those facing hunger and living in food deserts more access to healthier foods. For example, the Healthy Cities and Communities initiative by the World Economic Forum is a public-private partnership to promote improved nutrition for people living in urban areas. The food is grown locally and distributed for free. These pilot programs in Austin, Texas; Jersey City, New Jersey; and Mumbai, India, are positively impacting their communities and reimagining how and where food is grown.

For consumers embracing the idea of better products, producers must remain transparent. Producers can build consumer trust by clearly communicating their mission and values, and developing a common language to bridge the gap. Investment within the middle of the value chain can support better communication between producers and consumers, creating improved end-to-end visibility and for companies, new growth opportunities.

Consumers say they will pay more for a premium “local” product. With the preference for local food over organic food, producers are offering products that are comparable to organic but with better specifications, often by using no pesticides and 95% less water. If companies think about how to reimagine their growth as the food system is changing, the opportunity to deliver a better product with greater productivity exists with the “locally grown” market.

Because of the COVID-19 pandemic and the restrictions that followed, the term “locally grown” has required a new definition: one that promotes self-sufficiency in a region due to the food, energy and water in that region. Locally grown has become a new way to talk about resiliency, a trend that may be part of the future, region by region, and country by country.

RECOMMENDATIONS FOR ACTION

1. Reimagine how healthier foods can be made available to all through innovation, such as community farms or controlled environmental farming in areas of food deserts or regions experiencing hunger.
2. Evaluate how your company can grow by focusing on the “locally grown” market, where consumers are willing to pay a premium for local foods.
3. Consider where investments in the supply chain will drive the greatest impacts for your company and the industry while addressing consumer needs and wants.

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Efficient Enterprise

Moderators:
Nathan Ramsey, Partner, Agribusiness Leader, EY-Parthenon, Ernst & Young LLP
Michael R. Dimock, President, Roots of Change, Public Health Institute

Panelist:
Ruth Kimmelshue, Corporate Senior Vice President, Business Operations and Supply Chain, Sustainability, Cargill

SITUATION

Efficiency is really about standardization at scale to achieve stable profits. In a globally intertwined economy, people and industries experience many unstable situations affecting the world over, but agriculture has always operated with instability, such as weather variations.

Two myths need to be addressed. One is that a farmer can't be profitable and sustainable. The second is that sustainable food is only for those who can afford it. However, it's important to understand that sustainable food is a global necessity and can be profitable.

Finally, consumers are asking for more fresh food, shorter supply chains (locally produced food) and information about who produces their food. With a growing number of consumers demanding more personalization, the system will move from macro-selection to micro-selection.

Rapid change across the food system is evident, and efficient enterprises are best positioned to capitalize on profit pool shifts and asset reconfigurations. As expectations are added to the food system to deliver on sustainability goals, address changing and diversifying consumer expectations, and accommodate new product and production technologies, that definition of efficiency may need to take on additional dimensions.

QUESTIONS

1. How do we take the lessons learned about global massive scale and apply it to local operations?
2. How do we balance the need for a system built on scale with a localization effort that may require added costs?
3. How do we bring more people with different perspectives and different voices to the table to address challenges?
4. With pressures from external factors, such as the market, and natural forces at play, how can farmers become less vulnerable in the system?

With a growing number of consumers demanding more personalization, the system will move from macro-selection to micro-selection.

CHALLENGES

Historically, efficiency in agriculture has been built on scale. The industry has long global supply chains and massive facilities. Consumers are becoming more fragmented and want to know more about where their food comes from. The challenge is listening to what customers want and building the necessary agility into the system.

The future is more consumer led than producer driven. To be resilient and adaptable going forward, producers will need to figure out what it means for their enterprises when consumers want shorter supply chains and local products. Perhaps operating at scale is different when a consumer is asking for more personalization. Consumers may realize that there are cost increases for localization, and the challenge will be on producers to balance efficiencies of scale and higher localization costs.

Agriculture is one of the only industries that can regenerate itself. Agriculture can take carbon out of the atmosphere and sequester the carbon in soil in a way that's beneficial to farm productivity. One of the challenges is creating a market for that carbon and working with farmers to create new profit pools so they want to engage and are rewarded for doing things that are good for productivity, the planet and consumers. Organizations will want to rethink capital investments to balance the need for agility and cost efficiency. Efficient enterprises will have the ability to quickly pivot to new profit pools as they emerge.

Food security needs to be prioritized. The pandemic highlighted where food security sits on the national security agenda for most countries. Countries that produce an abundance may choose to reserve some of the excess for their own population, in the event of a security crisis. Countries with high import rates might add resources to become more self-sufficient, employ greater innovative thinking to produce food and better use natural resources.

A food system should not be created where food that is perceived to be good is pitted against food that is perceived to be bad. The industry is accountable, ethically and morally, to produce acceptable food so that all people can eat and their nutritional needs are met. While food security has historically served as a measurement for efficiency, in a reimagined food system, this needs to be evaluated as new requirements around sustainability goals and diverse consumer needs have to be weighed.

OPPORTUNITIES

The pandemic put a spotlight on the global food and agricultural system and demonstrated its resilience and ability to react efficiently. At the core, food systems are built on efficiency. As long as the market is allowed to work effectively, that efficiency will continue to be delivered based on stakeholder and consumer needs.

Farmers are the original environmentalists, protecting land and natural resources to produce food. Leveraging what they have learned over many years, farmers can share that knowledge with people who care where their food comes from and how their food is produced.

Learning to be responsive to the signals of instability, considering which ones to pay attention to and which ones to address, is key in responding effectively to operational challenges. Farmers, at their core, are responsive because they are constantly responding to weather changes, market changes, supply and demand changes, and situations that are completely out of their control.

It's critical to listen to what customers are asking for and then build agility into the food system. The pandemic showed how agile the agriculture industry can be. Early on, when food service all but shut down, the industry adapted to find alternate supply chains to provide ingredients to retail customers, meeting consumer demands effectively. It is this type of agility that needs to be balanced with efficiency for long-term success.

Technology continues to improve how agriculture operates with new and emerging applications. One such technological innovation is vertical farming — growing crops in vertically stacked layers — which produces enough sustainably grown food to feed growing populations without straining natural resources. Growing these foods, such as lettuce and other produce, in the middle of a city in a vertical farm may be one of the most effective, efficient and sustainable new ways to produce food in an urban marketplace. Rethinking where investments are made can create new value across the industry.

RECOMMENDATIONS FOR ACTION

1. Expect instability (e.g., severe weather, supply chain gaps) and evaluate where to invest to build flexible, sustainable enterprises.
2. Evaluate capital investments to weigh true costs and benefits both now and in the future, considering how industry investments are shifting.

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LONGEVITY
Health
EXERCISE
Wellness roa
NUTRITION
REST
ITIVE THINKING

Reimagining a World for Human and Environmental Health for Sustainable Wellbeing

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Experts:
Bob Martineau, Senior Partner, FINN Partner
James E.K. Hildreth, President and CEO, Meharry Medical College
Rachel Hodgdon, CEO, International Well Building Institute

SITUATION

We are in a red code moment. According to a World Health Organization report, an estimated 250,000 people annually will die prematurely from climate-sensitive diseases, such as malnutrition, malaria and diarrhea, from 2030 to 2050. Without rapid, sustained change, this will only worsen. This report confirms that climate change is the biggest global health threat of the 21st century.

While everyone is affected by climate change, some communities are impacted more significantly than others. There is a direct correlation between public health and the community and socio economic impacts. It's the lower income neighborhoods that are next to factories and landfills and have contaminated water supplies.

