

# SOLACTIVE FUTURE TRENDS

The Change of Tomorrow Begins Today

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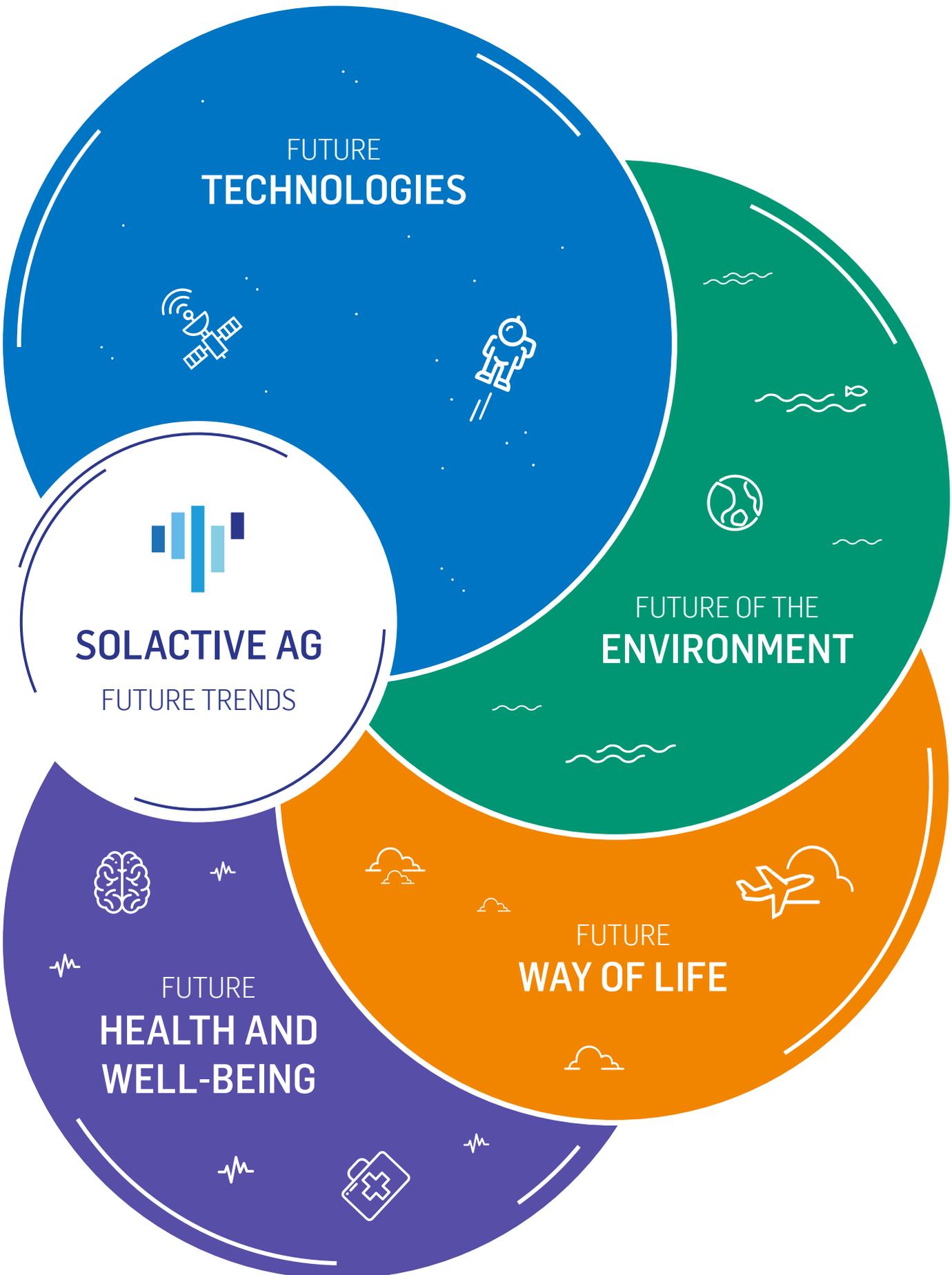
**SOLACTIVE AG**  
German Index Engineering

Publication: January 2020

1<sup>st</sup> revision: April 2020

[www.solactive.com](http://www.solactive.com)

# SOLACTIVE FUTURE TRENDS



## FUTURE TECHNOLOGIES

- > Solactive Fast-Growing Technology Companies Index
- > Solactive Electronic Payments Index
- > Solactive ARTIS® Worldwide Connectivity Index
- > Solactive ARTIS® AI and Automation Index
- > Solactive ARTIS® Big Data Users Index



## FUTURE OF THE ENVIRONMENT

- > Solactive ARTIS® Sustainable Energy Index
- > Solactive ARTIS® Sustainable Transportation Index
- > Solactive ARTIS® Waste Management Index
- > Solactive ISS ESG Beyond Plastic Waste Index
- > Solactive Vigeo Eiris Biodiversity Index
- > Solactive Renewable Capacity Weighted Bond Index



## FUTURE WAY OF LIFE

- > Solactive ARTIS® Future of Entertainment Index
- > Solactive ARTIS® Food Delivery Index
- > Solactive Remote Work Index
- > Solactive Beyond Basic Consumption Index
- > Solactive Fast-Growing Consumer Companies Index
- > Solactive Equileap Gender Equality Index Family



## FUTURE HEALTH AND WELL-BEING

- > Solactive Fast-Growing Healthcare Companies Index
- > Solactive ARTIS® Machines in Healthcare Index
- > Solactive ARTIS® Biotechnology Index
- > Solactive ARTIS® Oncology Index
- > Solactive ARTIS® Future of Nutrition Index



# EXECUTIVE SUMMARY

## SOLACTIVE FUTURE TRENDS

Our world is evolving at an ever-increasing pace. This evolution is reflected through structural changes that are set to revolutionize our day-to-day life on varying degrees.

The **Solactive Future Trends** offer a range of different indices. The idea behind them is to anticipate long-term future-oriented megatrends that could significantly impact the world for at least the next decade. **Megatrends are inevitable major long-term evolutions in society, economics, or the environment, that affect our lives and possibly also have an impact on politics.**

Based on today's knowledge, we concentrate on major beneficiaries of particular trends and create indices in the following categories: **Future Technologies, Future of the Environment, Future Way of Life, and Future Health and Well-Being.**

It is a difficult task to precisely predict what the next life-changing development will be. However, investors can adjust their portfolios around these trends as early as possible. Let's tackle it now with the Solactive Future Trends.

