

# THE INTERACTIVE ATLAS OF HUMANITY





THERE IS A NEW GLOBAL ORDER RISING  $\rightarrow$ We all know that it will be very different from the world in which we grew up – but what kind of difference this may be, no-one knows. So with this Atlas of Humanity, we want to offer a warm-up for the journey to new global orders; and to look at the world from different perspectives, and with three different projections. (see below) In the film "The Matrix", Keanu Reeves is offered the choice



AZIMUTHAL PROJECTION

A globe doesn't have a center - but this map has. It is an azimuthal projection, where all points are at proportionally correct distances from the center. Any point can be chosen as center: In the UN logo, is the North Pole. In our map, it is Riyadh.

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# **LOOK AT THE WORLD** FROM DIFFERENT PERSPECTIVES

between a blue pill and a red pill: blue for a manipulated land of illusions, red for the tough reality. Today, there are also completely different, often competing or contradictory world views around. But this time, we don't know (at least not yet), what is the real stuff, and what the illusion. So please, try the red and the blue world view – and decide for yourself.





# DYMAXION PROJECTION

This projection was released by R Buckminster Fuller in 1954. It is a kind of tinkering combination between map and globe: The map can be folded to form a globe, and the globe can be unfolded and flattened.

# ROBINSON PROJECTION

This map developed by Arthur Robinson in 1963 is a kind of optical illusion: It look rather exactly how most of us think the earth tooks like - but it shows neither the shape nor the land mass of countries correct.

# **HOW TO USE THIS ATLAS**

EACH MAP IN THIS ATLAS TELLS THREE DIFFERENT STORIES -IN BLACK. IN BLUE. IN RED. TO UNCOVER THEM, PLEASE USE THE BUTTONS ON EACH PAGE.





1) BROWSE THE MAPS IN THIS ATLAS USING THE BUTTONS TO ISOLATE RED AND BLUE PRINTED INFORMATION. THE GREY BUTTON REVEALS BASE DATA.CLICK THE CROSSED OUT BUTTON TO RETURN TO THE DEFAULT VIEW.









2) CHALLENGE YOUR VIEWS AND NOTIONS ABOUT THE WORLD.

### **EDITORIAL**

# **INVESTMENT FOR** A BRIGHTER FUTURE

THE WORLD TODAY FACES NEW CHALLENGES as well as incredible opportunities. As the global population grows, more abundant food and water supplies will have to be found. Cleaner energy to support economic and social growth and address climate change is already being developed but much more work needs to be done. Moreover, cutting-edge technologies like AI, robotics and machine learning will be vital to improve education and healthcare for all generations.

As important as these actions are, they must be developed in a sustainable fashion, benefitting all economies, with none left behind.

The FII Institute is playing a critical role in this effort, convening global business leaders and helping develop real-world solutions that incorporate social responsibility and sustainability as bedrock principles.

In just three years, that mission, which we call "Impact on Humanity", has gained momentum, with FII emerging as a leading global non-profit with ESG principles at its core.

Though complex challenges lie ahead, I am confident that FII will spur new efforts that leads to innovations to create a better, brighter future for all of humanity.

Tasin O. Al-Kumanyan

HE Yasir Al-Rumayyan Governor PIF, Chairman of the Board of Trustees of FII Institute

# **TAKING THE** HUMAN PERSPECTIVE



# **FII INSTITUTE**

IS A GLOBAL, NON-PROFIT FOUNDATION WITH AN INVESTMENT ARM AND ONE PRESSING AGENDA: POSITIVE IMPACT ON HUMANITY.

WE'VE CHOSEN FOUR CRITICAL AREAS TO FOCUS ON, WHERE THE INEQUALITIES ARE MOST GLARING AND WHERE EXCITING COLLECTIVE SOLUTIONS CAN BE FOUND.

### AI & ROBOTICS AMPLIFYING OUR CAPACITIES AND REVOLUTIONIZING THE WAY WE WORK AND LIVE

EDUCATION LIFELONG LEARNING WELL BEYOND THE FOUR WALLS OF A CLASSROOM

HEALTHCARE STRIVING FOR A BETTER QUALITY OF LIFE FOR ALL

SUSTAINABILITY A ZERO-CARBON WORLD IS POSSIBLE

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ACCELERATING TECHNOLOGY WILL CREATE MORE UPHEAVAL. AND MORE WEALTH.

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CAN WE REALLY GRASP THE REALITY WE ARE FACING? Sometimes I seriously doubt it. The speed of change, the sheer size of the challenges we must tackle – nothing is like it ever was, everywhere something new is brewing. From the viewpoint of the FII Institute's headquarters in Rivadh, the world as it is becoming looks rather bright. From other viewpoints, not so much.

The FII Institute is doing its best to offer new and fresh perspectives. By being a laboratory and curator of innovative and disruptive ideas. By creating global platforms to exchange and debate these ideas, which could be a game

changer for humanity. By investing financially in some projects that could make our world more sustainable and more inclusive.

This "Atlas of Humanity" is meant to show how those different perspectives may look. For every map, for every topic, there are three layers of reality, showing the world of today and tomorrow from different angles. But no matter how you look at them, there's one level above all those perspectives: humanity.

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**Richard Attias** CEO, FII Institute

# **ON SUSTAINABILITY**

EVERYTHING WILL BE TRANSFORMED BY THE TRANSITION TO NET-ZERO, CAPITALISM MUST BECOME SUSTAINABLE - AND IT

DN FOOTPRINT
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# **THE CHANGING WORLD ORDER:** THE NEW PARADIGM

The rise and decline of areat powers do not happen randomly. They follow long-term cycles, and the current global change can best be understood in comparison with previous paradiam shifts

BY RAY DALIO

THE WORLD ORDER IS changing in important ways that have happened many times before in history, though not in our lifetimes. How it is changing has created the paradigm that we inhabit. By "paradigm," I mean the environment we are in. Paradigms typically last about ten years, with occasional big corrections within them. They are driven by a persistent set of conditions that takes those conditions in a swing from one extreme to the other. This means that each paradigm is more likely to be the opposite of than similar to the one preceding it. For example, the roaring 1920s were followed by the depressionary 1930s, and the inflationary 1970s preceded the disinflationary 1980s. The assets and liabilities you would most like to have, or most like to avoid, change according to the paradigm at the time. For example, in the roaring 1920s you'd want to own stocks and avoid bonds, while in the depressionary 1930s it would be the opposite; in the inflationary 1970s you'd want to own inflation hedge assets like gold, commodities, and real estate and avoid financial assets hurt by inflation such as bonds and stocks - while in the disinflationary 1980s you'd want to do the exact opposite.

I believe the current paradigm is a classic one that is most importantly characterized by three big forces:

1) Big debt and debt monetizations, particularly in the world's leading reserve currencies, that are together threatening to cause a financial and economic crisis,

2) Big internal conflicts over wealth, values, and political gaps that are manifest by increased populism of the right and of the left and fights between them that are threatening to cause a type of civil war.

3) Big external conflicts, most importantly due to the leading world power (the US) no longer being the dominant power and increasingly facing challenges from rising powers, most importantly China, that are threatening to cause a type of international war.

The last time we saw such a confluence of events was in the 1930-45 period, though this type of confluence happened many times before

that. In this piece, I will briefly explain my reasoning and show charts that demonstrate these things happening.

The confluence of these three forces is shaping the type of paradigm we are in. All three transpire in cycles driven by cause/effect relationships that are logical and can be understood. They also affect each other so they tend to transpire in increasingly good and bad periods that coincide in what I call the Big Cycle.



# THE CHANGING WORLD ORDER



RAY DALIO

Ray Dalio, 73, is one of the world's most well-known and successful investors. In 1975, he founded Bridgewater Associates, today the world's largest hedge fund. His best-known books are "Principles: Life & Work" (2017) and "Principles for Dealing with the Changing World Order.Why Nations Succeed and Fail" (2021). He has committed more than \$6 billion dollars to charitable causes through Dalio Philanthropies.

# THE RISES AND DECLINES OF **GREAT POWERS**

The chart to the right shows indices of the strengths and weaknesses of the leading world powers since 1500. Note the Dutch, British, American, and Chinese cycles. The Dutch guilder was the world's reserve currency when the Dutch Empire was on top, the British pound was the world's reserve currency when the British Empire was on top, and the US dollar is the dominant reserve currency now that the US is on top. Note how things are changing. These cycles are transpiring for archetypical reasons.

The chart on the right below is a simplified version of what you just saw for these four empires. The gray shaded areas are the periods of great internal and external conflicts and restructurings via depression, revolution, and war (typically lasting 10-25 years). They are followed by more extended periods of peace and prosperity in which order is brought about by the existence of a dominant power that no country wants to fight because it's too strong, leading people to work harmoniously together.

THIS ESSAY IS AN UPDATE OF RAY DALIO'S JAN. 2022 LINKEDIN ARTICLE OF THE SAME TITLE.