The realities of the interconnectivity of public health and socio-economics also involves bias and racism. Inequities will continue to persist until all lives are valued the same.

Our culture is fraught with distrust and division. Recognizing that humanity exists on this planet together and accepting facts from trusted messengers is necessary. However, people accepting that climate change is real doesn't always mean those people change their choices. Focusing on solutions that help families and communities thrive may translate into a universal action that cause all to act.

Our culture is fraught with distrust and division. Recognizing that humanity exists on this planet together and accepting facts from trusted messengers is necessary.

QUESTIONS

- How do we get out of our own way to do what needs to be done to start making a difference?
- How do we address disparate impacts in our communities? How do we reach those communities with the least who are suffering the most?
- How can messages be framed to reach the public?
- Who are the trusted messengers to deliver the important messages?

CHALLENGES

One of the challenges with climate change is that it the topic has seemed so massive and so remote that individuals cannot make a difference. Also, people often believe working on climate change is the work of elected and appointed officials or large corporations.

It's time to model best practices and move both toward sustainability and advancing improvements in public health and the public environment. For example, the healthcare industry occupies 5% of commercial space but consumes about 20% of energy. Health systems are the fifth largest contributor to greenhouse gases. These imbalances can be corrected with creativity and science.

The COVID-19 pandemic offered the world a view of the impact and consequences of an airborne disease. After being exposed, a person was sick within a few days. For

many public health and environmental health issues, however, the latency period is long term. It takes years for asthma or respiratory issues to develop. Often, people feel they cannot make a difference individually. But as COVID showed, individuals can mitigate impacts with individual behaviors, such as wearing masks and being vaccinated with a goal to reach herd immunity. Hence, one of the lessons from COVID is that individual choices and actions matter, which underscores the need for everyone to do what they can.

OPPORTUNITIES

A 19th century mystic said, “If you can break it, you can fix it.” Human ingenuity, science, engineering and creativity offer ways to fix the problems we have created.

Decades of negative messaging, particularly around issues of climate, can be debilitating and paralyzing. It’s time to shift these messages to positive messages of abundance, as well as help everyone understand how they are impacted personally.

Giving people actionable ways to take first steps, a roadmap of choices that can be made in their own lives, can help move the needle in a positive way. Choices must move from small steps, such as using a reusable grocery bag and reusable water bottles, to large-impact choices.

Three areas where individual choices can make a difference include:

- A personal commitment to take a look at how much time we spend on planes. Travel more efficiently and more mindfully. Think about alternative forms of transportation other than airplanes.
- Get a copy of Paul Hawken’s book, *Regeneration: Ending the Climate Crisis in One Generation* to learn more about reframing solutions for the climate crisis.
- Become educated about that companies with which you are aligned and in which you invest to learn if they have a plan around Environmental, Social and Governance (ESG) factors. Start to make these demands.

Remind people that leadership matters. Elect leaders who will make good decisions for our planet and our relationship to it. There are critical public health needs that connect to the environment, such as access to walkways and healthy foods. Health comes in

part from being able to breathe clean air and eating healthy foods.

Find trusted messengers to deliver the information. When the messenger comes from the same culture, background and community as the population, messages are much better received. Then pivot the messaging to tap into the desire each person, their families and their communities to have the ability to thrive. It's time for a call to action for everyone.

RECOMMENDATIONS FOR ACTION

1. Increase research and understanding of how to inspire individuals, families and communities to take sustainable actions.
2. When disseminating data, intentionally select trusted messengers to deliver information to a population segment to maximize impact.
3. Increase dialogue between elected officials and communities to keep critical public health needs that are connected to the environment as a continued part of conversations that may lead to solutions.
4. Across industries, model best practices to move from sustainability to advancing improvements in public health and the public environment.

Vaccinations: What Did We Learn?

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Experts:
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Priti Krishtel, Co-Founder, I-MAK
Paul O'Brien, Executive Director, Amnesty USA

SITUATION

With the COVID-19 pandemic, the science and health communities came together in a rush to produce, and then, distribute vaccines to curb the pandemic. With vaccines in hand, leading scientists and public health officials cautioned the same thing: no one is safe until everyone is safe. The WHO set a goal to have 40% of people in every country vaccinated by the end of 2021. COVAX was developed to achieve fair and equitable vaccine access across the world.

Three years later, for a large part of the world, we find a collective failure to vaccinate as many people as quickly as possible.

What happened is that many high-income countries entered into direct contracts with pharmaceutical companies and bypassed COVAX. With the pharmaceutical companies prioritizing selling directly to rich countries for higher prices rather than providing what they had promised to COVAX, vaccine availability became unpredictable and supply was drastically reduced. Every time a target was set to deliver to low-income countries, only a fraction of those vaccines was delivered.

The death toll from COVID-19 has been staggering. By official counts, more than 5 million people around the world have died, with an alarming number of people in the United States, especially. However, there is a misconception about the number of people who have died globally, as the estimated true death toll is significantly higher.

In the same way, there is vaccine inequity, there is also diagnostic inequity. In Africa, for example, only about one in 20 people have received a COVID-19 test. That statistics indicate that many people may be dying at home without the diagnostics. New data indicates the net total of deaths in Africa from COVID-19 may be at least five times higher than the official figure.

The COVID-19 pandemic is a health crisis that lands in different contexts in disproportionate ways. As happened in the U.S. with polio when it was announced that polio was over, polio persisted in low income communities for another decade. We see those disparities happening now with COVID.

QUESTIONS

1. What is the accountability process in place for pharmaceutical companies that have made and then broken promises?
2. How can basic market structures be changed or regulated so that companies are unable to profit at the cost of health?
3. What have we learned from past pandemics (i.e., polio) that can be applied to the way the COVID-19 pandemic is handled?
4. If a charity-based model to provide vaccines globally doesn't work, how do we reimagine a system that will work to distribute vaccines globally?
5. How can capital groups be incentivized to invest in new systems to provide vaccine equity?

CHALLENGES

Helping people understand that another way is possible to address vaccine distribution and inequities continues to be a challenge. Scaling up manufacturing is what is standing in the way of everyone having the vaccine. But because of the monopolies that exist, because of the market incentives that exist, that isn't happening. Companies like Pfizer and Moderna, who are incentivized

to sell to the highest bidder, are going to make $53 billion in 2021. Countries that are considered less lucrative markets are not receiving the vaccine, nor are they getting access to the knowledge they need to start manufacturing the vaccine. When most of humanity isn't getting the vaccine, when the pandemic isn't actually ending, it is clear that profits have been prioritized over the health of humanity.

Every day that as many people as possible aren't vaccinated leads to the likelihood of new and dangerous variants, which is what scientists and infectious disease specialist warned, and which is evidenced by the Omicron variant.

Data say that charity-based models do not work for global pandemics. Pledges have been made simply to keep the voting public happy. But Africa gets left behind and is last in line. Leaders knew from the beginning that COVAX would be inadequate and not work.

OPPORTUNITIES

There are solutions. Manufacturing can be scaled up by waiving monopolies and sharing the knowledge. Companies that are structured to generate profits from shareholders must be courageous and reimagine a system that will license to low- and middle-income country manufacturers. Putting people first is necessary to break down a market that is dominated by profits.

Encourage the public to use its voice to mobilize and demand vaccine equity. It's time for the world to stand up and say, "Enough is enough."

In addition to vaccine inequities, the hesitancy to get vaccinated continues. Understanding the objections and then addressing and educating the public is needed. Learn about hesitancies and then educate.