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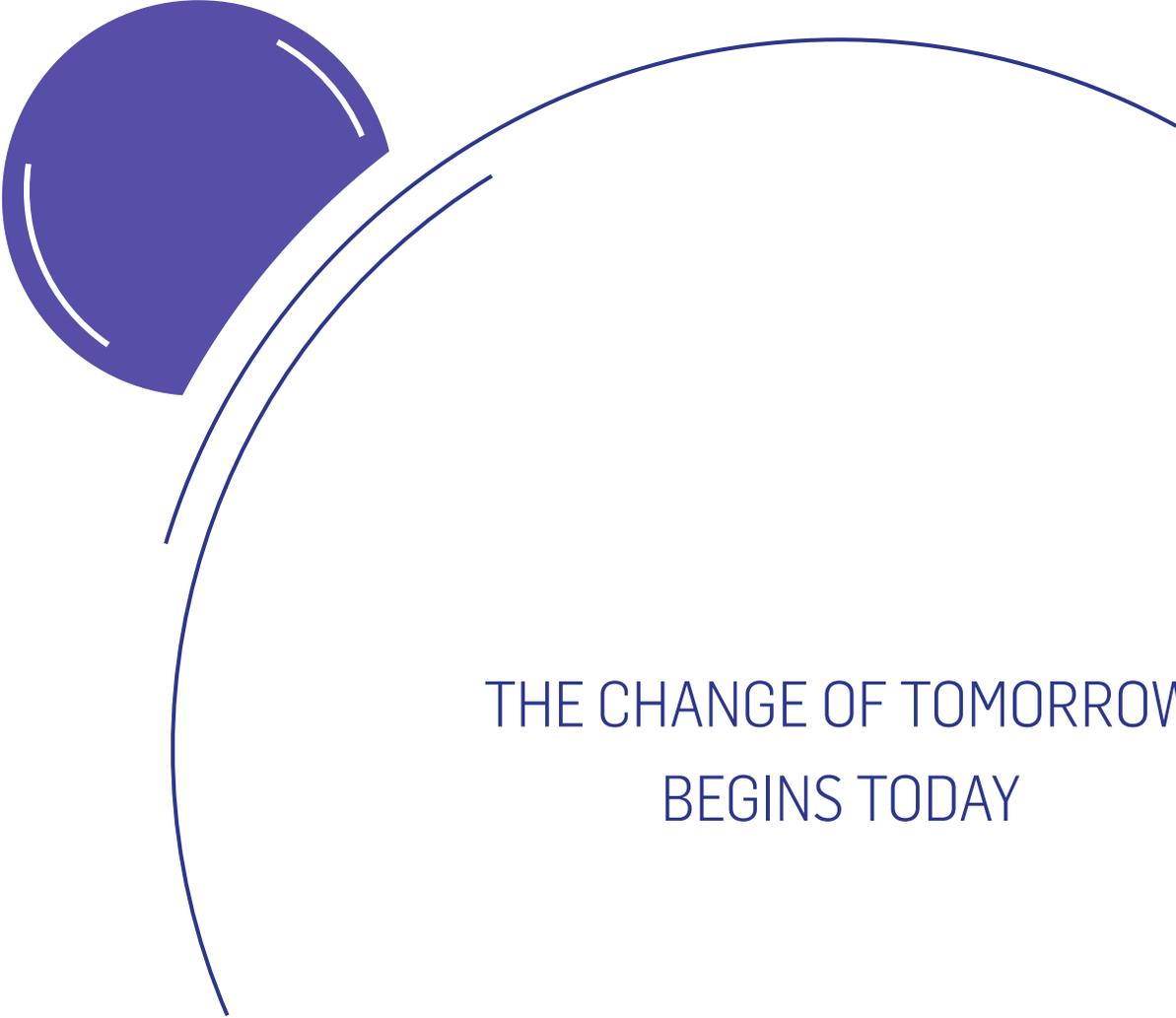
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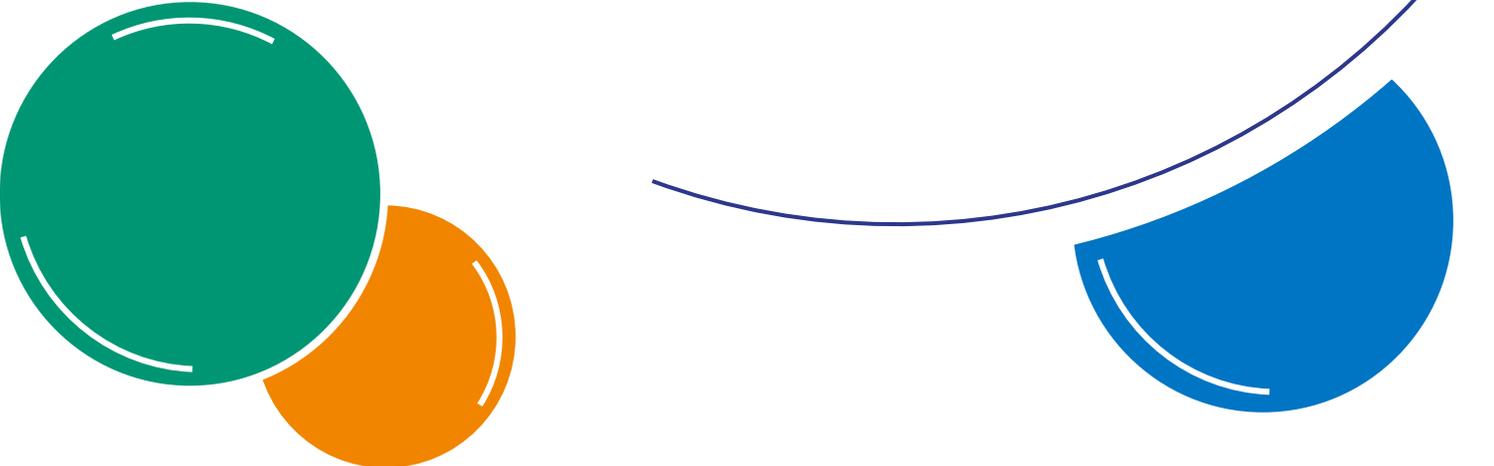
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# INTRODUCTION



THE CHANGE OF TOMORROW  
BEGINS TODAY



## INTRODUCTION

### THE CHANGE OF TOMORROW BEGINS TODAY

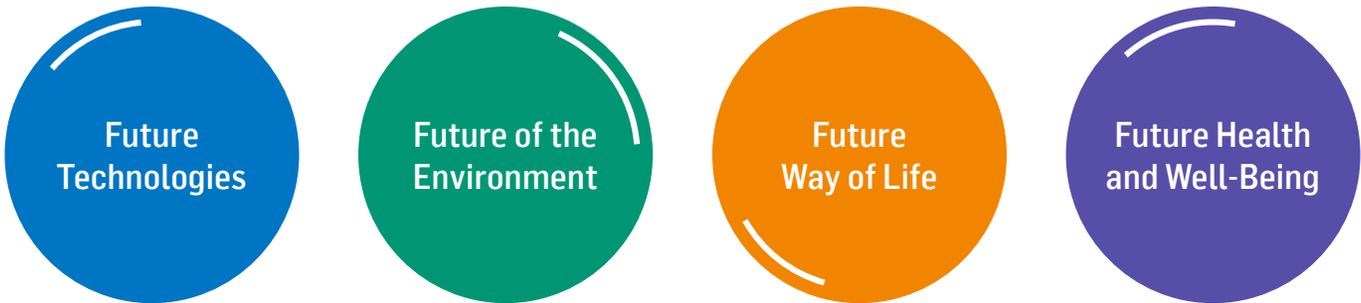
The **Solactive Future Trends** offer a range of new index concepts in the field of megatrends and thematic investing. As megatrends, in general, can also refer to past long-term trends, and stock prices reflect expected future cash flows, our approach is to focus on anticipated future-oriented megatrends that could significantly impact society during at least the next decade.