# THE ARCHETYPICAL BIG CYCLE

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I will begin taking you through the typical cycle at the point that the new order is created – i.e., a new system run by new leaders, after revolutions and wars. For example, the last world order to be created came after WWII, in 1945. At that point in the cycle there is a dominant power, and nobody wants to fight it, so this part of the cycle is typically peaceful and, if managed well, prosperous.

This leads people to borrow and bet on it continuing, leading to over-indebtedness. Because economic opportunities are naturally distributed unevenly, large wealth gaps develop.

Also, over time, competitors emerge and grow in power. Over-indebtedness and declining competitiveness eventually lead to financial problems at the same time as there are large wealth and political gaps. This produces internal conflict and people demanding more money, which leads governments to create more debt and print a lot more money, weakening the currency and raising inflation. As the dominant power weakens and others get strong enough to challenge it, there are greater internal and external con-

# **ROUGH ESTIMATES OF RELATIVE STANDING OF EMPIRES**



### **RESERVE EMPIRE TRANSITIONS OF THE PAST FOUR CENTURIES**



# the new order.

flicts, leading to revolutionary changes in who has what wealth and power. That ends the old order and leads to

This is now happening -- i.e., this is leading to a big shift in wealth and power. What should one do in this new paradigm? Naturally, as a global macroeconomic investor, the economic and market behaviors in this paradigm are top of mind for me. For the longer term as the paradigm plays out, I think

# THE TYPICAL BIG CYCLE BEHIND EMPIRES' RISES AND DECLINES

Standing relative to other powers



one should consider minimizing one's ownership of debt assets and putting funds into a highly diversified portfolio of assets, including high yielding non-cyclical stocks, inflation-hedge assets, and select new technology venture capital especially in countries with healthy finances and civil populations that have internal order. In other words. I think one's assets and liabilities should be well-balanced in asset classes that provide diversification and in countries with minimum exposures to dollar, euro, and yen debt assets.

Of course there will be corrections along the way as the paradigm unfolds – for example, in central bank tightenings, such as those which we are now in – but I don't see any sustained period in which governments are likely to allow cash real returns to be attractive to own because that would cause terrible problems for debtors and economies. These circumstances also have big geopolitical implications that will affect how hospitable different surrounding environments are. So in this new paradigm, one should think about where one is safe in investing, doing business, and living. 

### **ON TECHNOLOGY:**

# **HOW ACCELERATING TECH EMPOWERS YOU**

The future is faster - and better - than you think. Technology is accelerating far more quickly than anyone could have imagined. This will create more upheaval - and more wealth.

BY PETER H. DIAMANDIS, MD

We haven't reached humanity's pinnacle of technology. Every time one form of technology runs out of steam, it is replaced by another, more powerful technology. In the tech industry, this is referred to as "nested S-curves." Here's what this looks like:



abundance.

# SAVED TIME

vou need.

The early computers that used relays (orange) ran their course ... and were replaced by computers using vacuum tubes (blue), then transistors (green), and ultimately by what we call Moore's Law today: computers using integrated circuits (purple).

It's also important to understand that a decade of progress between 1950 and 1960 is not the same as a decade of progress, say, 50 years later, between 2010 and 2020. Let's discuss the three forces accelerating our world: saved time, demonetization, and capital

The first force is "saved time." Innovation needs time and focus: the ability of a researcher or an entrepreneur to focus their available time on slaving scientific challenges.

How we spend our time has changed a lot in the past few decades. Our ability to get almost any question we have answered instantly on Google is perhaps chief among them. Compare this to the days when you'd need to drive to the library and hope that you could find a published book with the information

Add to this the saved time that results from instantaneous global communications, the ability to find the exact product you need and order it online – and then have it delivered the next day. And with the Covid-19 pandemic came the acceptance of connecting with someone over Zoom, rather than spending an entire day flying from LA to New York for an hourlong meeting.

And as this bonanza of extra hours (saved time) continues to pile up, inventors, entrepreneurs – those proverbial guys and gals working in the garage – will have far more time to experiment, fail, pivot, fail again, pivot again, and eventually get it right.

# THE DEMONETIZATION OF **TECH & SERVICES**

Our second force is the demonetization of technology and services. Today, the impact of every dollar spent by an entrepreneur is growing. This means vou can today do much more with an invested dollar than you could even a decade ago.

Let's take DNA sequencing as an example, a technology demonetizing at a speed five times faster than Moore's Law. In 2001, Craig Venter sequenced his single genome at a cost of \$100 million. Today, you can do it for less than \$1,000.

Setting aside the incredible savings in time (nine months to sequence in 2001 vs. hours today), the cost would be 100,000 times cheaper. This means that every dollar in genomics research is going 100,000 times further.

### **CAPITAL ABUNDANCE**

Our third and final force is the abundance of capital. Nothing accelerates technological innovation like cash. Lots of cash. More cash translates into more people, equipment, experimenting, failing, and eventually creating breakthroughs.

There is now more "capital abundance" than at any other time ever. Companies raised more capital in 2021 (during a pandemic) than at any time in human historv.

Perhaps the best example of this is the story of venture capital funding, the traditional source of start-up capital that has helped to birth household names from Apple and Google to Amazon and Uber. In 2021, US venture capital firms invested an all-time high of US\$330 billion in start-ups, equivalent to over US\$900 million every day of the year. This record sum is double the US\$166.6 billion invested in 2020. Any way you slice it, this era of unprecedented capital abundance is massively accelerating innovation and funding crazy ideas and moonshots.

PETER DIAMANDIS' ESSAY HOW ACCELERATING TECH EMPOWERS YOU" WAS FIRST PUBLISHED ON DIAMANDIS.COM

### Peter H. Diamandis, MD, 61,

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is the founder of the XPRIZE Foundation, operator of large scale incentive competitions. He is also founder of Singularity University, member of the Board of Trustees of FII Institute and co-author of the bestselling books Abundance (2012), Bold (2015) and The Future is Faster than you Think (2020).

# FII: ATLAS OF HUMANITY 2022 FII: ATLAS OF HUMANITY 2022

# **MEASURING** GLOBAL **INNOVATION**

# IT'S ONE OF THE MOST INFLUENTIAL INDICES TO DATE. Started in 2007 by the Business School INSEAD and

today published by the World Intellectual Property Organization, the Global Innovation Index is an annual ranking of countries by their capacity for, and success in, innovation. With a set of multiple indicators and seven pillars, it measures innovation input and output. The Global Innovation Index is widely recognized in the business community as a rough guide to the attractiveness of technology investment in the respective country. Its importance has tempted a number of governments to optimize their economic policies for better index rankings.

# MOST IMPROVEMENT IN THE LAST DECADE

Innovation is moving southt At least that's what this map suggestsv&rshows the countries that have improved their result in the Global Annovation Index between 2012 and 2021 And from Vietnamyja India W Turkey and Italy to Mexico there's a kindtof Southern Belt of catchoup countries. They mayingtallcatchupito the top rafiks and a forlex apple in2021 was tankedf46th, Mexicor55th But ten years ago; they had been positioned about 20 ranks lowers 64 th for India, i79thlfor Mexido.vAn even higher jump in the ranke ing was made by Tanzahia, the only African country in this improvement group, It went up 38 places in lone decade; from 128th to 90th Still a long way to go, but at least it's the right direction.

# **GLOBAL INNOVATION INDEX 2021**





TOP 20 GLOBAL INNOVATION **INDEX 2022** 

NO DATA

SOURCE: GLOBAL INNOVATION INDEX

# MEASURING TECHNOLOGY OUTPUT

**TECHNOLOGICAL EXCELLENCE IS GREAT.** But it can only be sustained when the company (and the society) can transform it into economic output. Output in the end is something people need, or people want, or better: both. But especially with innovative technology, the relationship among research, technology, and output can be very indirect, and the path to economic return can take years or even decades. So other measures are needed to value research and technology instead of plain revenue or profit data. One of those measures is shown here – the global ranking of patent production.

### TOP 20 FOR HIGHNTEEK EXPORTS

The 20 countries highlighted here are not necessarily the ones with the biggest volume of high the characterist. They are the 20 countries where laigh effect exports have the biggest share of total foreign trade life hards the reason why leven small countries like Singap fore lon UAE can be part of the top 203 Shessix ledders and his global ranking laye two things in common: all hey are focused iop mainlifecturing and they are glocated in East Asias-of hina, Malaysiag Philippines, South Korea, Singapore, and Vietnam. Next in the ranking are three countries known as locations, for houts (dured main fact (fing) the Czech Republic and Hungaria (for Germany) and Mexico (for the US) I Israel.