The hope is that a combination of people working together in alliance, whether corporations, governments, civil society organizations, charities or faith-based organizations, can reach the goal to vaccinate a majority of the world and ensure everyone everywhere has access to COVID vaccines as soon as possible.

RECOMMENDATIONS FOR ACTION

1. Demand accountability among pharmaceutical companies regarding contract obligations and promises.
2. Continue efforts to encourage the public to use its voice to insist on vaccine equity.
3. Increase efforts to understand and address hesitancies among the unvaccinated.
4. Improve diagnostics to obtain accurate data regarding the number of infections and deaths, particularly on the continent of Africa and in other underserved parts of the world.

Putting Women's Health at the Core of Sustainable Development

Issue Facilitator:
Susan Harvey, Vice President of Global Medical Affairs, Hologic

Experts:
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SITUATION

Females, who make up 49.6% of the world population, are the cornerstones of families, communities and economics. Because of the important role women play in taking care of communities around the world, as well as being mothers of the future, assessing and understanding women's health is critical.

In 2020, the Hologic Global Women's Health Index, in partnership with the Gallup World Poll, collected data from 120,000 people in 116 countries who speak more than 40 languages. The survey sample represents the 3.9 billion women in the world and is the largest study of its kind on women's health, with data measuring attitudes, opinions and behaviors from

lived experiences of females older than 15. Five dimensions of health were measured: preventive care, basic needs, opinions of health and safety, individual health and emotional health. The data indicates there is much work to do globally regarding women's health in these areas.

Although the study did encounter some pandemic-related obstacles because of the lack of face-to-face interviews and lack of technology in some African and South American countries, specifically, the Women's Health Index is the fartherest-reaching survey instrument that exists.

> *1.5 billion women globally (the size of China's population) were not tested for any of the four most critical diseases in the prior 12 months.*

It presents a baseline to offer opportunities for comparisons and more in-depth studies going forward. The survey questions were based on information from public health experts, global health experts and academics, and the Sustainable Development Goals, particularly number 3, good health and well-being.

QUESTIONS

- What is the role of social determinants, such as economy or environment, as it applies to the index?
- How can stakeholders work together to improve women's health?
- How can the Hologic Index data be used to bring awareness and begin effecting change?
- What steps can policymakers take to move the needle forward on each of these five dimensions?

CHALLENGES

The data revealed three top insights:

1. The need exists to Identify deadly diseases early enough to impact health and lives positively.
2. Women don't feel safe. 1.7 billion women said domestic violence is a problem in the areas where they live.
3. Education for women remains a priority. Women need to stay in school so they are not dependent on men, communities or government for food and shelter.
4. Respondents also revealed that preventive care and emotional health are top needs. The survey data found 1.5 billion women globally (the size of China's population) were not tested for any of the four most critical diseases in the prior 12 months.

Twelve percent of women were not tested for any kind of cancer in the prior year and few women were tested for diabetes, which is the fastest growing deadly disease.

Emotional health is at its worst in 15 years, with women experiencing a general lack of control during the pandemic combined with feelings of worry, sadness, stress and anger.

OPPORTUNITIES

The database is a platform to share the data and serve as a roadmap for stakeholders to look at the priorities and better understand what resources are available to impact each of the five dimensions.

The data provide a good starting point. When looking at the five dimensions of health — preventative care, basic needs, opinions of health and safety, individual health, and emotional health — deciding to address and allocate resources to only one dimension will effect positive outcomes in women's lives. Consider what it would mean if an action added one extra year of life to every woman in the world. That's 3.9 billion years of life added.

Focusing on girls, who are the wave of the future, is imperative to improving women's health. One key finding of the report noted that a women's age at their first pregnancy, along with the pregnancy care available to her, has the most significant impact on both the mother and the child. For example, early pregnancies in adolescence can have long-lasting negative effects on women and girls. The Index found that women who first become pregnant at younger than 19 score worse in all five dimensions compared with women who first become pregnant at an older age.

Policymakers and governments must be in conversation and collaborate to drive the change to bring about better, safer and longer lives for women.

RECOMMENDATIONS FOR ACTION

1. Increase collaboration between governments and policymakers to enact legislation and programming to positively impact women's health and lives.
2. Continue efforts to ensure equitable education for girls across the world.
3. Increase partnerships among healthcare systems, governments and advocacy groups to address the five dimensions of health and develop action steps to effect change.
4. Develop resources to identify deadly diseases earlier for women in an effort to positively impact outcomes.

Creating a Global Health Workforce to Improve Health Equity: Design for a Global Medical University

Issue Facilitator:
Joxel Garcia, Chief Medical Officer, Ambient, Admiral (ret.) USPHS, 14th US Assistant Secretary for Health, former US representative to WHO, former Deputy Director, PAHO/Regional Office of the Western Hemisphere

Experts:
Julio Frenk, President, University of Miami
Stephen Shaya, Managing Director, Akkad Holdings

SITUATION

Universal healthcare is a fundamental right, not a privilege, regardless of a person's status in the world. Creating a global health workforce to improve health equity requires a strategic shift in how students are educated.

One example, the Global Health Studies program at the University of Miami, provides students with an interdisciplinary perspective for understanding the foundations of sustainable health systems around the world. The program provides both undergraduate and graduate students the opportunity to examine how global health outcomes relate to society, culture, and the environment. To meet the emerging challenges to human health and resilience, students learn how to adopt

evidence-based health policies, practices, and interventions, and how to translate them from international to community scales.

Medical education is at a juncture. Education was one of the fields that did not experience a technological revolution. However, with the pandemic, education was forced to embrace technology. This acceleration of change and creativity is transforming not only education, but also healthcare.

QUESTIONS

1. How can a healthcare workforce be created from within a nation?
2. How can educating a healthcare workforce be moved from a closed system to a dynamic real world experience?
3. How can technology be used to transform healthcare education?
4. How do we incentivize graduates with healthcare degrees to relocate to rural areas where healthcare is most needed?

CHALLENGES

There are places in the world without enough doctors, nurses and community health workers. Even where underserved areas have its citizens pursue healthcare careers, often the graduates go to cities, rather than go to the rural areas where they are most needed.

Healthcare education currently takes a competency-based approach and students learn in silos. A move to inter-professional education where students from two or more professions and learn from and with each other to enable collaboration, would improve health outcomes.

OPPORTUNITIES

A strategic shift in educating healthcare professionals requires changing the system to match the dynamics of what is happening in the workplace. Moving to and engaging students in an inter-professional model would improve health outcomes.

Global Healthcare Workforce Shortage

World Health Organization forecasts a shortfall
of 12.9 million healthcare workers globally by 2035

- The pandemic has only made things worse: We're heading toward a healthcare crisis.
- By 2030, the United States will need 370,000 newly qualified nurses.
  - The world will need another nine million.
  - ICN estimates 13 million nurses will be needed globally in the future.
- The 2020 report by Association of American Medical Colleges (AAMC) projects a US physician shortage between 54,100 and 139,000 by 2033.
  - Europe: 4.1 million healthcare professional shortfall in 2030.
  - (0.6 million physicians, 2.3 million nurses, and 1.3 million other healthcare professionals)

The prevailing model in medical school is a closed system, one that doesn't adequately prepare students. Changing that model to send post graduate medical students into the real world could result in a workforce better prepared for the realities of the workplace.

> *How do we incentivize graduates with healthcare degrees to relocate to rural areas where healthcare is most needed?*

With many people globally without adequate healthcare, leveraging innovation, leveraging the global connection to share resources and knowledge is crucial to move the world toward health equity.