The word megatrend has its origin in the early 1980s, when John Naisbitt, active in the field of future studies, published his book "Megatrends: Ten New Directions Transforming Our Lives".<sup>1</sup> The Oxford Dictionary defines a megatrend as "an important shift in the progress of a society or of any other particular field or activity; any major movement".<sup>2</sup>

Examples matching this definition are digitalization, the phenomenon of social media, the rise of the internet, secular shifts in the interest rate environment, the enormous increase in the global usage of plastics, and demographic changes. By having early anticipated these trends, as well as having effectively identified their major beneficiaries and economic implications, investors could have tremendously gained from accurate predictions. However, this claim is easy to make ex-post.

Ex-ante, predicting the future is a very challenging task as forecast errors compound in a forecast's time window. What we attempt to identify with the **Solactive Future Trends** are long-term future-oriented megatrends. Based on today's knowledge, we seek to identify some of tomorrow's most promising investment themes, as well as to select the major beneficiaries of these individual trends.

We identify four major categories for the **Solactive Future Trends**, under which we summarize our new index concepts. The categories are:

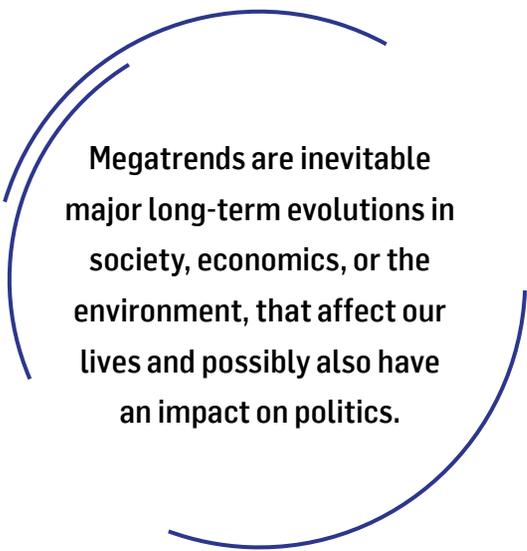


Future  
Technologies

Future of the  
Environment

Future  
Way of Life

Future Health  
and Well-Being



**Megatrends are inevitable major long-term evolutions in society, economics, or the environment, that affect our lives and possibly also have an impact on politics.**

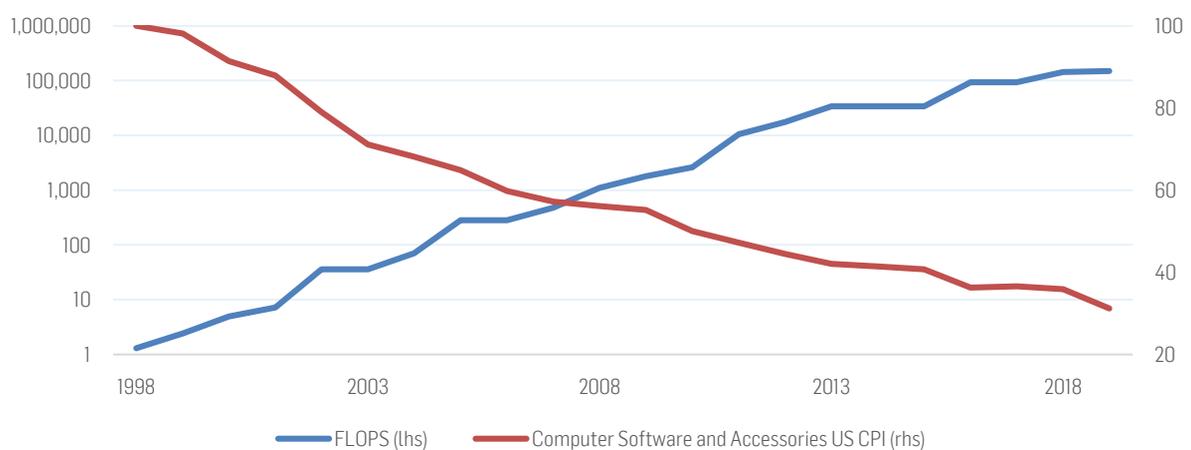
## INTRODUCTION

### THE CHANGE OF TOMORROW BEGINS TODAY

**Future Technologies**, such as in the field of digitalization or process optimization, slowly but steadily change our daily personal and professional lives. Data usage increases by the day, and it is very convenient to order a taxi or book the next trip from a smartphone. Supervising – or even being able to operate – an iron ore mine in South America from an office in Europe is nowadays business as usual for plant manufacturers. Global data volumes are expected to grow sharply, from 33 zettabytes (ZB) in 2018 to 175 ZB in 2025.<sup>3</sup> The exponential growth of data volumes is just one example reflecting previously unimaginable developments that may be on their way. If the potential of existing or new technologies – such as artificial intelligence or automation – fully unfolds in the near future, their implications could have major effects on global economic growth.

#### Floating-Point Operations per Second (FLOPS) (Trillions) by Largest Supercomputer (Left-Axis) and Computer Software and Accessories CPI for All US Urban Consumers (Rebased as of November 1998, Right-Axis)

This graph shows the floating-point operations per second (FLOPS) carried out by the world's largest supercomputer during any given year, as well as the computer software and accessories CPI for all US urban consumers, through time. As software-related technology – in general – has evolved at a fast pace, so have its costs sharply declined.



Source: TOP500 Supercomputer Database and the Bureau of Labor Statistics

Human development and technological advancements are tightly connected to the **Future of the Environment**. Actions have consequences. The increase in global energy generation capacity brought enormous benefits to the industrial world. At the same time, chemical giants are crucial for numerous economic sectors. Both the energy and chemical industries are embraced by humanity, but at the same time are responsible for major environmental catastrophes on our planet. An increase in global surface temperature by around 1° C between 1950 and today is just one example of how we enjoy the advantages of innovative technologies whilst probably observing the long-term detrimental consequences from their externalities.<sup>4</sup>