# **ONLINE** AND MOBILE CONNECTIVITY

COMMUNICATION HAS NEVER BEEN THAT GLOBAL. Connectivity is no longer a privilege for some cosmopolitan elites. It's a basic service. Even in the most remote areas of the lowest-income countries, there is (or can be) internet, smartphone, Amazon or Alibaba. Today, there are just ten countries left with fewer than ten smartphone subscriptions per 100 citizens. And 100% is no way the limit. In more than 50 countries, there are already more smartphone subcriptions than inhabitants. No, we haven't built one global village for 8 billion inhabitants. It went the other way: We have built 8 billion global villages, one for each person on earth.

### MOST INTERNETIUSERSBANDWIDTH

During the doteom era around the year 2000, "internet" was alkind of magic global for future lorinsodernity. Technically connection to the internet is still the basis for thost of our online.connectivity; but the imagic spellowily transferred to "smart/"hwordsficsmattphoneltsmart.city.posal. According If internet was still the same as modernity; the first three countries would have reached 100% modernity. According totthe International Delecommunication/Union, sic Saudi Arabia, UAE, and Bahrain, 100% of inhabitants are infernet users: At the other extreme, just three countries are left where fewer than 10% of the population are internet users: Burundi, South Sudan and Uganda.



### SPOTLIGHT **DIGITAL MAGIC AIR**

With 5G connectivity the air around us becomes magic – and our individual digital sphere will surround us continuously. And 5G technology even has the potential to be more than a data playground for the global elites. With a little help from space technology it can bridge the digital divide and create a level online playing field for humanity.

MARCH 2022



# **HUMANITY'S** HOTSPOTS OF **TECHNOLOGY**

INVENTORS ARE OFTEN SEEN AS LONESOME COWBOYS, creating against all odds and mainstreaming great new technologies. On a personal level, this may be the case from time to time, but on a systemic level, new technologies arise from supportive, competitive, inspiring environments. Cool kids need hotspots to thrive.

Here we see the 100 hottest clusters of technology today, as evaluated by the Global Innovation Index 2021. It gets a bit crowded in Europe, the US and East Asia, as that's where the action is today. The (almost) blank spots are in the South, with just one hotspot in Latin America (Sao Paulo), and none at all in Africa.

### TECHNOLOGICAL HOTSPOTS IN HISTORYES

Technological innovationstare fotta moderninivention. From the taming of fire via the invention of lagricul (Breis) f moneye offweapons) of steamenginesy of digitable vices to genetic engineering, humanity transportinuous history of improving, linventing, spreading technology. The locations hayelchanged i though The firist giant steps for mankind were made in ot Conthe moon, but lin Africa, where horious abiens seteoútiongtsoglobah advertuires From theres the torch of hmovation wenition the fertile crescent in today's Middle East, to Egypto to Chiffauto India with every divilization addingnew technologies to humanity's portfolibeJustia feweentubies agorethe hotspot inoved to Europe and North America. It won't stay there forever.



# **THE VALUE** OF HUMAN CAPITAL

THERE MAY COME THE DAYS OF THE SINGULARITY, when artificial intelligences will be savvy enough to invent and innovate for themselves, and humanity gets sidelined by its new digital masters. But for now, innovations need at least the participation of human beings – so human capital is a necessary ingredient for technological progress. The World Bank currently computes a Human Capital Index for 173 countries. The top performers come from Asia (five countries in the Top 10), Europe (four) and North America (one). The US is not the American leader. That's Canada (global rank #3). The US is at number 36.

# SCIENTIFIC EXCELLENCE

For sciencists, ingthing beidts a Nobel Prize it's the chost valuable available availa



ATLAS OF HUMANITY 2022

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# **HUMAN CAPITAL INDEX**

< 0,45
0,45 - 0.5
0.56 - 0.6
0.66 - 0.7
> 0.75

COUNTRIES WITH MORE THAN 10 NOBEL PRIZE LAUREATES

COUNTRIES WITH MORE THAN 5,000 RESEARCHERS PER MILLION INHABITANTS

NO DATA

SOURCES: RESEARCHER DATA OECD (LATEST DATA (MOSTLY 2020), HUMAN CAPITAL INDEX WORLD BANK, DATA FOR 2020

# BASIC IC TECHNICAL SKILLS

THERE'S NO SUCH THING AS A BASIC ICT SKILL. At least not in the way basic skills are defined at school. Reading and writing a language, that's as clear and invariable as the basic rules of arithmetic. But in the world of information and communication technology, it's different. The languages we use change continuously (BASIC anyone? Cobol?), as does the hardware and software we use. So if we try to measure ICT skills, chances are high that the tools and questions we use today will be completely different in a few years. Like the one used by the Global Education Monitor shown in this map: How many people are able to copy and paste in Microsoft Word?

### BASIC PROGRAMMING SKILLSC

Writing a computer program? That's way more demandig than-doing copy and paste in-Word And indeed only in 12 countries are sthere in ore that 10% iof the population that blaim to be able to code. Once again, countriés from Europe and the Middle East can be found at the top EAnd the hotspot of information fand consmunication technology the US? The Global Education Monitort containst data on ICA skills for more than la hundred countries abutinot fon the United States be Canada Education Monitor wanted to know: Are you capable of placing a mathematical formula into an Excel sheet? In six countries, more than 50% of the population answered yes. All are in Europe. The first non-European country in this ICT skill ranking? Saudi Arabia, with 47% of yes answers.



### IMPACT REPORT **DIGITAL TWIN TECHNOLOGY**

A digital twin is the virtual version of something that happens or exists in physical space. It operates in the same way as their physical relative, and in real time, coded as a virtual model. With the rise of the Metaverse, the concept of the digital twin has now moved out of industry and into everyday life, as we start to see digital twins of ourselves likely to live, work, and play within it.

JUNE 2022



# **ON SUSTAINABILITY**

# **CAPITALISM AND SUSTAINABILITY**

Every company and every industry will be transformed by the transition to a net-zero world. The question is: Will you lead or be led?

BY LARRY FINK

MOST STAKEHOLDERS -FROM shareholders to employees, to customers, to communities and regulators - now expect companies to play a role in decarbonizing the global economy. Few things will impact capital allocation decisions – and thereby the long-term value of your company - more than how effectively you navigate the global energy transition in the years ahead.

It's been two years since I wrote that climate risk is investment risk. And in that short period, we have seen a tectonic shift of capital. Sustainable investments have now reached US\$4 trillion. Actions and ambitions towards decarbonization have also increased. This is just the beginning – the tectonic shift towards sustainable invest-

# TRANSITION RESULTS IN NET ECONOMIC GAIN

Estimated cumulative GDP impact of transition to net-zero, 2020-40



money in motion. technology.

ing is still accelerating. Whether it is capital being deployed into new ventures focused on energy innovation, or capital transferring from traditional indexes into more customized portfolios and products, we will see more

Every company and every industry will be transformed by the transition to a net-zero world. The question is, will you lead, or will you be led?

In a few short years, we have all watched innovators reimagine the auto industry. And today, every carmaker is racing toward an electric future. The auto industry, however, is merely on the leading edge – every sector will be transformed by new, sustainable

Engineers and scientists are working around the clock on how

to decarbonize cement, steel, and plastics; shipping, trucking, and aviation; agriculture, energy, and construction. I believe the decarbonizing of the global economy is going to create the greatest investment opportunity of our lifetime. It will also leave behind the companies that don't adapt, regardless of what industry they are in. And just as some companies risk being left behind, so do cities and countries that don't plan for the future. They risk losing jobs, even as other places gain them. The decarbonization of the economy will be accompanied by enormous job creation for those that engage in the necessary long-term planning.

The next thousand unicorns won't be search engines or social media companies, they'll be sustainable, scalable

innovators – startups that help the world decarbonize and make the energy transition affordable for all consumers. We need to be honest about the fact that green products often come at a higher cost today. Bringing down this green premium will be essential for an orderly and just transition. With the unprecedented amount of capital looking for new ideas, incumbents need to be clear about their pathway to succeeding in a net-zero economy. And it's not just startups that can and will disrupt industries. Bold incumbents can and must do it too. Indeed, many incumbents have an advantage in capital, market knowledge, and technical expertise on the global scale required for the disruption ahead.

Our question for these companies is, what are you doing to disrupt your

business? How are you preparing for and participating in the net-zero transition? As your industry gets transformed by the energy transition, will you go the way of the dodo, or will you be a phoenix?

We focus on sustainability not because we're environmentalists, but because we are capitalists and fiduciaries to our clients. That requires an understanding how companies are adjusting their businesses for the massive changes the economy is undergoing. As part of that focus, we are asking companies to set short-, medium-, and long-term targets for greenhouse gas reductions. These targets, and the quality of plans to meet them, are critical to the longterm economic interests of your shareholders. It's also why we ask

# " We focus on sustainability not because we're environmentalists, but because we are capitalists and fiduciaries to our clients."

### LARRY FINK

Chairman and Chief Executive Officer, Blackrock

you to issue reports consistent with the Task Force on Climate-related Financial Disclosures: because we believe these are essential tools for understanding a company's ability to adapt for the future.