Building a technology platform could provide care to people who have never had healthcare before. In areas without electricity, internet and a basic infrastructure, solar power and satellites could provide connectivity. Partnering with The Commonwealth Fund, for example, with an innovative business model could provide healthcare for a large population at a fraction of the cost of traditional healthcare.

Receiving basic healthcare, primary care, is a fundamental right that many throughout the world do not have. Telemedicine can be a solution. The healthcare industry, however, needs the support of governments to provide these opportunities. To have a globally connected healthcare system requires the political will to create the needed global partnerships.

A dynamic, global healthcare workforce is one educated not only in factual, foundational information and competencies of the profession, but also in leadership, with an understanding of institutional and systemic context.

A Global Medical Workforce Needs a Global Health Sciences University

WHY?

- Rapidly increase global medical workforce to ensure access
- Strengthen resiliency of global healthcare
- Leverage online learning and new technologies for a nimble, cost-effective, and scalable medical training
- Leverage existing platforms for universal medical certification/license wallets and passports that are portable across political boundaries

RECOMMENDATIONS FOR ACTION

1. Explore leveraging innovation and the global connection to share resources and knowledge to improve health equity.
2. Continue efforts to expose post graduate medical students to real world experiences to better prepare them for the workplace.
3. Increase dialogue between the healthcare industry and governments to create partnerships that provide telemedicine and other possibilities for a globally-connected healthcare system.
4. Encourage interprofessional education by eliminating learning silos in healthcare education.
5. Build a global medical university to create a global medical workforce for the future,

Solutions for a More Resilient Global Health for All: Major Findings, Initiatives, and Recommendations for Action

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SITUATION

Ensuring countries around the world are more resilient and prepared for global health challenges requires focusing on the underlying health status of the public. What starts as a health problem quickly becomes a social and economic problem. The pandemic has shone a bright light on systems that were already fragile. Because of the pandemic, essentially every sector has been impacted: education, mental health, politics, trade, travel.

To best understand public health, people need to be more science literate and to understand how the science affects their lives and what actions that they take. However, the general public is not good at digesting massive amounts of science and also can be impatient with the scientific

method. The scientific method means that you learn something and then something happens and you learn something else but that disqualifies what you had before. It is not for the faint of heart, because it is ever changing.

QUESTIONS

1. How can we better integrate industry, academia and individuals into global health?
2. How can all populations, including refugee populations, have access and equity to preventative care?
3. How can trust be restored for global health organizations that failed to provide global vaccine access?

CHALLENGES

Often, people have no idea what public health is until something goes wrong. With the pandemic, a study estimated that nearly two-thirds of COVID-19 hospitalizations in the U.S. could be attributed to additional health factors such, as obesity, diabetes, hypertension, and heart failure, all leading public health concerns.

The findings give insight into how underlying conditions contribute to hospitalizations during the pandemic while also highlighting the impact of major threats to public health.

Improving global health requires increased government support, which is insufficient in many countries. Necessary investments are needed for global health around the world to ensure protection, detection and response to global health emergencies.

OPPORTUNITIES

Improving the underlying health status of any population helps them deal, not only with existing challenges, but also makes them more resilient for future public health emergencies.

We need to bring people together who can contribute to the solution at hand.

> *To best understand public health, people need to be more science literate and to understand how the science affects their lives and what actions that they take.*

Strategically engage with governments, relevant institutions, the civil society and the global community to seize opportunities to work together. Bring non-traditional stakeholders to the table. Whether it's indigenous leaders, academia, private sector, it's time to change the approach that's been the norm.

Like-minded philanthropies are often nimble enough to pioneer programs and take risks that others can follow. When those kinds of programs are successful, then they can be scaled and supported by governments. Whatever strategies are developed must make sure that equity is driving the distribution and access.

Take the best ideas from all sides in a bipartisanship approach to promote health, security, and opportunity. Data sharing, advocacy and working collaboratively for transparency and global accountability are needed to build resiliency over time.

Responsible communications strategies that tell the stories, combining data with personal accounts, can inspire the actions needed to make the world a safer place.

RECOMMENDATIONS FOR ACTION

1. Increase conversations with government officials regarding increased funding for public health.
2. Establish partnerships between like-minded philanthropies to pioneer programs.
3. Improve processes for transparency and accountability regarding data sharing and advocacy.
4. Make data personal by combining stats with personal stories to impact action.

Prosperity

Restructuring Markets and Finances for Inclusive, Sustainable Growth through ESG

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Experts:
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SITUATION

The good news is that the demands of investors and of asset managers are aligning, as investors increasingly want assets with strong ESG performance and asset managers are building products with sustainability and solid returns in mind. Data report that 77% of Americans say they want their values reflected in their investments.

A disconnect can exist, however, between economic and social progress, but connecting them can improve investment performance. As managers refocus to take a broader view of risk, investors benefit from a more holistic view of returns.

While traditional investment management tended to look at historical patterns and historical precedents, the Social Progress Index offers a tool to evaluate factors that impact long term value and performance into the future.

QUESTIONS

1. How can social progress data be integrated into financial markets, including investors, to inform decisions?
2. What kind of data should investors use to make decisions?
3. How do issues like healthcare, education, and social issues become part of the budgeting process?
4. How can the information from indexes be used to guide corporate strategy?
5. How do you engage top leadership in these conversations to gain support?

CHALLENGES

Lack of standardized data is a challenge, as well as confusion about what and how to measure. These data challenges can deter efforts to integrate ESG and social metrics into investment assessments.

Integrating ESG into the capital budgeting process is also challenging.

Knowing how to incorporate investing in items such as education, clean water, getting people to work present other challenges.

OPPORTUNITIES

As ESG becomes a mainstream priority, establishing standardization in data and reports is crucial. The World Economic Forum's International Business Council (IBC) has provided a recommended set of 21 core metrics and 34 expanded metrics to assist in a consistent reporting system.

Likewise, any information the Social Progress Index can generate is a tool to help investors understand and give appropriate weight to various factors that matter to citizens.

For example, 26% of the Americans who have indicated they want their investments to reflect their values say that recent events have caused them to rank the importance of their investment decisions above other actions, such as purchasing, voting, or volunteering. Given the state of the economy and the realities of human suffering and environmental degradation, a growing number say they want their investments to address these broader issues.

More rigorous analysis and dialogue is needed to determine how to connect investment, business operations, and social issues, whether it's fair pay, access to healthcare and family leave, becoming more inclusive, engaging supply chains in a different way, or climate change. Despite the need for more work in this area, companies are increasingly including social progress issues in their core business decisions. Implemented thoughtfully and effectively, this trend can yield benefits for society, the environment, and long-term growth and returns for business and markets.

RECOMMENDATIONS FOR ACTION

1. Investors and fund managers should continue to demand alignment between returns and ESG impacts.
2. Increase use of the Social Progress Index to guide economic development choices.
3. Continue efforts to standardize data to help integrate ESG into business strategies.
4. Increase dialogue among key decision-makers and institutions that make up financial markets to promote understanding, fairness, inclusivity, and innovative approaches to investment.

Empowering Girls: Global Perspectives on Access and Equality

Issue Facilitator:
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Experts:
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Geoff Adlide, Senior Director of Advocacy & Communications, Global Partnership for Education

SITUATION

When it comes to access to education and equality for girls globally, important progress has been made. In 1970, only one in four children in the world attended primary school. Today, less than one in ten does not attend primary school, which is significant progress. Of those numbers, primary school education for girls is at a similar ratio, with nine out of ten girls completing primary education. However, inequity for girls persist.

When it comes to secondary school, only three in four girls complete their lower secondary education. It is still a girl who is less likely to finish school and less likely to learn.