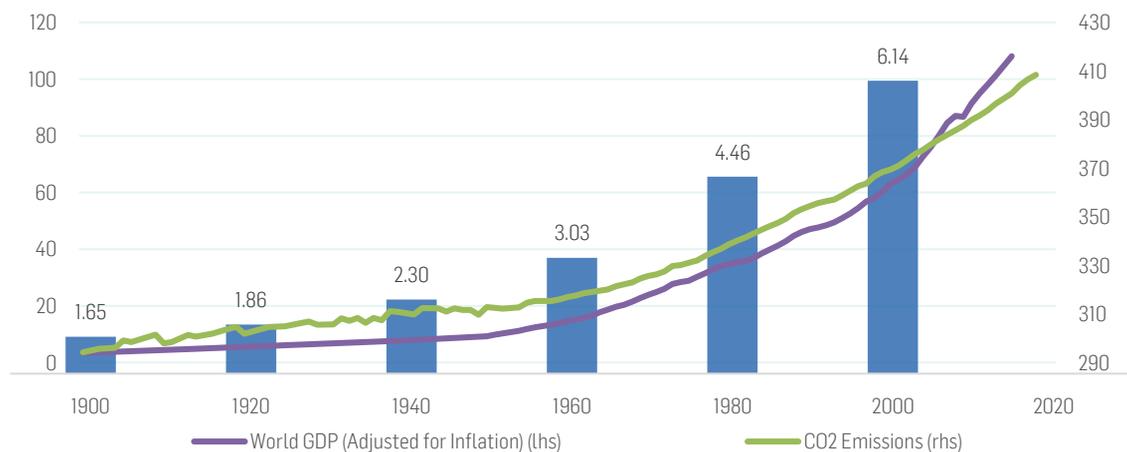
## INTRODUCTION

### THE CHANGE OF TOMORROW BEGINS TODAY

Societal awareness regarding environmental protection is increasing already, and more engagements in areas such as sustainable energy, sustainable transportation, the reduction of plastic waste, and the preservation of biodiversity will presumably become more relevant for global citizens and businesses.

#### World GDP (Trillion International Dollars, Left-Axis), Atmospheric CO2 Concentration (Parts Per Million, Right-Axis), and Total Global Population (Billions, Bars)

This graph shows the World's total GDP, atmospheric CO2 concentration, and population from the beginning of the twentieth century on. Several developments have enabled both a sharp increase in global wealth and the number of citizens worldwide. However, they have come at the cost of a greater degree of carbon generation – and consequentially, concentration – around the globe.



Source: [www.ourworldindata.org](http://www.ourworldindata.org) and References Therein

The **Future Way of Life** – i.e., how we interact, communicate, travel, conduct business, and handle most common daily routines – has already changed, and further changes are imminent. It is unthinkable that society will give up on the ease of managing the world from the comfort of our mobile devices. The number of smartphone users was around 3.2 billion in 2019, and this number is most definitely not foreseen to decline in the future.<sup>5</sup>

Other developments could change the world in similar ways as how quality of life has steadily improved in recent history or as how life expectancy at birth has risen by 5.5 years to 72.0 years between 2000 and 2016 – which has been the fastest growth since the 1960s.<sup>6</sup> In this context, the global consumer behavior is being reshaped to a large extent, and companies are adjusting their product offering accordingly.

**3.2 bn**

expected  
smartphone users  
in 2019

**5.5 yrs**

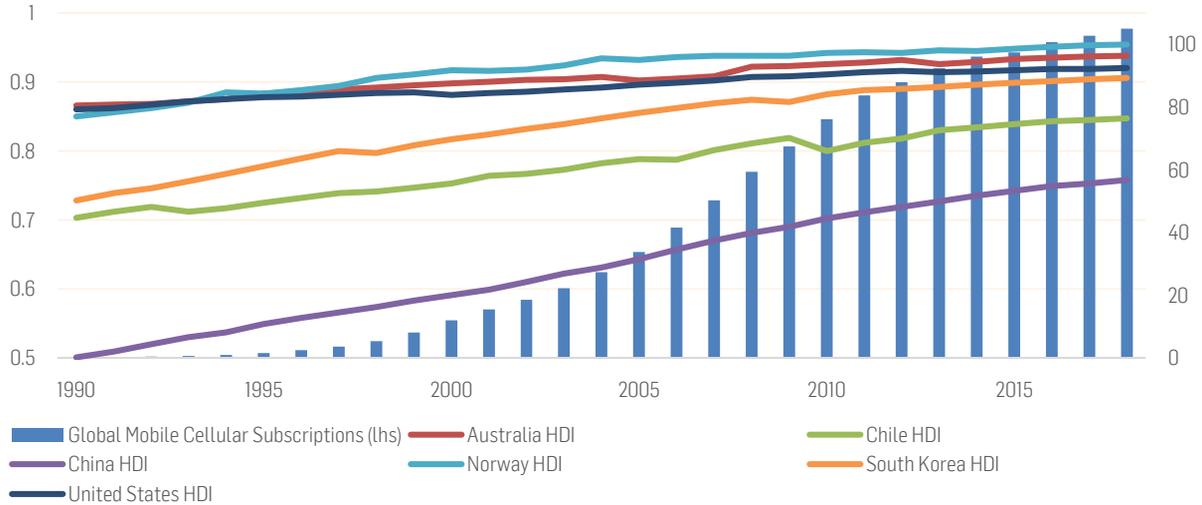
increase in life  
expectancy at birth  
since 2000

# INTRODUCTION

## THE CHANGE OF TOMORROW BEGINS TODAY

Select Nations' Human Development Index (HDI) (Left-Axis) and Global Mobile Cellular Subscriptions (per 100 people, Right-Axis)

This graph shows select countries' HDI (a statistic composite index of life expectancy, education, and per capita income indicators), as well as mobile cellular subscriptions worldwide. Recent history has witnessed a convergence of developing nations' human development towards that of developed economies. Simultaneously, the world is becoming ever-more connected. 2016 marked the first time in history in which the global number of mobile phone subscriptions overshadowed the world's population.



Source: The United Nations and the World Bank

The **Future Health and Well-Being** will continue to improve through technological advancements. Nowadays, it is already far easier to perform routine health checks and diagnose different diseases than ever before. More importantly, many severe diseases are either gone or curable, and fast progress is observable in fields such as biotechnology and oncology. With the vast breadth of information regarding how to live a healthy life, in combination with increasing personal medical care capabilities, humanity's well-being will likely keep on enhancing in the future.



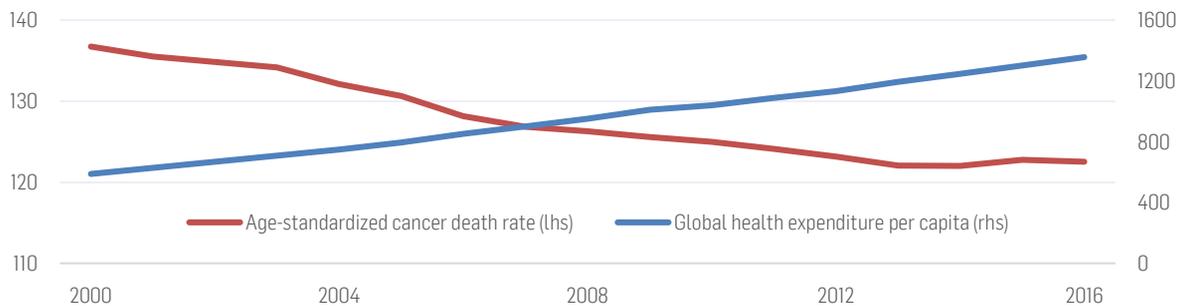
An example of a growing healthcare business sector is the genome market. Its global size is expected to increase from USD 26.0 billion in 2018 to USD 50.4 billion in 2025.<sup>7</sup> The healthcare sector is very dynamic due to its many fast-growing business sub-sectors. The aim to constantly enhance health and well-being will be the basis of future innovation – either through the development of a blockbuster medicine, the improvement of surgery methods, or the optimization of healthy nutrition.