The transition to net zero is already uneven, with different parts of the global economy moving at different speeds. It will not happen overnight. We need to pass through shades of brown to shades of green. For example, to ensure continuity of affordable energy supplies during the transition, traditional fossil fuels like natural gas will play an important role both for power generation and heating in certain regions, as well as for the production of hydrogen.

The pace of change will be very different in developing and developed countries. But all markets will require unprecedented investment in decarbonization technology. We need transformative discoveries on a level with the electric light bulb, and we need to foster investment in them so they are scalable and affordable.

As we pursue these ambitious goals – which will take time – governments and companies must ensure that people continue to have access to reliable and affordable energy. This is the only way to create a green economy that is fair and just and avoid societal discord. Any plan that focuses solely on limiting supply and fails to address demand for hydrocarbons will drive up energy

prices for those who can least afford it, resulting in greater polarization around climate change and eroding progress.

Divesting from entire sectors - or simply passing carbon-intensive assets from public markets to private ones will not get the world to net zero. And BlackRock does not pursue divestment from oil and gas companies as a policy. We do have clients who choose to divest their assets, while others reject that approach. Foresighted companies across a wide range of carbon-intensive sectors are transforming their businesses, and their actions are a critical part of decarbonization. We believe the companies leading the transition present a vital investment opportunity for our clients, and driving capital towards these



Larry Fink, 69, is Chairman and Chief Executive Officer of BlackRock. He and seven partners founded BlackRock in 1988, and under his leadership, the firm has grown into a global leader in investment and technoloav solutions. BlackRock's mission is to help its clients build better financial futures and the firm is trusted to manage more money than any other investment company in the world.

phoenixes will be essential to achieving a net-zero world.

# A CATALYST FOR CHANGE

Capitalism has the power to shape society and be a catalyst for change. But businesses can't do it alone, and cannot be the climate police. That will not be a good outcome for society. We need governments to provide clear pathways and a consistent taxonomy for sustainability policy, regulation, and disclosure across markets. They must also support communities affected by the transition, help catalyze capital for emerging markets, and invest in the innovation that will be essential to decarbonization.

It was the partnership between government and the private sector that led to the development of Covid-19 vaccines in record time. When we harness the power of both public and private sectors, we can achieve truly incredible things. This is what we must do to get to net zero.

THIS ESSAY IS AN EXCERPT FROM LARRY FINK'S 2022 LETTER TO CEOS

# **NET ZERO** AND CARBON FOOTPRINTS

WHICH COUNTRY IS CLOSEST TO NET-ZERO CARBON? No, not the green Germans (7,690 kg CO, emissions per capita), and not Norway with its ultra-high Tesla density (7,620 kg). It's the Democratic Republic of Congo, with only 28 kg CO<sub>2</sub> emissions per person per year. The reason, of course, is not the highly sophisticated Congolese energy policy, but the absolute poverty of most of its inhabitants. That's not exactly how environmentalists envision a net-zero world. Reducing the carbon footprint a bit can be done through saving. Reducing it a lot or eliminating it completely can only be achieved with the help of innovative technologies.

# THE DIRTY DOZEN (HISTORICALLY)

These 12 countries are of tusually seen as the distiest ones Measured in current Cogemissions per capita, Germany for example lisyranked 29ths and India is placed at 109th, But they belong to the group of countries that have put the biggest carbon builden on the /environment and humanity. This almost bternabfahking adds all CO emissions singe t800uThe worldschampion in this discipline oddby adong ways is the United States With more than 400 trillion tons of COlivithas emitted) more greenhouse gases than the next twoinctheiranking; Chinatand Russia, reombigede While Gerlmanfy, the UKyoH Polandehaverearsedetheir dirty dozen rank from a century of carbons rich industrial revolution, India or China have entered the ranking due to the sheer size of their populations.



### SPOTLIGHT **CIRCULAR CARBON**

Race is on to find solutions to slow down global warming! One of them: removing carbon from the air. Numerous methods have been identified, both natural and technological, for extracting carbon dioxide from the atmosphere. Experts are urgently investigating their viability, relative costs and potential trade-offs, synergies and downsides..

JULY 2022



# BIOCAPACITY AND RESOURCE **CONSUMPTION**

IF YOU DON'T CONSUME MORE THAN YOU CAN AFFORD  $\rightarrow$ your balance sheet will be sound, and your life should be calm. The Global Footprint Network uses a similar approach for countries. It's called "biocapacity" - how many (standardized) hectares of productive land are available per inhabitant?

On the other side of the balance, the Footprint Network estimates the resource consumption per person, measured in the same standardized hectares. The relation between capacity and consumption shows an environmental balance for each country. As humanity, we live beyond our means, but some regions are better off than others.

# HIGH POTENTIALS: UNDERUSED BIOCAPACITY

How does a locustry get a high blockpacity perperson With a))fertile(soils,b)) diverse (ecosystems) and (i)) not (to) many people: The countries highlighted here share these iqualities. In addition, they make thrifty use of their resources. Their citizens:consumellessthan 50% of the qountry's biolapacity Three countries starid out, though cother ordyrothes where less tham 10% of the bid capacity is used by the population And they alliare neighborse in the morth of (South America) Frenchl Guyanat Surinamen Guyanad Solifathere's one realy lyiknderpopulated region on)earth it/s this three-country region befween Veriezuela/and Braziln the Middle East, but it's also a feature of city states (like Singapore) or islands (like Barbados).



# **MORE BUCK** FOR THE **ENERGY BANG**

MARKETS ARE OFTEN SEEN AS EFFICIENCY \_ MACHINES. Competition and transparent information force the seller to produce and distribute as cost-efficiently as possible. We can all think of counterexamples, but the efficiency approach succeeds more often than fails. The higher the energy prices, the higher should be the energy efficiency of production and distribution. And indeed, the amount of primary energy needed to produce one unit of GDP has been steadily decreasing for decades. The countries with the most GDP buck for the same energy bang are focused on service industries: city states like Hong Kong and tax havens like the Cayman Islands.

### ENERGY EFFICIENCY LOSERSS

About 150 countries managed to increase their bitergy effir ciency between 2000 and 2019 re but 14 ordidalt. Highlighted here are the bountries that increased the inenergy consumpd tion pen USgdolfárcóf GDPsby mohe tham one megajouley Allot of themare fossil fue hexporters; dike Bruneh, Oman, Alges riar op Equatorial Guinean As they are heavily dependent on energy prices, this efficiency loss may be more a statistical effect due ftoienergy price volatility, Statistical effects may also be the results of African countrieslike/Zimbabwee Gaborg.ros Liberiave they gan bg explained by the poor ieliability of their statistical dataollapse of the old business model?



# UNLEASHING THE POWER OF THE SUN

SOLAR POWER MUST BE THE ENERGY OF THE FUTURE.  $\rightarrow$ And it will be. The solar radiation reaching just a tiny fraction of the Sahara desert would be sufficient to produce all the electrical power consumed by the whole of humanity. And while fossil reserves could be depleted within decades or a century, the sun will be shining for billions of years to come. But to make solar energy production as efficient and sustainable as possible, it should be focused on the the regions with the highest radiation. It doesn't make really sense to produce solar power in polar regions that need the most energy for heating in winter when the sun doesn't even rise.

### WHERE SOLAR POWER HAS THE MOST POTENTIAL

Shemorg sunshine, the more solar power? Almost right. The photovoltaic potential of a location is not only defined by the hours of sunshine, but also by its altitude and slope South-jfading hillsides have a higher potential than low/ land oblains with the same in umber of subshine hours. (In the Southern hemisphered the hills ide should obviously be north cfacing). Whe regions with the highest photovoltaic potentialr(medsured in kWhper.kWecapacity) areflocated in the highlighted to untitleshif work highlighted to untitleshift work highlighted to untit work highligh unifiedpimpactifocusedtsolar energytstrategyt these regions should be the ones with the highest solar power production. As we can see, they aren't.



# CLIMATE CHANGE AND MIGRATION

GLOBAL CLIMATE CHANGES. AND CHANGES FAST.  $\rightarrow$ We're already far beyond the questions of whether cimate change is happening (oh yes, as global temperature data for the last decades show), whether it is man-made (well, what else?), and how we made it happen (mostly by burning fossil fuels). The questions we have to answer right now are: How fast does the climate change? And where does it end? The transition to a world of net-zero carbon emissions is already under way, and it will probably be achieved somewhen in the 21st century. The earlier humanity manages to reduce its carbon footprint, the less severe the consequences will be.

### WHERE DO CLIMATE REFUGEES GO?

Oheidegree of global temperature rise equalsione billion climatemigrantsantil 2100. That's the guesstimate of US futurist Parag Khanha. He has also given an estimate for the directions of these migration flowse as highlighted here. Khanna's main takeaways; Climate migration will be mostly regionalevefrom Indiacof China to Siberial from the US(to Canada, afrom the Sahel to Zambia. And it heddn't be catastrophie waves of glimate refugees. Humans have always migrated to where they hope to find a better place to live, and they will continue to do so an if than I made frontiers allow it. the whole of the Antarctic won't melt that fast. But even a one-meter sea-level rise would have severe consequences for millions of people.