Worldwide, about 60 million girls have no access to basic education. A number of the reasons for that include menstrual hygiene, with some 500 million girls and women lacking adequate facilities for menstrual hygiene management. Lack of resources and facilities to manage menstrual hygiene has a cyclical effect that results in absenteeism and lack of education. All of this affects the education and economic advancement for girls and their families, their communities, and (potentially) their countries.

The pandemic has had devastating effects on girls' education. While the full impact has yet to be seen, past experiences indicate that many of the young people who left school do not come back. These children typically are from the poorest families and at most likely to be girls. It's estimated that the pandemic has disrupted the education of 850 million girls worldwide.

There has been progress over the past decade regarding child marriages as rates of child marriage are going down. However, globally, one in five girls marry before the age of 18, with 12 million child marriages occurring annually. Child marriage is related to extreme poverty where girls are valued for their labor, sexuality, fertility. During the pandemic, child marriages increased as did teen pregnancies.

QUESTIONS

1. What systemic issues hinder girls' access to an education?
2. How can more opportunities be provided for girls to receive an education?
3. How has COVID impacted the work to empower and educate girls?
4. What has the pandemic and the forced closure of schools taught about innovation in educating all students?
5. How can governments and businesses partner to help change norms that negatively impact girls and their opportunities for education?

CHALLENGES

While more girls attend school, data show that learning is not improving, due to poor quality of instruction and lack of resources at home. So, while there's been significant global progress, the inequity has grown. The gender gap is closing, but far too slowly.

The distance to get to school continues to be a barrier. Too many girls must walk hours to get to a classroom. Traveling this distance on foot can be dangerous because of gender-based violence.

Frequently, personal privacy and hygiene are concerns as there are no separate toilets for boys and girls. Consequently, girls may stay home from school during menstruation.

After not attending school for a few days, it may be hard to go back, so there is a significant drop out rate.

During the pandemic, the lack of internet and lack of equity around digital education and devices for remote learning prevented many students from continuing with their education. The pandemic also resulted in a loss of family income in many homes, which meant that girls may be forced to work to support their families or, perhaps, take care of housework and younger siblings while other members went to work.

At the start of the pandemic, the Global Partnership for Education, working with 76 country partners, mobilized $500 million to provide distance education opportunities to keep some form of learning happening while schools were closed and also to prepare the schools to reopen. One of the challenges has been that the teacher workforce, which already struggles in poor countries to provide quality teacher education and training. When schools closed, some teachers found other employment. As a result, the quality of education in challenged areas will erode further.

Another challenge created by the pandemic is that economies are devastated, resulting in cuts in government budgets. These budget reductions often include education funding, a further barrier to girls having access to education.

OPPORTUNITIES

The pandemic has given an opportunity to think about how the most vulnerable youth can have access to learning. When schools closed, radio and newspapers became vehicles to relay educational information, providing space to innovate and test new options.

In Kenya, for example, when the students were sent home for nine months, family agreements were developed, with community leaders meeting with families. At this meeting, families received some necessities and were asked to sign an agreement that they would protect their families, particularly their daughters, during this unprecedented time and make sure they returned to school when schools reopened. The family agreements were successful. Because they saw that others were invested in their families' goals, many families kept their word.

Ensuring girls have access to school provides other benefits in addition to education. In a school setting, there are adults who are watching over the girls, people who will know if they suddenly stop coming to school because they have been married or for some other reason. These

people are invested in the girls' education but also are protective of them.

Too Young to Wed is providing girls with tools to become their own advocates, using communication skills like photography, journalism, storytelling to become local champions. In Kenya, for example, some girls have refused to marry or have run away from marriages, changing their futures. These girls have a chance to reclaim their lives and tell their stories. This type of education is about building confidence, wellness, and education.

The Girls Education Awareness Program, which recently launched, brings together the business community to use its marketing, communications, and advocacy assets to deliver messages aimed at keeping girls in school. The messages are delivered to community leaders and families with a goal to change norms and behaviors that impede girls' educations.

Through **Rotary International's Empowering Girls Initiative**, thousands of projects are being initiated by Rotary Clubs worldwide to support health, education, safety, well-being, and economic opportunities for girls. Many of these projects are conducted through the Rotary Foundation's global grant program, and many are implemented through local, community-based partners, NGOs, and nonprofits with specific technical and subject matter expertise — such as the Global Partnership for Education and Too Young to Wed. While much remains to be done, these initiatives can change the equity and economic trajectory for girls through collaborative and cooperation. Empowered girls become empowered women, and when enough women are empowered, they can change not only their lives and communities, but also influence change in the economy of an entire country.

RECOMMENDATIONS FOR ACTION

1. Address menstrual hygiene globally to improve girls' access to education.
2. Support current teachers by providing continuing education opportunities and focus on teacher recruitment with fair and equitable compensation.
3. Continue to innovate with family-led solutions, such as the Kenyan family agreements model.
4. Develop opportunities for partnerships between corporate and community leaders and families to seek solutions when girls' educational opportunities are at risk.

Unlocking Nature-smart Development

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SITUATION

Our ecosystems are experiencing a biodiversity crisis. Nature-based solutions can be used to harness natural systems, such as forests and soil, to address climate change and many of the issues that our world is facing. A nature-based solutions approach can contribute to the resiliency and productivity of the land, as well as protect communities against the impact of disasters. In short, we can work *with* nature to solve crises.

Because of urbanization and the need for environmental sustainability, foodscapes are growing in popularity. However,

climate change is negatively impacting foodscapes. For example, California is one of the most productive foodscapes, where 5 million acres of cultivation produces one quarter of the fruits, vegetables and tree crops consumed in the United States. This enormous productivity is in crisis, however, because of climate change. Farm workers, especially, are suffering from extreme heat, drought, or floods, or all three.

QUESTIONS

1. How can natural systems contribute to the productivity of the land, increase resilience, and be considered a nature-based solution to many of the current climate issues?
2. What role can indigenous people have when designing and implementing nature-based solutions?
3. How can education play a role in moving toward nature-based solutions?
4. How does climate change impact the ability to implement nature-based solutions?
5. How do we integrate policy and funding decisions to support nature-based solutions?

CHALLENGES

Many foodscape classes are experiencing not only one but two or more pressures from climate and water scarcity.

When looking at disasters and climate change, it may seem that communities, countries, and families face different drivers to risk that may seem disconnected, but they are actually intricately connected. Globally, the impacts of climate change and disasters are increasing, impacting more people in more areas with more severe outcomes. There is a strong link between disasters and poverty.

To implement nature-based solutions requires a range of interventions around governance and regulation, as well as incentives.

One of the challenges is technical. Systems are better at analyzing, designing and implementing traditional infrastructure than doing the same for a wetland system, for example.

Another challenge is the maintenance. Nature-based solutions tend to take more time to become effective. Once effective, these solutions need to be maintained carefully, with continual adaptation and management. A traditional infrastructure intervention may take up to three years to build, but a nature-based solution might take five to ten years to become effective with consistent support from the community.

Another barrier is financing. More financing exists for traditional infrastructure than green infrastructure.

OPPORTUNITIES

Foodscapes, the building blocks of our food production systems, and hence the building blocks of the economy, offer tremendous options to address climate change, increasing demands on the integrity of the food system and other challenges.