## INTRODUCTION

### THE CHANGE OF TOMORROW BEGINS TODAY

#### Global Age-Standardized Cancer Death Rate (per 100 thousand people, Left-Axis) and Global Health Expenditure Per Capita (Current International Dollars, Right-Axis)

This graph shows the global age-standardized cancer death rate per 100 thousand people, as well as global health expenditure per capita. As cancer death rates increase in age, an increasing life expectancy, aging populations, and population growth, the number of cancer deaths have risen worldwide. However, when controlling for a changing age-structure, this disease's death rate has been continuously declining. This development can largely be attributed to a rise in healthcare spending.



Source: The World Bank, and [www.ourworldindata.org](http://www.ourworldindata.org) and References Therein

It is a challenge to predict what the next life-changing development will be. Despite all the excitement around new technologies, they have not led to a strong pick-up in productivity yet. However, if innovation is underpriced, a major boost in economic growth could be imminent, and many current projections would eventually have to be revised.

Digitalization continues to change our daily lives, new technologies in healthcare help to address humanity's well-being, and it is most likely that mother nature will be further affected by our actions. Investors can adjust their portfolios around these trends as early as possible.

The **Solactive Future Trends** offer a way to do so.

In the following sections, we describe in detail the four major categories of the **Solactive Future Trends**, as well as their respective sample of new indices. In each of the sections, we first describe the overall trend and then proceed to present summaries of the indices. For the index construction, we apply a diverse set of methodologies. We often use ARTIS®, Solactive's proprietary natural language processing software that identifies companies with exposure to different themes by analyzing hundreds of thousands of data sources. ARTIS® stands for Algorithmic Theme Identification System. The last section of this document provides a description of ARTIS®.

[1] Naisbitt, John (1982), Megatrends: Ten New Directions Transforming Our Lives.

[2] Lexico. Powered by Oxford.

[3] Reinsel, Gantz, Rydning (2018), IDC – Data Age 2025, The Digitization of the World.

[4] NASA's Goddard Institute for Space Studies. Global Climate Change: Vital Signs of the Planet.

[5] Newzoo (2019), Global Mobile Market Report.

[6] World Health Organization, Global Health Observatory (GHO) data.

[7] Global Market Insights (2019), Digital Genome Market Global Projections 2019-2025 Report.

# FUTURE TECHNOLOGIES



From stone artifacts enabling the dawn of agriculture to the steam engine paving the way for the industrial revolution, technological breakthroughs have continuously shaped the development of humanity. New technologies – such as digital technologies – are already embedded in the social fabric of many developed countries and are also stemming socio-economic changes in emerging nations. These revolutionary developments are reshaping our economies. In doing so, they are providing avenues for the creation of new social, financial, and human capital, as well as simultaneously opening new investment horizons and growth opportunities.

Amongst the top beneficiaries of future technological advances will not only be those that generate them. Namely, corporations willing to constantly embrace innovation and leverage it into their core processes are set to gain a competitive edge relative to their less-dynamic peers. Those at the forefront of technology adoption will ultimately drive smarter, as well as more robust and profitable business models – creating higher value for their stakeholders.

### What does Solactive do in the Future Technologies Space?

Our technology-related index offering is set to gain from societal and economic shifts derived from the never-ending string of technological disruption that will shape our future. The companies that compose them are both those leading the way towards a tech-driven world, as well as those better set and willing to incorporate new technologies in their corporate strategy – thus, becoming posed to better tackle the shifting needs of an evolving society. Solactive's "Future Technologies" index concepts provide conclusive investment opportunities in the near to long-term future, as technologies mature and proliferate further within our societies.

### Future Technologies – Our Index Offering

As technological trends evolve, so do our research practices. We are constantly transforming our indexing methodologies to offer novel solutions catering to the changing dynamics of the investor community. Our research ecosystem powering these indices is – in itself – driven by a mix of cutting-edge technologies such as natural language processing, coupled with expert insights. Please find indices composed of the leaders in their respective field below:

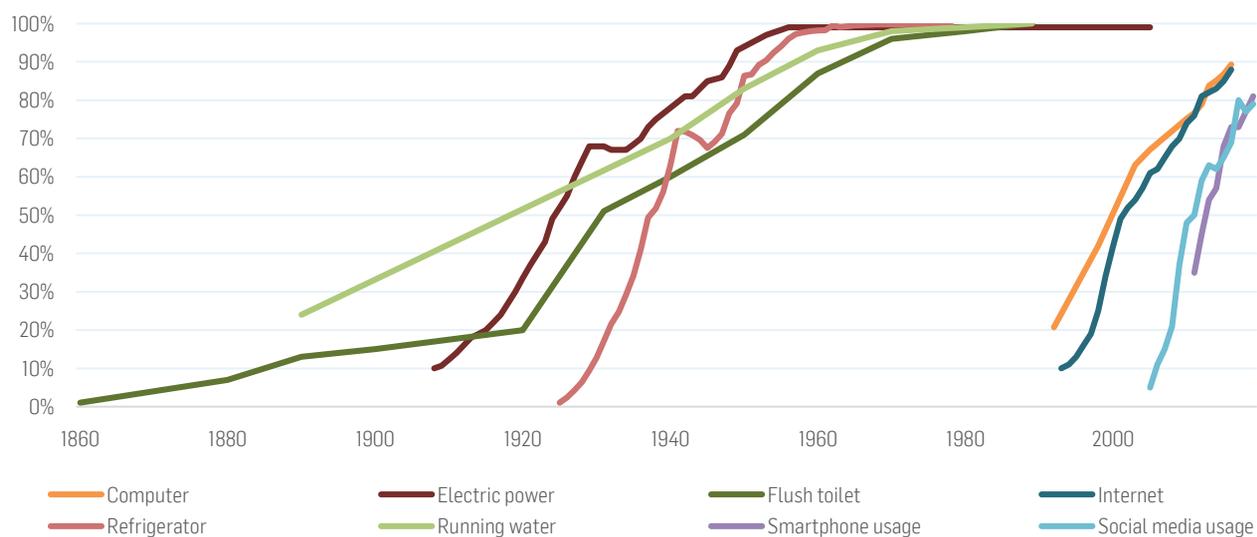
- > Solactive Fast-Growing Technology Companies Index
- > Solactive Electronic Payments Index
- > Solactive ARTIS® Worldwide Connectivity Index
- > Solactive ARTIS® Artificial Intelligence and Automation Index
- > Solactive ARTIS® Big Data Users Index



## Innovation In, Advancement Out

Between the 15th and the 19th century, a global power shift occurred, as the United States, Western Europe, and Japan overtook China's stronghold as the largest economy in the world. This catching-up in growth – accompanied by an increase in wealth – mainly took place due to the unprecedented degree of innovation present in this set of countries.<sup>1</sup> This is not the only case in which increases in productivity significantly spearheaded economic growth. Namely, between 1870 and 1950, the US economy approximately quadrupled (in constant prices). Only about 15% of this growth could be attributed to an increase in inputs (like capital and labor), leaving 85% open to interpretation.<sup>2</sup> Assuming that economic output is derived from an increasing input and productivity, it becomes apparent that the latter may have driven this expansion.<sup>3</sup> Furthermore, patent-based data has corroborated the significant causal link between innovations and economic growth.<sup>4</sup> Given this set of facts, it becomes apparent that those able to better leverage technology and innovation are set to reap the benefits of constant progress and disruption – especially as new technology adoption rates continue to steadily increase.