# **TEMPERATURE CHANGE IN THE LAST 50 YEARS**

2011 - 2021 average vs. 1956 - 1976 base line

+0.2 - +0.5 °C + 1.0 - + 2.0 °C + 2.0 - + 4.0 °C > +4.0 °C





SOURCES: NASA, NATIONAL GEOGRAPHIC, PARAG KHANNA

FII: ATLAS OF HUMANITY 2022







# THE OCEANS AND OUR PLASTIC WASTE

The 20th century saw the breakthrough of plastic for everyday and everywhere use. Cheap to produce, easy to process, and fast to dump: plastic is a global symbol for mass production and consumption. But increasingly plastic is also a poster product for the overexploitation of natural resources and human carelessness about the impact of our lifestyle on the environment. Of the more than 100 million tons of single-use plastic waste every year, more than one million tons ends up in the oceans, harming and killing marine life. And, via the food chain, ocean plastic waste also endangers human health.

### ADDRESSING THE PRODUCERS

To reduce oceanl plastic swaste and the overall plastic infligence on the environment, it's best to make and use less of st? Producing stuff with the altriost endless spansof life (technically speaking) just to transport grocerlies from thielshop to the can may be conversion to but care'd be the snost efficient userofeóuriscasceuresourcesdlfeve searchefonthe maitedulprites of single-disciplistic production, ave find them at the hotspots of manufacturing: (the US, Europe) East Asias Of the 20 biggest producers of singlef yselplastic aten bottie from China (5), Taiwan (2), Thailand (2), and Maldysia (1); The only continent without any of those plastic mass producers is, once again, Africa.

HEADOUARTER OF CONTRIBUTOR TO SINGLE-USE PLASTIC-WASTE TOP 5 POLLUTING COUNTRIES

# MARINE LIFE UNKNOWN AND **ENDANGERED**

WE KNOW EVERYTHING ABOUT 30% OF THE EARTH:  $\rightarrow$ the solid part of the surface. But we know next to nothing about the liquid 70 percent: the ocean, its stocks and flows, its threats and treasures. Yes, we drill for oil and dive for wrecks in the shallow waters of the coastal shelves, but that's just the proverbial tip of the iceberg. Unfortunately, being out of humanity's focus doesn't mean that marine life is out of danger. Overfishing and the dumping of toxic waste have badly hurt the complex ecosystems of the seas. Now global warming will be the next disruptive event for complex biological systems we do not even know – let alone understand.

### CORAL REEES AT RISK REAS

There may be some coral reefslieft that are not in acuté danger of getting severely damaged or even destroyed hamely the cold i water reefsiof the northern hemispherel But the huge majority of the precious and witherable reef ecosystemsare facing existential risks light how. For three reasons: loyeruse, sea level, and temperature rise. All three have the same culprit: mankind Maybe, when the sea level rises ocorals, dan go with the flow. And when iocean waters get warmer, the species may find new locations to thrivef But the faster the conditions of an ecosystem change, the more likelylitlis that the destruction of the old by far outpaces the creation of the new. In nature, adaptation needs time – much more time than our intrusions allow.

**OCEANS AT RISK** 



MARINE PROTECTED AREAS

SOURCES: MARINE CONSERVATION INSTITUTE, UNEP/GRIDARENDAL, RICHARD PRIMACK

EXISTING CORAL REEFS





# MEASURING SUSTAINABLE DEVELOPMENT

THE SUSTAINABLE DEVELOPMENT GOALS WERE set up in 2015 by the United Nations and should be achieved by 2030. The 17 interlinked global goals cover areas of ecology and economy, of health, education and culture. While the 17 SDGs themselves are just words, there are many specific targets linked to each of these goals and some indicators for each target that are used to measure the progress toward reaching them. Progress as a whole is tracked by the Sustainable Development Solution Network, a nonprofit institution founded by the UN. Since 2017, it has been publishing SDG indices for each goal and each country.

### NEGATIVE SDG PERFORMANCENCE

Compared with the first SDG Index publication for the year 2017, 27 countries have/achieved/advorse overalhSDG Index result. That is not how the SDGs where the aff to be reover time a country should get close to achieving the goals. So what has happened here? Some eases lare easy to explain Countries like Syrian Sudan dr Venezuela Tareystuck in social turmbil or even civilfwaneso why should they stare about sustainable development? But the loser list also contains some countries thabare poster children for sustainability arsluch as Norway, Sweden or Switzerlandn Their losstisenotsdrastickellrthree are still in the Global Topt Ten of the SDG Indexo Bub they all have some rather weak spots when it comes to the most 6hallengingiSDGp for high-cificomelcouhtriestiResponsible Consumption and Climate Action.



# IMPACT REPORT **FAIR SHARES**

Inclusion means not just talking about emerging markets, but listening to them. In this publication, we feature voices of investment practitioners from Africa, India and China, whose views concerning the gaps and biases in ESG reporting and standards are paramount but are seldom truly heard.

OCTOBER 2021



### **ON HEALTHCARE**

# WHY DO **CHILDREN DIE?** THE TOUGHEST QUESTION I'VE EVER HAD TO ANSWER

BY BILL GATES

TWENTY-FIVE YEARS AGO. I came across a question that I have thought about literally every day since: Why do children die?

Before I tell you what drew me to this mystery, I want to acknowledge that child mortality is not an easy subject to talk about. As a parent, I can't imagine what it would be like to lose a child. It is shocking even to see the words "children" and "die" used in the same sentence.

But I think "why do children die?" is one of the most important questions ever. It is hard to think of a measure of how a society is doing that reveals more than whether it is protecting its chil-

dren, and especially its most vulnerable children. And the better we understand why children die, the more we can do to save them.

The very good news is that the world has made phenomenal progress in this area over recent decades. Since 1990, the number of children who die every year has fallen by more than half! If progress on child mortality is a good measure of the state of the world, then – despite the huge global setbacks of the past few years, including COVID-19 – the state of the world has dramatically improved. And based on what I know about innovations that are still to come,

we can look forward to even more progress in the years ahead.

My introduction to the subject came 25 years ago, when I read a New York Times article about the health problems caused by unsafe drinking water in low- and middle-income countries. I was shocked to learn that every year, 3.1 million people – nearly all of them children – died of diarrhea, often because they had drunk contaminated water. Diarrhea kills 3.1 million children?, I thought. That can't be true, can it? But it was.

I had to know more. What other major inequities did I not know about? I read everything about global health that I could find, and I spoke to as many experts as I could. I learned that researchers define child mortality as the death of anyone under the age of 5. They use that age because the first five years are the riskiest time of childhood, when kids are the most vulnerable.

Learning about the history of child mortality helped me put the statistics in context. In 1950, some 20 million children died. In 1990, it was down to 12 million children, even though more babies were being born. By 2000, the number had dropped to fewer than 10 million. By 2019, it was below 5 million. Virtually all these

# **DRAMATIC DROP IN DEATHS OF CHILDREN UNDER 5 YEARS**

Child mortality dropped by more than half in less than 30 years.



deaths occur in low- and middleincome countries.

So the next question was, why were so many children dying?

Around 18 percent of the deaths were caused by non-communicable conditions, such as cancer and cardiovascular problems. The large majority – 82 percent – of the deaths were caused by communicable diseases, such as diarrhea and malaria, and health problems that their mothers experienced – exacerbated by risk factors including malnutrition. (This 18:82 ratio still holds true today.)

On the one hand, this was heartbreaking. The worst killers were all

▶ things that people in rich countries considered just an unpleasant episode (such as diarrhea) or never experienced at all anymore (such as malaria). Although it was true that children were dying because of deadly diseases, that was only part of the explanation. They were also dying because of where they were born.

On the other hand, it was encouraging that such a large share of the deaths was preventable. When I saw the breakdown of diseases, I thought: Here is our road map. This is what the Gates Foundation should be working on. With the right team, partners, and funding, we could help the world move through the list, systematically going after the worst killers. Solutions that already existed could be made more affordable and delivered to people in low-income countries. Solutions that didn't exist could be invented.

# MILLIONS OF DEATHS FROM PREVENTABLE CAUSES

Most child deaths are due to conditions that can be treated and prevented.





Bill Gates, 66, was co-founder of Microsoft (in 1976) and acted as CEO or Chairman of the software giant until 2014. In 2000, he created the "Bill and Melinda Gates Foundation", today the world's wealthiest charitable foundation. His latest publications: How to Avoid a Climate Disaster (2021) and How to Prevent the Next Pandemic (2022)

On page 12 is the chart as it looks today. As you can see, pneumonia is the top preventable cause, but the story here is one of real progress. In 2000, it took the lives of more than 1.5 million children, but by 2019, the number was around 670,000 – still an awful number, but a reduction of more than 55%.