Mapping shows that foodscapes are diverse, ranging from intensively cultivated bread baskets with high potential soils to sparsely populated rangelands with a remarkable density of roots. The information provides a look across the globe with an eye toward commodity yield. In addition to green infrastructure, nature-based solutions protect and restore natural ecosystems that are relevant to many foodscapes, including forests, wetlands and grasslands. For example forests and grasslands are being converted for soy production. This conversion produces tons of carbon into the atmosphere and decimates biodiversity. Working on commitments to zero deforestation is a key intervention and nature-based solution.

Nature-based solutions can contribute to the resiliency and productivity of the land, as well as protect communities against the impact of disasters.

Converting land to secondary forests can be restored by intensifying production using civil pasture interventions, increased tree cover, and improved pasture and raising practices.

The second type of nature-based solution is agrarian regenerative agriculture which reverses climate change by rebuilding soil organic matter and restoring degraded soil biodiversity, resulting in both carbon drawdown and improved water cycles.

A third restorative solution is aquaculture. Tremendous potential exists for restoring near shore marine ecosystems that also produce food. Studies show edible food production from the sea can be increased between 30% to 70% using nature-based interventions. For example, cultivating oysters, clams and seaweed, cleans the water while providing high protein food.

Integrating more traditional approaches with agriculture is another opportunity to impact natural protected areas by planning, designing and building infrastructure to serve a specific purpose, such as to provide flood protection or water purification, with urban spaces for recreation and business opportunities.

An example of this integration has occurred in Beria, Mozambique, a city prone to flooding. Instead of building a draining system, the government worked in collaboration with the World Bank to

develop a 108-acre park. The park, on the banks of the Chiveve River, includes groves of replanted mangroves, a natural defense against flooding, exhibition buildings, restaurants, a market, amphitheater, botanical garden and outdoor gyms.

Now, people do not face flooding during rains. The public can use the park for recreation and jobs have been created by the market and other activities.

Nature-based solutions also improve human health. Strong scientific evidence points to the fact that proximity to nature, especially for people in urban settings, positively impacts both mental health and physical health. Developers should integrate nature in cities and high-density urban areas to give people gathering space, improved air quality, natural beauty, and improved mental health.

Protecting these ecosystems, restoring them, reconstructing where possible, then combining the ecosystems with urban expansion with the development of new infrastructure is a rich area for innovative nature-based solutions. Also, coastal protection is a very important piece to the puzzle for remediating climate change and improving biodiversity. For example, coral reefs reduce a wave's height and energy significantly to protect against the impact of storms on communities. Mangroves and coastal wetlands also serve a coastal protection function.

Because of the strong link between disasters and poverty, the World Bank is focused on disaster risk management as part of the challenge to fight poverty. Scientific evidence also suggests a strong impact on health, with proximity to nature positively impacting both mental and physical health. Integrating nature in cities and high-density urban area gives people improved air quality and improves wellbeing.

RECOMMENDATIONS FOR ACTION

1. Investors should continue supporting green infrastructures with long term commitments.
2. Continue protecting and restoring ecosystems.
3. Seek ways to incorporate nature into high-density urban areas.
4. Use nature-based interventions to increase edible food production from the sea.

The Prosperity Paradox: Can We Eliminate Poverty Sustainably?

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SITUATION

Sustainable prosperity can be defined as a level of ongoing, reliable income for a person or family that enables them to manage their expenses over the long haul.

Solving poverty, i.e., creating sustainable prosperity, is a complex “wicked” problem, so labeled because there are so many issues at play; it is a "causal thicket." In developed countries, the issue of poverty is complicated further by the number of agencies and siloed programs serving the poor. In the US, there are more than 80 federal programs spending $1 trillion annually.

In many instances, a gap exists between the services offered and accessing the services. In underdeveloped areas, aid and assistance have often become barriers to creating sustainable economies employing and benefiting the local people.

QUESTIONS

1. How do we encourage community leaders to take the lead to move from poverty management to prosperity systems?
2. How can technology be used to scale solutions?
3. How can we move beyond the dead-end debate between narratives of individual initiative versus a rigged system to a pathway out of poverty?
4. How do we align existing programs, overcome the "cliff effects," and incentivize ending poverty for existing poverty agencies?
5. How do we look at poverty through a different lens, addressing not the visible signs of poverty, but creating lasting prosperity?

CHALLENGES

Even with the many programs available, poverty persists. In developed economies, poverty management systems are not incentivized to move people permanently out of poverty, they are not held accountable, and investments are scattered, siloed, and unable to scale.

In underdeveloped economies, investment has largely taken the form of aid in response to an immediate need. Like snow on the water, the impact of this investment passes quickly, while the underlying need to make long-term investment in viable, scalable business clusters that can create a sustainable local economy never happens.

In short, in both developed and underdeveloped settings, there is a lack of strategic business development planning and investment to create a lasting economic system to eliminate poverty. Investments in both settings are ineffective because they are ad hoc, disconnected, and not grounded in co-creating a sustainable business ecosystem with the local people in poverty.

According to the National Report on Uneven Ground, 42% of Americans are not prospering based on the ALICE Threshold. [ALICE stands for asset limited, income constrained, employed.] The ALICE Threshold is the average income a household needs to afford household basics (housing, childcare, food, transportation, healthcare, and contingency funds). These are families living paycheck to paycheck who also need help.

OPPORTUNITIES

There is strong emerging evidence that poverty can be eliminated sustainably by aligning and targeting existing investments in both developing and developed settings. The work of Circles USA and the work of the

Global Prosperity program at the Christensen Institute, Harvard Business School are demonstrating success in ending poverty in real communities.

Sustainably ending poverty requires new aligned systems at the community level and at the personal level. At the community level, the many existing organizations, services, and investments need to be aligned in a shared agenda and coherent operating system to scale solutions. At the personal level, people moving out of poverty need a personalized success path that gives clear direction to their personal activities and provides easy, coordinated access to the aligned services available in the community, in short, a community well-being system.

> *The real goal in addressing prosperity is not simply poverty reduction.*

A community well-being system involves identifying households that aren't thriving, conducting assessments, having a team with with navigators and mentors to help set priorities, building personalized success pathways, managing community service referrals and tracking progress and outcomes. In this way, services for housing, primary care, financial wellbeing, nutrition, legal, disaster and safety, transportation, personal care, employment, and others can be integrated into a shared community well-being system.

A well-being system connects health, safety, lifelong learning, meaningful work and income, humane housing, a thriving natural world, reliable transportation, a sense of belonging, and civic muscle.

Technology can be used to develop a shared platform to conduct assessments, collect information, and match that information with navigators, mentors and coaches, and the community. Using shared technology, communities have an opportunity to scale data-driven community efforts to create prosperity.

Such an approach to poverty doesn't have to compete with the current poverty management system. It's simply another way to do business that uses services from the system in a coherent, strategic way; it's attached to the emerging economy and the economic development that communities are doing.

One poverty alleviation system in Dorchester County, Maryland, measures 2900 households in the county living in poverty. The target is to get 10% of the households out of poverty by 2025. This person-centric

pathway requires service coordinators that support people through all stages from crisis intervention, stabilization, readiness, placement, advancement to prosperity as defined by access to shelter, food, healthcare, childcare, meaningful work, and a community in which to thrive.

In Tennessee, a new initiative to change the way poverty is addressed in that state was passed in 2021 by the General Assembly without a single dissenting vote from Democrats, Republicans, Independents. The statewide three-year pilot project involves leaders from a variety of sectors, including faith-based organizations, business, philanthropic, state agencies, academic, community action agencies and non-governmental organizations to address poverty in six regions using a common sense approach. These pilot programs are preparing to scale and will build intentional pathways that have a clear line of sight out of poverty to prosperity.