US Household's Adoption Rates of Different Technologies (%)

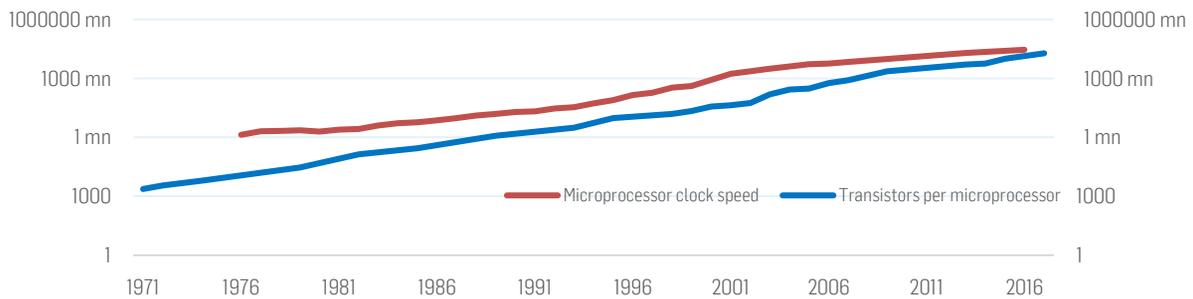


Source: [www.ourworldindata.org](http://www.ourworldindata.org) and References Therein

## The Best is Yet to Come

Innovation is taking place in many shapes and forms, but predominantly as technological revolutions. The developments span from devices connected through ever-faster broadbands to machines automating complex processes. Several statistics indicate that the progress is exponential. The number of transistors in integrated circuits has increased by 100% around every two years, from 1.21 million in 1989 to 19.2 billion in 2017.<sup>5</sup>

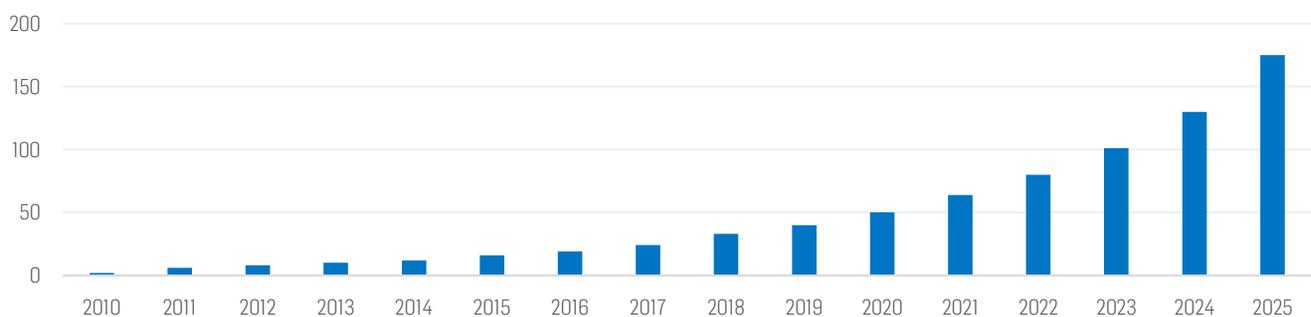
**Microprocessor Clock Speed (Hertz, Left-Axis) and Number of Transistors which Fit into a Microprocessor (Right-Axis)**



Source: [www.ourworldindata.org](http://www.ourworldindata.org) and References Therein

Further, computational power, measured as operations per second, increased exponentially. The computational capacity of personal computers doubled every 1.5 years between 1975 and 2009.<sup>5</sup> Supercomputer power, measured as calculations per second by the strongest supercomputer each year, has also increased way faster than linearly.<sup>5</sup> A wide array of technological advancements can take place due to the use and availability of reams of data, which are expected to further increase. The International Data Corporation (IDC) expects the Global DataSphere (the amount of data created, captured, and replicated in any given year across the world) to grow from 33 zettabytes (ZB) in 2018 to 175 ZB in 2025 (1 ZB = 1 trillion gigabytes).<sup>6</sup> The largest gains from new technologies may yet to be realized due to implementation gaps. However, once complementary innovations to technologies like artificial intelligence are developed and adopted, we will be set to witness an even faster evolving world unlike the one we live in today.<sup>7</sup>

**Global DataSphere (Zettabytes)**



[1] Stanford Graduate School of Business (2019), *How Innovation Drives Economic Growth*.  
 [2] Abramovitz (1956), *Resource and Output Trends in the United States since 1870*.  
 [3] Rosenberg (2004), *Innovation and Economic Growth*.  
 [4] Kelly, Papanikolaou, Seru, and Taddy (2018), *Measuring Technological Innovation over the Long Run*.  
 [5] Roser, and Ritchie (2019), *Technological Progress, Our World in Data*.  
 [6] Reinsel, Gantz, Rydning (2018), *IDC – Data Age 2025, The Digitization of the World*.  
 [7] Brynjolfsson, Rock, and Syverson (2017), *Artificial Intelligence and the Modern Productivity Paradox*.





Technology is becoming more embedded in our society by the day. Firms increasingly growing within the technology sector will reap the benefits of our great degree of dependence towards them. Our [Solactive Fast-Growing Technology Companies Index](#) tracks tech companies growing at a steady pace.



### Investment idea

Technology has become an elemental part of our society. This fact follows from technological innovations being adopted at an increasingly-fast pace within our day-to-day lives.

As tech companies continue innovating, the ones that grow at a faster pace within their respective sub-industry are set to benefit the most from society's dependence towards their services. Consequently, this set of players may be the ones that profit the most out of our rising degree of tech-savviness.

The Solactive Fast-Growing Technology Companies Index tracks tech companies with an increasing revenue stream.



### Index methodology

The equity universe of the index is that of the Solactive GBS Developed Markets Large & Mid Cap Index.

Out of this universe, we filter for companies in the Technology economic sector. Furthermore, we drop companies that have not experienced a growth in annual sales during each of the five years previous to the selection date.