Diarrhea is another example of progress. In two decades, its death toll has dropped 58%. A key reason is the use of low-tech interventions like oral rehydration solution (sugar water, essentially), which replaces lost electrolytes. Governments also ran large-scale sanitation programs to cut down on the spread of bacteria. Scientists developed an affordable rotavirus vaccine, and the world came together to deliver it. Between 2010 and 2020, this vaccine prevented more than 200,000 deaths. By 2030, it will have prevented more than half a million deaths.

Even though the overall number of deaths has halved, the relative positions of the top three killers have not changed. They are the same today as in 1990: neonatal disorders, pneumonia, and diarrheal diseases. As you can see in this graphic, the fourth slot

is where there has been a huge shift. In 1990, measles was responsible for half a million deaths. Today, it's malaria that is in the fourth slot – not because malaria deaths went up (they actually went down), but because measles deaths fell by a whopping 87%.

Why? Vaccines. Since 2000, Gavi, the Vaccine Alliance has provided measles vaccines to more than 500 million children – half a billion! – through routine immunization and special vaccination campaigns. (This is just one example of the magic of vaccines – although unfortunately vaccination rates have dropped because of the pandemic and other factors.) And malaria may not be #4 on that list for long, thanks to innovations like malaria vaccines, improved insecticide-treated bed nets, and sugar baits.

### **DECADES OF PROGRESS**

Many groups deserve credit for the decades of progress I've described here. Countries with high disease burdens have launched massive vaccination campaigns, strengthened their health systems, and shared best practices with each other. Wealthy countries generously

give aid that supports these efforts. Pharma companies have contributed technical expertise and made products affordable for low- and middle-income countries. Foundations including the Gates Foundation have stepped up with additional funding for innovative ideas. (At the foundation, we have staff and partners dedicated to each slice of the pie you see in the chart.)

Although too many children still do not live to see their fifth birthday, the world is moving in the right direction. If everyone keeps doing their part, we can move even faster and save even more lives. Because of COVID and other setbacks, the United Nations' goal to cut childhood deaths in half again to below 3 million by 2030 will be missed, but it can still be achieved the following decade.

At a time when war and pandemic are in the news every day, it is important to look for reasons to be hopeful. The world's opportunity – and ability – to save children's lives is surely one of those reasons.

BILL GATES' ESSAY "WHY DO CHILDREN DIE?" WAS FIRST PUBLISHED ON HIS BLOG <u>GATESNOTES.COM</u>.

FII: ATLAS OF HUMANITY 2022

# **THE GLOBAL** GROWTH **STORY: LIFE**

FOR OVER TWO CENTURIES, NO DATA SET HAS GIVEN A  $\rightarrow$ clearer view on the wealth and development of a nation than its life expectancy at birth. Industrial revolution, medical revolution, green revolution, digital revolution – these have all contributed positively to life expectancy. Fewer children and mothers dying at birth, more and healthier food, better cures for diseases, less dangerous living and working conditions – to name some of the most important factors in that centennial growth story of life expectancy. The laggards in life expectancy are typically the lowest-income countries, with a lack of medical infrastructure and high rates of undernourishment.

# THE HIGHEST RISEF IN THE SOUTH H

Surecicountries who already that a lifelexpectance of more than 70 years in 1970 (like Japan) could not add two more decades of longevity in the 50 yearst passed since then isg the highest growth rates for life expectancy between 1970 and 2019/are almost exclusively ideated in the Global South Of the 131 countries that iad ded more than 22 years of life expectate winthese five decades ht6 hre in Africa, fi2 inf Asia and g in Latin America. The world has become more equal this wavest at deast in life expectantly ran explanation: They are high-income locations like Singapore or Hong Kong, tax havens like the Cayman Islands, or European colonies like Martinique or Guadeloupe. So, it's the wealth that makes the longevity, not the climate.



# **INFANT SURVIVAL:** SUCCESS STORY **OF THE CENTURY**

"WHY DO CHILDREN DIE?" A QUESTION FOR HUMANITY. Reducing infant mortality was one of the great global challenges of the 20th century – and it has been among the greatest success stories of medical and human progress. A little more than a century ago, infant death was seen as a kind of fate. Today, even in the countries with the highest infant mortality, more than 90% of newborns survive the first five years. In more than 70 countries, the survival rate is higher than 99%. And the success story continues. According to WHO data, in 188 of 195 countries, the infant mortality has further declined since the year 2000.

# THE HIGHEST REDUCTION (IN ABSOLUTE TERMS)

In the 21st century, the main success story in the fight against infant mortality has been written in the South voif you look at the reduction in absolute numbers since thetbeginning of thetcenturys Some 23 countries have experiencedsa decline infinfant mortality by more than 46 tdeaths peril, 000 live biithsin 7 of them Farein Africa. The main reason iforathis concentration of African countries is their overall still highemortality rate. Accountry with ramone talityrate lower than 40 per 2,000 newborns simply cannot reduce/this/rate/by/more than 40. And shat's the case for moreithani 0200 dumtries and living standards. The rebound since then has been remarkable.

### SPOTLIGHT PNEUMONIA VACCINE

The paper makes the case for a vaccine to fight pneumonia. Pneumonia is, in most cases, a curable or preventable disease. But it remains the leading infectious cause of death globally among children under the age of five, disproportionately affecting marginalized populations. An effective and affordable vaccine is the best way to tackle this global challenge.

DECEMBER 2021



# DISEASE **AND CANCER BURDEN**

FOR EVERYONE AFFECTED, DISEASE IS A DISASTER.  $\rightarrow$ They and their loved ones will do whatever it takes to get healthy again. For societies, they are a statistic. You can't heal everyone whatever it takes, as resources are limited. Every country has to find its own way to keep its citizens as healthy as possible. An indicator like DALY can help to find that way. For each policy, it can measure how many Disease-Adjusted Life Years are gained or lost. And for humanity, the DALY indicator can also show challenges and priorities: If we want to invest in healthcare, the best place would be where there are the most life years lost to diseases.

# **HEADQUARTERS OF CORPORATE HEALTH**

Astweeknownthe dountries with the highest healthcare budgets are not the ones with the highest disease burden. Apdtthat's not just about income, as this map suggests: The countries highlighted are those where iat least one of the 50 diggest pharmace Otidal companies is located a The mostigliobaBplayersare the US (17 headquarters) followed by Europe (16); Japan (8) and a rising China (4) Nor Swiss companies do hogiustecare about Swiss problems. But for mosb bf the leaders of the major health care companies, the diseases that kill the most people ar away tments into everything else but cancer.

10,000

25,000 50,000

75,000

NO DATA

>90,000



# **VACCINES: TRUST AND** EQUALITY

WE SEEM TO HAVE ENTERED A DECADE OF VACCINES.  $\rightarrow$ The Covid-19 pandemic has unleashed a huge wave of vaccine research and development. Less than a year after the outbreak of the new virus, the vaccine campaign started - and saved millions of lives. The mRNA technology especially experienced an unprecedented take-off. It will not only be deployed against viruses, but also against other pathogens; and likely against cancer, too. The dark side of the vaccine decade: It is more unequal than ever. The high-income countries bought all the vaccines they needed for their citizens – and low-income countries were left behind.

# LACK OF WACCINESTRUSTY FOR CHILDREN

Theiefficacy of vaccines is pure science. They drave saved lives forliftore/than/200iyears/jandiconffinue?tordosofiffpeopletake the vadcines, that ist IB some fcountries, the wave of Covid arg vaccines was also accompanied by a wave of vaccine distribut. Mithe countries highlighted here whore that 15% of adults domotatiustsvacdiheseThe reasons prayadiffer from case to dase. In some gases the success stories of homemade vaccines thay have sounded to genuch like a fairly tale, in another pit nfayı beilack of itrustiin the government (or lover confidence impersonals YouTube and Google research. Another case of pure science: the higher the rate of vaccinated people, the higher the efficacy. So not taking the jab because it's not effective is a kind of self-fulfilling prophecy.





# DOCTOR AND NURSE DENSITY

IT'S GOOD TO BE HEALTHY. BUT ONCE YOU'RE SICK, it's better to have healthcare workers around you. Doctors and nurses are the cornerstones of any country's health policy. Or rather, they should be. There are still 18 countries that count fewer than one medical doctor for each 10,000 inhabitants – all of them are in Africa. The country with the highest doctor density, though, is not one of the usual suspects from Europe or North America. It's Cuba, with 84 doctors per 10,000 inhabitants, according to the latest WHO statistics. The main reason is Cuba's education policy, which, since the 1960s, has produced many more doctors than are needed on the island itself.

# **AND THE NURSES?E TO CATCH UP**

Yes; doctors are important. And doctors save lives But nurses matterttoonIn low-income and highly durate outries like Ethiopia, frueses are the most important ingredient for the rapididecline of imortality rates i Imremote regions where there is next to no chance of seeing a doctor, shuch lessa hospital, basic medicalistations have been established, with just one nurse and perhaps some medicines. This does not heal, all the sick, but can drastically improve medical care forsmother and child before and after births In pure quantity, though as shown here, the North is in the lead. Almost all Countries with more than 100, hurses per 10,000 in habitants are OECD members with an increase in medical doctors of 975% over 15 years.