RECOMMENDATIONS FOR ACTION

1. Examine pilot projects underway to determine best practices and expansion opportunities.
2. Increase dialogue at all levels of government to ensure accountability and eliminate silos.
3. Seek data sharing innovations to simplify processes.
4. Continue seeking cross-sector solutions to partner community-based services with families for well-being systems.

Rethinking Human Development and the Role of Governance

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SITUATION

When looking at human development, measuring quality is more important than quantity. Traditionally, income, education, and health have been scored through a unidimensional lens. A multidimensional focus, however, considers how the quality of these factors impacts human wellbeing for a more holistic approach, while acknowledging inequalities.

QUESTIONS

1. What specific manifestations of development need focus?
2. What countries are being left behind?
3. What role does democracy play in development outcomes?
4. How can challenges be addressed that are most important to a specific country?

CHALLENGES

The world has changed significantly since the first Human Development Index as published more than two decades ago.

> *When good governance is in place to formulate better policies and better strategies supported with the necessary infrastructure, communities will begin to experience positive outcomes.*

When looking at global transformations, especially through crises, three distinct challenges to the HDI measurements exist.

- Quality – Building the HDI to factor in measures of quality, moving beyond the global and national levels to look at how different groups are affected at subnational levels.
- Sustainability – Considering the relationship between human development and the environment
- Governance - Addressing the challenge of trustworthy and reliable governments

SOLUTIONS

Addressing factors concerning quality is complex. The multidimensional aspect of poverty, for example, considers the context of a country and its specific challenges. Looking at the quality of human development outcomes will better measure the wellbeing of a population than only factoring inputs and outputs.

Further, as the planet and society struggle with the effects of climate change, biodiversity loss and other environmental crises, these ecological effects on human wellbeing represent new dimensions to measure.

Though it takes time, trust in governments can be built through accountability and transparency. Trust erodes where there are good policies but poor governance or poor implementation. The absence of good governance disproportionately affects the poor, the most vulnerable populations who need the most support. Governments are tied to development, and so it is important to measure it so that the stakeholders can better support development outcomes.

Not enough policies are being made with the people in mind who are being affected. A process is needed that involves more participation from local communities to gain the relevant knowledge.

When good governance is in place to formulate better policies and better strategies supported with the necessary infrastructure, communities experience positive outcomes.

RECOMMENDATIONS FOR ACTION

1. Demand accountability and transparency among governments regarding policy integrity of development policies and outcomes.
2. Increase data collection from local communities to ensure relevance when creating policies.
3. Continue examining how climate change and other environmental crises affect human wellbeing.

Post Script - Thoughts on Ukraine

From Khalid Abu-Ismail

The Russian/Ukrainian war led to ravaging effects on the world economy that is still recovering from the COVID-19 pandemic. The most significant impact of the war is the sharp increase in commodity prices as both Russia and Ukraine are significant exporters of wheat and energy supplies. These steep price increases led to a severe tightening of countries' financial conditions, which poses a serious risk of unrest and social tensions globally, especially in emerging and developing countries. In the Arab region alone, ESCWA estimates the pandemic and the Russian-Ukraine war may have led to an additional 20 million people falling in poverty using national poverty lines.

From Natasha Lindstaedt

The Russian/Ukrainian war has had a significant impact on human security, poverty, and good governance. Conflict degrades government institutions, making it more challenging for example, for the Ukrainian government to deliver goods and services and to implement the rule of law. The conflict is also causing significant displacement. Almost 13 million Ukrainians have fled their homes, with approximately 6 million fleeing abroad. With millions living in precarious conditions, this places more pressure and strain on local governments to attend to numerous threats to human security.

To the wider community the conflict will have a far-reaching impact on the global economy. As the conflict involves two of the biggest commodity producers, there is risk that there will be a significant interruption to the export of basic necessities like wheat. This may cause other wheat producing nations to halt their own exports causing a negative chain reaction. The UN Secretary General estimates that up to one fifth of the global population will face hunger. Due to spikes in hunger, poverty, and shortages, this raises the risk of instability in impoverished communities already under strain.

Applications of the Ideas in this Report:
A Collaboration between Oak Ridge Associated Universities and Global Action Platform

INTRODUCTION

Oak Ridge Associated Universities (ORAU) and Global Action Platform launched a new partnership at the 2021 Global Action Summit to engage the research capacity of ORAU universities to advance solutions for the most pressing food, health, and economic issues facing the world. Through this new strategic partnership, the findings and recommendations framed by the seventy international experts who designed the Summit program will be used to frame action research agendas for the 140 major research universities and labs working with ORAU.

This article presents the top recommendations of international experts in food, health, and economics for applied research and workforce development to build a more inclusive, sustainable world. The experts making these recommendations played leading roles in developing the agenda of the Summit, and each possesses exceptional comprehensive knowledge and experience about global food, health, and economic issues. The recommendations for research and workforce are based on the content of the Global Action Summit and are presented by the following:

REIMAGINING GLOBAL FOOD: Rob Dongoski, Partner, Food and Agribusiness Lead, Ernst & Young
REIMAGINING GLOBAL HEALTH: Dr. Louis Cuervo, Senior Advisor for Research for Health, Pan American Health Organization (PAHO)
REIMAGINING GLOBAL PROSPERITY: Scott Miller, President and CEO, Circles USA

Research and Workforce Priorities for Global Food

For the past two years, the global EY organization has conducted an extensive survey capturing consumer sentiment and behaviors. The findings reinforce the impact consumer preferences have across all industries and bolster the EY perspective on the future of the food and agriculture industry – Food System Reimagined.

The world's food system is undergoing massive transformation, both systemically and structurally. Changes are already being experienced and will continue over the next decade. Three key shifts in the system include:

- Increased innovation happening more in the middle of the value chain and less on either end
- Greater focus for all players across the value chain to be more planet friendly
- Greater consumer focus to be more responsive to basic consumer needs and growing consumer preferences

Recommendations for Food Research

1. Food Innovation for nutrition, health, and personalization

As consumers become more directly involved in shaping the food system, the connections of food, diet, nutrition, and health are increasingly important to remodeling the food system, including research in the following areas:

- How to increase nutritional value
- Personalized diets, genetics, and nutrition, including understanding the impacts of different foods on different people and populations
- The interconnection of food and health, including how food can be used to combat obesity and other chronic diseases

2. Next generation genetic research

In light of climate change, it is increasingly important to take genetic research on food to the next level, including expanded research in the following areas:

- Creating plants that are drought-resistant or adaptable in other critical ways
- Extending or modifying habitats and increasing the adaptability of food production to respond to climate shifts
- Conducting genetic research to counter resource scarcity by identifying the right genetics for plants and animals in regions with the greatest challenges
- Using CRISPR-Cas9 in lab-grown meat and plant-based alternatives
- Measuring sustainability and climate change in relation to agriculture

3. Efficient production and distribution methods

In addition to creating a more nutritional, personalized and healthy diet and using genetic adaptations to meet climate change challenges, the food system needs a more innovative, efficient system for production and distribution, including...

- Reducing food waste
- Reducing water waste in agriculture
- Reducing contamination from agriculture
- Creating effective models of local and nimble supply chains
- Using electric vehicles in agriculture production and distribution
- Determining optimal efficiency of shipping (maximal loads or partial loads)
- Optimal market goals for capacity utilization, total food production capacity and total consumption needs
- Capital deployment in the food system to improve efficiency of the whole system, from production to nutrition to environmental impact

Workforce Recommendations for Food

1. Increase recruitment of top talent into agriculture and related businesses.
2. Improve messaging to students about opportunities in food science and technology.
3. Design dual degree paths that help students move from an agriculture science path to a business path with an MBA, and from a business path into an agriculture-science program.
4. Increase agriculture-based STEM programs for high school and college students.
5. Draw upon the passion for food experience and quality for rising generations to motivate them into agriculture studies and professions.
6. Create motivating courses for field workers in agriculture to help meet labor needs.
7. Create agriculture-based content for advanced technologies, such as data science (artificial intelligence, machine learning, analytics), robotics and mechanization.