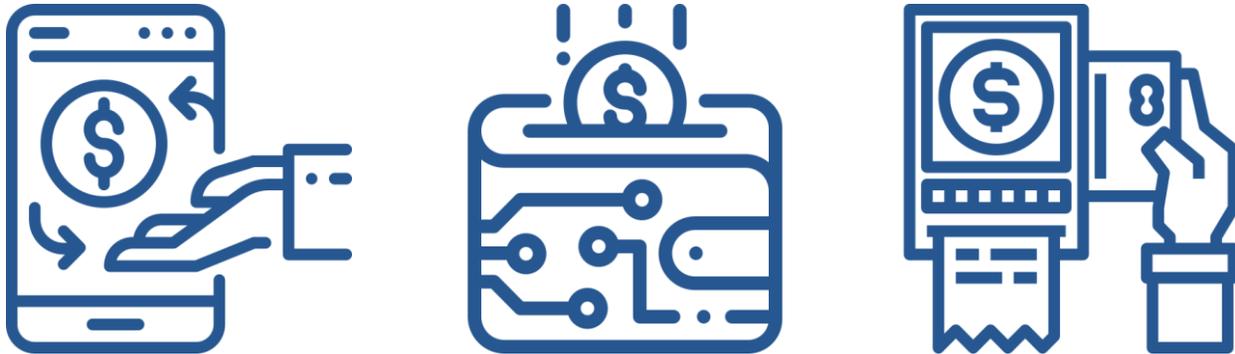
Out of the resulting universe, we select the top-30 companies by (four-year) average annual sales growth. The final universe is weighted according to the companies' free-float market capitalization.



### Top index constituents

- > Facebook
- > Alphabet
- > salesforce.com
- > PayPal Holdings
- > NVIDIA
- > ServiceNow





The payment process is adapting to our fast-moving lifestyles. Consequently, developments, such as paying with contactless technology, are making this process more convenient. Our [Solactive Electronic Payments Index](#) tracks companies enabling the next generation of payment systems.



### Investment idea

Modern technologies are becoming ever-more intertwined within tasks of our day to day life, and the way in which we pay for goods and services has not been spared from this change.

Widespread access to the internet and a high smartphone ownership rate are enabling a more seamless shopping experience for customers. The upside from these technologies may also potentially benefit business owners via sales growth, lower transaction costs, and higher transparency when it comes to their financial income.

The Solactive Electronic Payments Index consists of companies producing, offering and operating electronic payment solutions.



### Index methodology

The selection universe comprises companies that are classified under any of the following sub-industries:

Payment Processing Software, Internet Department Stores, Electronic Payment Processing, Web Search Sites and Software, Credit Cards, Smart Phone Manufacturing, E-Commerce Service Providers, Retail Industry Software, Online Game Websites and Software, Mixed Electronic Transaction Processing, and Money Transfer Services.

The constituent selection is based on FactSet's Revere Business Industry Classification System (RBICS).



### Top index constituents

- > Apple
- > Amazon
- > Alphabet
- > Visa
- > Mastercard
- > PayPal




 powered by **ARTIS®**

Globally, societies are becoming more connected. Technological advancements have made broadbands more efficient, and – therefore – more relied upon in our day-to-day life. Our [Solactive ARTIS® Worldwide Connectivity Index](#) tracks companies revolutionizing global connectivity.



### Investment idea

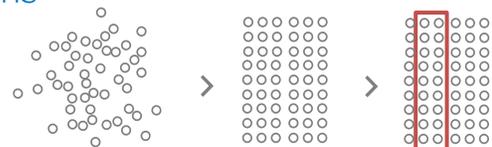
Over the past couple of decades, broadbands have become faster and evolved to be an essential part of the functioning of global societies and economies.

Further advances and developments in the field are set to embed the internet in daily life and business to an even greater degree. Examples of this fact can be visualized given the relevance that technologies such as 5G or the Internet-of-Things are set to have in the shaping of our future.

The Solactive ARTIS® Worldwide Connectivity Index is composed of global players active at the forefront of the 5G and Internet-of-Things fields.



### ARTIS®



Companies are selected by ARTIS®, our proprietary natural language processing algorithm that allows us to build a deep understanding of the products and services a company offers.

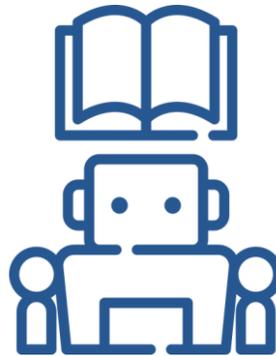
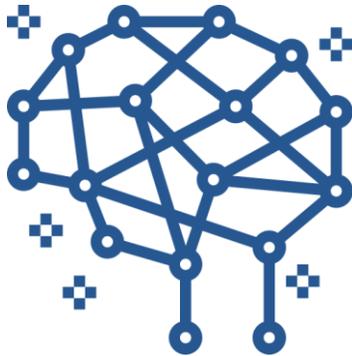
To create such insight, ARTIS® goes through large volumes of publicly available information such as annual reports, business descriptions, or financial news and identifies which companies and to what degree they are relevant to the respective theme.



### ARTIS® top picks

- > InterDigital
- > Samsung Electronics
- > AT&T
- > Cypress Semiconductor
- > Amazon.com
- > QUALCOMM





powered by **ARTIS®**

Artificial intelligence (AI) and Automation are playing an ever-growing role in our society. AI is present in an increasing number of daily activities of our life. Our [Solactive ARTIS® Artificial Intelligence and Automation Index](#) tracks companies pushing AI and Automation to new stages.



### Investment idea

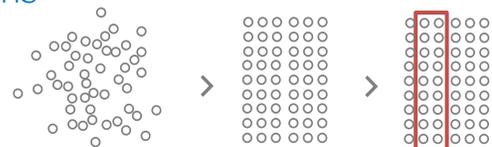
In the past decade, advances in artificial intelligence (AI) and Automation have shifted to replace blue-collar to white-collar jobs. This shift is often seen as a threat to Humans, but it may instead represent one of the most exciting opportunity and challenge of our time.

Fields such as healthcare, automobile, education, and many others, are set to benefit in major ways. We expect that future innovations in AI and automation will have a big say on the shape of our future.

The Solactive ARTIS® Artificial Intelligence and Automation Index is composed of global players active in the forefront of the AI and Automation fields.



### ARTIS®



Companies are selected by ARTIS®, our proprietary natural language processing algorithm that allows us to build a deep understanding of the products and services a company offers.

To create such insight, ARTIS® goes through large volumes of publicly available information such as annual reports, business descriptions, or financial news and identifies which companies and to what degree they are relevant to the respective theme.



### ARTIS® top picks

- > NVIDIA Corporation
- > Alphabet
- > Amazon.com
- > LS Industrial Systems
- > Silicon Laboratories
- > Rotork





powered by **ARTIS®**

The corporate landscape is being increasingly defined by firms both able, and willing, to invest and use big data in order to mold their business strategy. Our [Solactive ARTIS® Big Data Users Index](#) tracks the companies that are set to benefit the most from the big data revolution.



### Investment idea

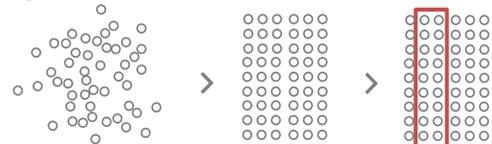
Data and analytics are changing the basis of competition within the corporate sphere. Leading companies are using their capabilities to improve their core operations and even launch entirely new business models.

The development of devices with greater computational power and the discovery of new kinds of datasets are enabling firms worldwide to gain insights previously unattainable.

Therefore, in order to gain exposure to firms paving the way to a more analytical future, we have created our Solactive ARTIS® Big Data Users Index. With it, investors can gain exposure to the companies benefitting the most from big data.