# **SANITATION: BASIC NEED AND FLUSHING LUXURY**

LACK OF BASIC SANITATION IS ONE OF THE MAIN causes of communicable diseases and childhood death in low-income countries. Some 3.5 billion people – almost half the world's population – have no choice but to use unsafe sanitation facilities. Lack of basic sanitation leads to estimated losses of US\$200 billion a year in health costs and lost productivity.

According to the WHO definition, access to basic sanitation services means at least pit latrines that are not shared with other households. In urban regions, access to that kind of safe toilet is far better than in rural areas – even in low-income countries.

### THE BASIC LUXURY DE SEWER SYSTEMS

Wastewatef systems were invented long, long ago. Ancient Rome even had the Clobica Maximalasseweit for more than a/millionCinhabitantstio2,000eyearschgozButtoday,abild lions of people still don't have access to sewer systems and wastewates \$reatmento Surepeten in the highest ainbome countries dike Switzerfand aremote and sparsely populated areasatan getcalong) without public sewers Andsin coastal regions everywheile in the world where reatment of wasted water is often left to the oceans. But especially in Africa and Southeast Asiat there are whole countries almost without sewage systems. The process of urbanization may lead to a gradual improvement of the wastewater balance – as every city should have its own Cloaca Maxima.

# SPOTLIGHT **DISEASE DATA**

In September 2021, we launched the Global Infectious Disease Index (GIDI), providing valuable information to assess the readiness and vulnerability of global healthcare systems in tackling endemic and emerging epidemic diseases. Since its launch, GIDI has acquired a reputation as a scientifically rigorous and credible resource, unique in its field.

SEPTEMBER 2022



# **THE GROWING** COST OF HEALTHY LIVING

HEALTH IS EXPENSIVE, AND THE RICHER, THE MORE so. Economists estimate that for each 1% of GDP growth, healthcare expenditures grow by 1.4%. And sociologists can explain that growth difference by the change of priorities in societies and households. Once the basic needs of food and shelter are met, you get more interested in well-being, and spend more for it. Among the countries that spend the highest share of GDP on healthcare (according to WHO data for 2019) are just two lower-income countries. For very different reasons. Cuba, with a strong focus on healthcare for decades, and Afghanistan, with a huge slice of foreign aid – back in 2019.

# THE DOUBLE GROWTH STORY)

The countries shown blere have something in compont They have increased their health expenditubly per capita by more than 70 percent during the last/decadea And almost all of them have something else in common: They have experiencedabiatstandingleconomics growth stories ein the same period. The massive riselof wealth in China and Southeast Asiaris mintored linthe above average nise of health carespending. Buttnoteall the global growth champions of the 2010s also appear in the league of healthcare growth Thankidors. Countries like Indfaor Ethlopia have used bigger parts of their additional income to reduce absolute poverty and increase food security. If their growth stories continue, the growth of healthcare expenditure should catch up.

In Percent of GDP

SOURCE: WHO

# 13-000 **HEALTH EXPENDITURE** < 5 5 - 10 10 - 15 15 - 20 > 20 EXPENDITURE MORE THAN 3,000 USD / CAPITA COUNTRIES WITH HEALTH EXP / CAPITA GROWTH OF MORE THAN 70% IN THE LAST DECADE NO DATA



# **FOOD FOR KIDS** POOR QUALITY OR QUANTITY

MALNUTRITION IS ONE OF THE BIGGEST THREATS FOR the health or even the life of children. In 2021, an estimated 45% of deaths in children were linked to undernutrition. But overnutrition in childhood also can lead to chronic diseases and a significant reduction of life expectancy. The World Health Organization (WHO) sees a "double burden of malnutrition," with "the coexistence of overnutrition alongside undernutrition."

On the map, we have added WHO data for serious underweight and overweight in children. The lowest malnourishment share is recorded in Germany (4.6% of all children under five), the highest in Yemen (42.6%).

### OVERWEIGHT: AN EMERGING PHENOMENON SIA

Therichele the fatter? Notexactly Most higherincome counto tries have a rather flow rate of obese children under five on the US for example, loften seem as a supersize food count tryerecords/just 8.8% of children with serious overweights Australiagthird in the foverweight ranking (18.5%); list he highkindome@exception.)Mostecountries.with a high rate of overnoutished children belong to the group of cemerging marketspArid often to the Middle East six of the overweight EdpteniareSArablispeaking dountriesrWith the years of hun% génandrscarcityerotithat far behind eparents (and grandn pasents) tend to overfeedte well I meant ibut not well done, has by far the most undernourished children in the world.

MPACT

# IMPACT REPORT **THE RIGHT TO NUTRITION**

Feeding the world is a moral imperative for humanity, and putting bread on the table is a daily challenge for hundreds of millions of people, as climate change, political and economic disruption are threatening food security. This report sets the goal of food security as a human right and offers solutions how technology, innovation and human effort can contribute to reach that goal..

OCTOBER 2022



# **THE YOUTH STEWARDS OF OUR FUTURE**

Our young people will be the architects of the future. We must empower them and provide opportunities, so that their creativity and genius can overcome the challenges they face.

BY HRH PRINCESS REEMA BINT BANDAR AL SAUD

PLEASE ALLOW ME TO SHARE with you both my personal and our country's highest priorities: Working with, supporting, empowering our youth. The generation that will carry on the work begun by our Vision 2030 and making sure it touches the lives of everyone in the kingdom and across the region. Making sure it is an example to the world of what is possible. What can be done when a vision, ingenuity, hard work, and determination come together.

We as Saudis are a young nation: 75 percent of our population is under the

### **HRH Princess Reema Bint** Bandar Al Saud, 47, is the Saudi Arabian ambassador to the

United States since February 2019-becoming the first female envoy in the country's history. She is a member of the International Olympic Committee and a member of the Board of Trustees of the FII Institute



age of 35. And the canvas for our young people is not the past. It's not even the present – it's the future. The reforms and transformations occurring in the kingdom. The change and progress that shape our nation.

inclusion.

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1) They shape it economically: Building a stronger private sector, job growth and creation, entrepreneurship, sustainable development, renewable energy and building a global leading digital infrastructure.

2) They shape it socially: women's empowerment, greater equality and equity, diversity and

3) They shape it culturally: placing the kingdom's art and entertainment community at front

stage. Our natural preservation efforts. Sharing our traditions and our heritage with others and the world.

It's a blueprint for the future. More results and changes have occurred in the past 5 years than in the previous 80. And the key to our long-term success: the Guardians will ensure that this future society matches our dreams and honors our ambitions to create a place for everyone.

# **TOOLS FOR THE FUTURE**

It's our young people. Their success tomorrow depends on our success today. And if our young people are to be the architects of the future, they need the right tools. And they need us to prioritize their interests. They

need us to believe in them. And that means providing opportunity and investing in the future so that their creativity and genius can overcome the challenges they face. Like climate crises. Like providing global public healthcare.

We cannot close our eyes. And we must begin the work now. That's what our young people will be able to finish. But we must construct the foundation upon which they can reach the clouds.

I firmly believe our priority must be our young people. Because they are the stewards of the future. And I have no doubt that in their hands the future is bright. And while I've seen so much change in my lifetime, including changes that many thought were all but impossible, my confidence in what we can achieve together defies all uncertainty and has no reservation.

Building the future is never complete. Each generation shares that responsibility of doing its share. Empowering and paving the way for the next – that's how the future is built. Together.

THIS ESSAY IS A SHORTENED TRANSCRIPT OF HRH PRINCESS REEMA'S ADDRESS TO THE FII PRIORITY SUMMIT. SEPTEMBER 2022

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# WHERE THE NEXT STUDENTS

THIS MAP IS NOT ABOUT EDUCATION. IT'S ABOUT BABIES. But as the newborns of today are the students of tomorrow, the development of birth rates gives a hint as to where investments in education should be going. It's a very clear hint. At any given time in 2022, about half of all babies are born in Asia (511 out of 1,000, to be precise), and almost one-third in Africa (326 out of 1,000). The traditional hotspots of education in Europe and North America will teach only small fractions of tomorrow's students – from each region about 5%. And all projections for future birth rates suggest that this situation will deteriorate even further.

# LOWER SHARE OF BIRTHS IN 2050

Today's oldest continent, Europé, will not get anylyounger in the next/decades.EuropeAs share of globab births is predicted to fall from 512% to day to 14:5% in 2050. Eewersbirths, more deaths will arotine cessarily mean af shrinking population. The deficit cars also be covered by migration habut fond massive scale for which Eugope is unprepared. 21. Sometime around The main reduction in the share of births, though, will not takeplabeein Europeobut in Latin Artiegica and East Asia: While in 2022Asia accounts for 511dof 1,000 global births, By 2050 that share will shrink to 4390 About half of that reduction will come from China alone. The decline of birth rates that is a typical side effect of economic development and higher education was advanced and amplified by China's One-Child policy between 1980 and 2016.