Research and Workforce Priorities for Global Health

The response to the pandemic showed an incredible capacity within the research world to develop diagnostics and therapeutic technologies at an astonishing pace. The circumstances turned competitors into collaborators and boosted technologies, such as gene editing, to develop diagnostics and therapeutics with benefits that will reach well beyond the pandemic.

For example, ongoing studies on gene editing with CRISPR are promising to improve the quality of life and the lifespan of people with sickle cell disease. The 2020 Nobel Prize was awarded to two women who led the teams that developed CRISPR and, once more, demonstrated the value of multidisciplinary work, leading to innovations for health. That work supported diagnostics during the pandemic.

The pandemic also demonstrated that technological solutions on their own are insufficient to address global health issues. Many systems weaknesses were exposed, e.g., mistrust and misinformation caused resistance to public health policies; vaccines sometimes did not reach their intended recipients; and the lack of standardized electronic vaccination registries was problematic.

It is standard to look at the six pillars of health systems in debates about the pandemic response. Yet stark contrasts were seen between pandemic preparedness indicators and actual implementation and outcomes. Countries that were expected to perform well sometimes did not, while some countries with poor preparedness indicators performed unexpectedly well. Generally, there is a need for more and better research in public health to have universal health coverage and resilient health systems.

Recommendations for Research for Global Health

1. Leadership and Trust

- Expanded research on improving communication between health leaders and the public to determine what works to increase trust.
- Expand research about knowledge translation into public health debates and the media.
- Expand research on how public health leaders motivate and sustain collaborations and build trust with multiple stakeholders.

2. Misinformation (the infodemic)

- Addressing misinformation upstream with implementation research on scaling up practical approaches for developing critical thinking abilities in

children (e.g., Informed Health Choices, an evidence-based process developing necessary thinking skills on health-related information for school-age children). The benefits of these strategies extend beyond the intervened children and teachers.

- Expanded research on factors that enable stakeholders across sectors to communicate effectively and collaborate, such as simple metrics and methods.
- Expanded research on the role of social media, broadcast news, and other communication channels and how to increase the presence of valid health information in these new media and public discourse settings.

3. Holistic Health

- To gain knowledge on the drivers of intersectoral and multi-stakeholder collaboration.
- Leveraging big data for new research, identifying meaningful correlations, and using big data to explore personalized medicine and genomics to improve health services organization, access, and quality.
- Test strategies for multi-stakeholder collaborations that address the determinants of health.
- Expanded research to assess the drivers for resilient health systems, health equity, and
- Universal health coverage.

4. Drivers of Human Behavior

- Behavior change is a cross-cutting element. Expand research in behavioral science on co-creating knowledge with diverse stakeholders to promote the social appropriation of knowledge.
- Expanded research on the economic impact of health-related decisions.
- Expanded research on the incentives and disincentives that guide societies toward making sound decisions. What kind of nudges and (dis)incentives can contribute toward health and development? Several Nobel Prize awardees have focused their work on these behavioral issues.

Workforce Recommendations for Health

1. Balance medical training to incorporate health data, AI, and digital health technologies with personal judgment, contextualization, and personal touch in dealing with people;
2. Increase collaborative and participatory research experiences for a global healthcare workforce;
3. Improve instruction related to the Social Determinants of Health and health equity;
4. Integrate instruction on the economic impacts of healthcare decisions and policy;
5. Include work with data scientists in medical training;

6. Create diverse teams for medical students that move them out of their comfort zones in their specialties into groups with representatives of other disciplines, backgrounds, levels of education, and demographics;
7. Incorporate instruction related to public leadership, trust, and how to deal with complexity and uncertainty in broader settings outside a field of expertise;
8. Teach methods of co-creation of policy and knowledge with diverse stakeholders, e.g., developing health policies with public policy makers so that they are involved in the process rather than giving them the policy to enact. Consequently, they become advocates.

Research and Workforce Priorities for Global Prosperity

Circles USA has chapters in 22 different states and Canada and has been working on solutions for inclusive prosperity for more than twenty years. Research shows that most communities and countries have poverty management systems rather than systems to move people out of poverty. As a result, poverty rates are relatively stable over decades in most settings. The funding of these poverty management systems, from workforce and human services to health services, is calculated on units of service to number of people served.

These systems are neither funded nor designed to move people out of poverty. To shift from poverty management to a process of poverty elimination, the funding and the incentives must be redesigned to move people out of poverty and into the workforce.

Research shows that there are five stages for moving people out of poverty into the workforce that need to be integrated. Currently, these five steps tend to be done in silos. The first stage is crisis intervention. People come into the system needing something immediately – housing, childcare, food, mental health, drug abuse prevention, or recovery. Second, there is an effort to stabilize them. Once stabilization is accomplished, these agencies have completed their work, with no hand-off to longer-term support leading to workforce. The later-stage work leading to self-sustaining work remains disconnected from the early stage, and so repeat loops between crisis and stabilization develop, and the overall outcome of moving people out of poverty is managed but not achieved.

Recommendations for Research for Global Prosperity

1. Systems Design

- Expanded research on best practices to move people from poverty to economic self-sufficiency (using the ALICE Threshold as a measurement of self-sufficiency)
- Expanded organizational design research on how to reorganize government agencies managing poverty into a poverty-eliminating system integrating the five stages of development from poverty to work;
- Expanded research on tax policy for funding poverty management agencies to streamline and integrate funding across all five stages of poverty elimination; and
- Expanded research to develop metrics and incentive structures to finance outcomes (government and non-government financing – e.g social impact investors) instead of fees for services (including building a model for calculating return on investments)
- Expanded research on community/ regional level systemic change required

to support moving people out of poverty into prosperity – including affordable housing, access to quality healthcare, child and youth development, personal financial management, and lifelong learning.
- Expand research on community/ regional level for systemic change to maintain an acceptable level of high-quality jobs for residents in the community/ neighborhood/region (economic development, small business startups, etc.)

2. Cliff Effect

- Expanded research on how to eliminate the American benefits cliff effect and the legislative policies needed to correct this unintended effect.

3. Scaling Solutions

- Expanded research to build digital platforms that can be deployed in local communities and regions to help scale poverty alleviation solutions; and
- Expanded research on the costs and systems needed to scale proven poverty alleviation solutions.

Workforce Recommendations for Prosperity

- Train people moving into social services and government agencies to work collaboratively across sectors and government agencies and budgets to create systems (e.g., train them on collective impact principles);
- Create courses for prosperity "navigators" who can provide sustained guidance, support, and coaching for people moving from poverty and crisis into work and stability (prosperity based on ALICE Threshold); teach navigators about the critical success factors for leaving poverty (including social capital and networking as core critical success factors)
- Integrate curriculum and training for workforce development and economic development, and poverty alleviation – a three-part integrated approach to building prosperity at multiple levels – neighborhood level, community level, city level, regional level, and state level.
- Prepare HR workers to understand the different employment issues between someone coming out of poverty into work versus someone coming to work from a stable, middle-class background, to improve onboarding of employees
- Prepare HR workers to understand how to improve the quality of jobs in organizations – to minimize turnover and provide a sustainable career pathway for employees

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