NO DATA

SOURCE: UN POPULATION DIVISION, VISUAL CAPITALIST



# **EDUCATION COMPLETION AND** LEARNING POVERTY

BASIC EDUCATION IS ONE OF OUR MOST BASIC NEEDS. Without going to school, there is next to no chance of becoming a part of the global community. You may be able to learn from your parents whatever they are doing, and you may be able to follow in their path – but that's basically it. And in a world changing as rapidly as the one we're living in, there is no guarantee that yesterday's knowledge will be enough to put tomorrow's food on the table. At least on paper, this basic need is almost fulfilled almost everywhere. Just 13 countries, all of them African, report completion rates for primary education of less than 50%. But what have these children learned at school?

### GOING BACKWARDS EEARNING POVERTYON

Yësileducationeisintportanb Eveny political deaded knows it, as ddes every international organization. If yous wang to keepginvlestorstandydohorschappy and wilking toppay, fyou betterpresentogologyeducation statistics: But what dooks great on papel), logeshe f needssarily look good indicality At deast it hat is what then "leahning poverty" concept of the World Bank suggests. Ip measures the proportion of stue dents.whdcare-unablectoread and, understands a simple text by age fert. For children that are going to primary schoole this should be aige sception as primary education should basically teach children how to read and write. But in the countries highlighted here, most of them in Africa, learning poverty is the norm: More than two-thirds of children lack basic reading comprehension.



### IMPACT REPORT **EDUCATION AND POVERTY**

Millions of children remain without access to basic education. The digital divide is growing wider, eaving the 'haves' with the highest-quality education available, and the 'have-nots' with little or no access to quality education. But breakthroughs in modern technology make it possible for many more children to access good-quality education to prepare them for the jobs of the future.

OCTOBER 2021



# **HYGIENE AND** SANITATION AT **SCHOOL**

WHAT IS A BASIC SANITATION SERVICE AT SCHOOL? According to the UN organizations WHO and Unicef, this means toilets or latrines, usable for all students and single-sex. Not too difficult to fulfil, it may seem, but in at least 23 countries fewer than half of all schools possess this kind of basic sanitation. Presumably there are between 10 or 20 more countries that lack basic sanitation. Namely in Africa, where the lack of hygiene at school and the lack of statistical data at national level often come together. Some high-income countries like Canada or Sweden also did not deliver data – but we can assume that most or all of their schools have usable toilets.

### HYGIENE IMPROVEMENT IN THE LAST DECADE

Countries that already to ffer close to hob% lactess to basic hys, gienel services at schoble an't improve quantitatively n while the guality of school toilets often leaves lots of room for improvement/The case is different for the 100 or iso course tries that deliver far less than 100% accessibility. Thereases highlighted here managed to improve the hygiène situation at their schools significantly during the 2010s. The fcountries withethe most amproved pelformatcel between 2011 and 2021 saie Serbia, Indias and the Philippinesr By the Way, only three countries have reported a decline in hygiene services at schools during that decade: Saint Lucia, the British Virgin Islands, and Palestine.



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### IMPACT REPORT **HEALTH EQUITY**

As the global population swells and the moral imperative of health equity becomes undeniable, the need for profound innovation in the field of healthcare delivery has become more urgent. The good news is that it is happening. This report explores how new technologies and systemic changes in health delivery improve people's everyday lives..

DECEMBER 2020



# **GLOBAL** LANGUAGE PROFICIENCY

AMONG LANGUAGES, THERE'S ONLY ONE GLOBAL PLAYER:  $\rightarrow$ English. It's by far the most widespread, the most used in business, in travel, in pop culture. And it's usually the best bet to get around anywhere, if you don't understand one of the native languages. How good that bet is can be measured with the English Proficiency Index, elaborated by the language school chain EF. Besides the countries with English as mother tongue, the highest English proficiency is found in Northern and Western Europe, the lowest in some African countries and parts of the Arabic-speaking world. In Asia, there's just one country with very high English proficiency: Singapore.

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Whehryou imeetes of idonevin your country ewhat's the chlánkeithatghéyawjll speakvthe same dangilage as gioter Ed some.countries, the probability list close to 100% film Caba and Colombia, everybrie speaks Spanishted North or South Koreathere's almost only KoFeanli AndVirilsome countries, theprobability is close to zero. Take Papual Newh Guinda, where more than 800 different languages are spoken or tiny Vanuatuiwithimore than; 100A Totmeasure that probability, scientists uset the Linguistic Diversity Index. Highlighted here are the countries with the highest index val Mesa High diversity, though, thoes not necessarily mean shat your in s ferlocistor/dogsarotsunderstahid.you: Chemost bountries there **is a lingua france** to facilitate communication – such as English in India.





# **TOO MANY** PUPILS PER TEACHER

TOO MUCH QUANTITY CAN ENDANGER QUALITY.  $\rightarrow$ In manufacturing, scaling up output can often be done without loss of quality. In service sectors, not so much. Hairdressers can't just increase their revenue by delivering more and more haircuts. And teachers can't scale up their performance by teaching more and more pupils. Usually it's just the opposite: teachers get better when classes are smaller. Twenty pupils per teacher is a good ratio for primary schools. According to the Global Education Monitor, more than 80 countries stay within that range – not only high-income countries, but also countries such as Nepal, Jordan or Seychelles.

### TOO MANY PUPILS IN BREPRIMARY EDUCATION

Breeprimaryheducation clathat fmeants institutions of or childrem under sixylears old. Here, teaching is not usually a schools,likellearning@fsabstractskills,fbutsociallearninges. and playing of course For 20 countries (highlighted here) the Globial Education Monitor reports aemedian number of more than 30 pre-school pupils perited chew Wost of these countrieshare located lin African spine in South and East Asia, one ine Southi America (Colombia) , and one in, Europe (the United Kingdom) Weiddly, the UK reports a whoppifrg 63 predschool pupils penteachert with discondulightest in unat bevin the world. This quantity stands in starked outrast to Britain's numbers for primary and secondary education, both fewer than 20 pupils per teacher.



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### SPOTLIGHT **LEARNING BY FOUNDING**

This paper makes the cases for refugee entrepreneurship education. The millions of inhabitants of refugee camps are often seen as people with zero options. And especially the young generation has next to no chances to get higher education and decent work. But entrepreneurship education can change that. Not for profit in the first place – but for a chance.

APRIL 2022



# WHAT/WHERE ARE THE BEST UNIVERSITIES?

THE VALUE OF A GOOD UNIVERSITY IS HIGH. But the value of the BEST university is on a completely different level. Being the best in a certain discipline is attracting talent – students, researchers and professors alike. And being the best in a number of disciplines almost exponentially increases the attraction. But which university is the best? There are multiple rankings at national or regional level, and at least three competing rankings on a global level. The data for this map are based on one of them, the QS World University Ranking, which tracks and evaluates more than 1,400 universities in about 100 countries.

# THE MOST INTERNATIONAL STUDENTS NETWORK

Abtractling tstudentso froms abroad qisabite off the equality eriteria/for igoods universities if the leaglers in this ranking comes mainly from smalleio collutries like Sivitzerland on Horlg Kong, but also from Spain (business university IE) and the DK (Londown School tof Economics/Imperial College) ubin versities from big countries like (Shiha, Vind dia or the USA (get Sovien ranks's), if tenhald grafity), dsitly have high/tR)mbers of idghestic students: The country with the most universities in the Top 20 for this indicator is the UAEI with, six can puses: American driversity in/Dubbie and is Shaojah (Pcaniadian University Dubai, tajhfan University Atin University according to this indicator is in Saudi Arabia: the Islamic University of Madinah.





# **ABOUT FILINSTITUTE**

THE FUTURE INVESTMENT INITIATIVE (FII) INSTITUTE is a new global nonprofit foundation with an investment arm and one agenda: Impact on Humanity.

Global, inclusive and committed to Environmental, Social and Governance (ESG) principles, we foster great minds from around the world and turn ideas into real-world solutions in five critical areas: Artificial Intelligence (AI) and Robotics, Education, Healthcare and Sustainability. We are in the right place at the right time: when decision-makers, investors and an engaged generation of youth come together in aspiration, energized and ready for change.

We harness that energy into three pillars: THINK, XCHANGE, ACT. Our THINK pillar empowers the world's brightest minds to identify technological solutions to the most pressing issues facing humanity. Our XCHANGE pillar builds inclusive platforms for international dialogue, knowledge-sharing and partnership. Our ACT pillar curates and invests directly in the technologies of the future to secure sustainable real-world solutions. Join us to own, co-create and actualize a brighter, more sustainable future for humanity. <del>< -</del>





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