### ARTIS®



Companies are selected by ARTIS®, our proprietary natural language processing algorithm that allows us to build a deep understanding of the products and services a company offers.

To create such insight, ARTIS® goes through large volumes of publicly available information such as annual reports, business descriptions, or financial news and identifies which companies and to what degree they are relevant to the respective theme.



### ARTIS® top picks

- > Amazon.com
- > Facebook
- > Alphabet
- > Alibaba Group Holding
- > Walmart
- > Twitter



# FUTURE OF THE ENVIRONMENT



Our world is changing at an ever-increasing pace. This evolution is reflected through structural changes that are set to revolutionize our day-to-day life on varying degrees. As our communities become progressively shaped by major trends, our societal landscape is set to do so as well on previously unimaginable ways. For instance, with the advent of gene editing, automation and new manufacturing technologies, and artificial intelligence.

Technological and industrial progresses are not only enabling more efficient means of production and a more comfortable lifestyle but also come at the cost of negative second-order effects. Society is becoming increasingly aware of the externalities of its development and consumption and is taking actions to combat them. Examples of this trend can be observed from the shift towards eco-friendly energy sources, or with the increasing need to preserve the environment.

### **What does Solactive do in the Environmental and Sustainability Space?**

Solactive's "Future of the Environment" index concepts are set to benefit from the increasing societal awareness of environmental and sustainability issues that are affecting our world's future. The growth of their underlyings will follow as citizens and corporations alike become more and more conscious of the negative consequences of industrial advancements and an increase in global consumption. Therefore, we are committed to develop indices tracking the performance of companies and countries that are enabling a greener future – which, in turn, are set to benefit from humankind's transition towards a more sustainable economy.

### **Future of the Environment – Our Index Offering**

We are constantly working on new and thought-provoking environmentally-friendly index solutions in order to add value to the investment community. Our research ideas and inspiration for these concepts are derived from both ground-breaking trends and our interactions with experts in the field of sustainable investing. Please find the list of index concepts we have created within this space below:

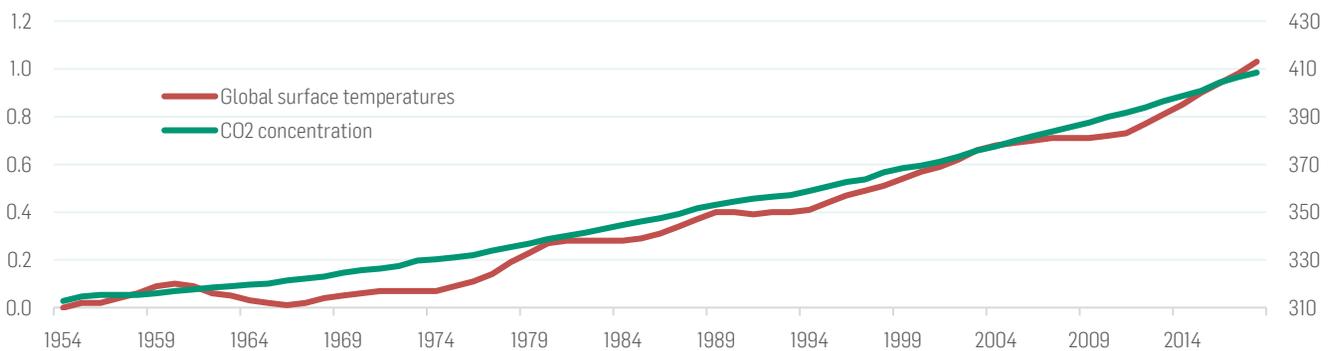
- > Solactive ARTIS® Sustainable Energy Index
- > Solactive ARTIS® Sustainable Transportation Index
- > Solactive ARTIS® Waste Management Index
- > Solactive ISS ESG Beyond Plastic Waste Index
- > Solactive Vigeo Eiris Biodiversity Index
- > Solactive Renewable Capacity Weighted Bond Index



## Are Economic Growth and Environmental Protection at Odds?

The degree of economic and urban development the industrial revolution generated in societies across the whole world may not have come without negative externalities. In 1880, the level of concentration of carbon dioxide (CO<sub>2</sub>) in the atmosphere stood at 287.77 parts per million (ppm). By 2018, the CO<sub>2</sub> degree of concentration had risen by around 42% to 408.52 ppm.<sup>1</sup> During the same time span, global surface temperatures rose by 1.04 degrees Celsius – while global warming increased in pace steeply after 1975.<sup>2</sup>

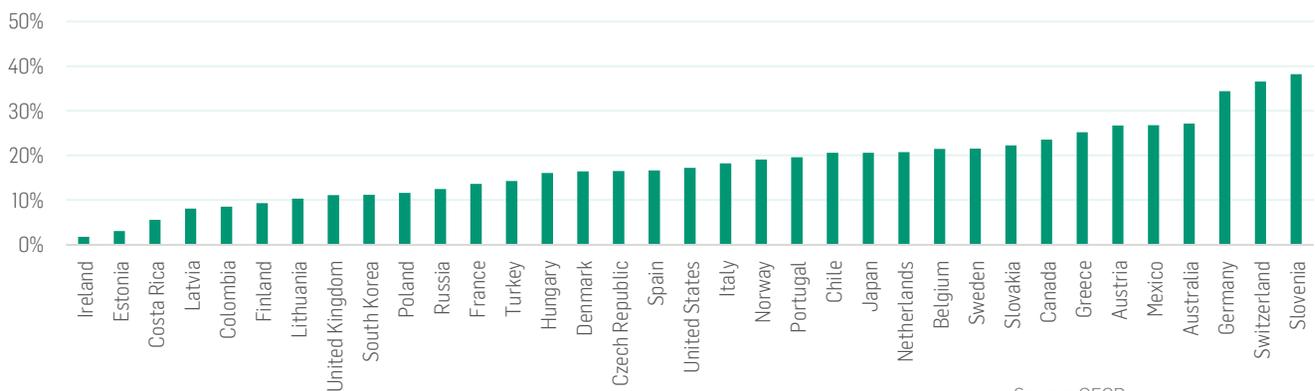
Global Surface Temperature Rise from 1954 (°C, Left-Axis) and Atmospheric CO<sub>2</sub> Concentration (Parts Per Million, Right-Axis)



Source: NASA, and [www.ourworldindata.org](http://www.ourworldindata.org) and References Therein

At the same time, we are currently going through an extinction crisis. Since 1970, the world has lost 60% of its vertebrate population, and more than 40% of insect species are declining rapidly.<sup>3</sup> Besides, natural forests declined by 6.5 million hectares per year from 2010 to 2015, mangroves declined by 20% from 1980 to 2015, and natural wetlands by 35% between 1970 and 2015.<sup>3</sup> All the while, global plastic production rose to 381 million metric tons per year in 2015 from 2 million metric tons per year in 1950.<sup>4</sup> It is estimated that there are more than 150 million tons of plastic in the ocean today, and by 2050, there could be more plastic than fish in the sea by weight.<sup>5</sup>

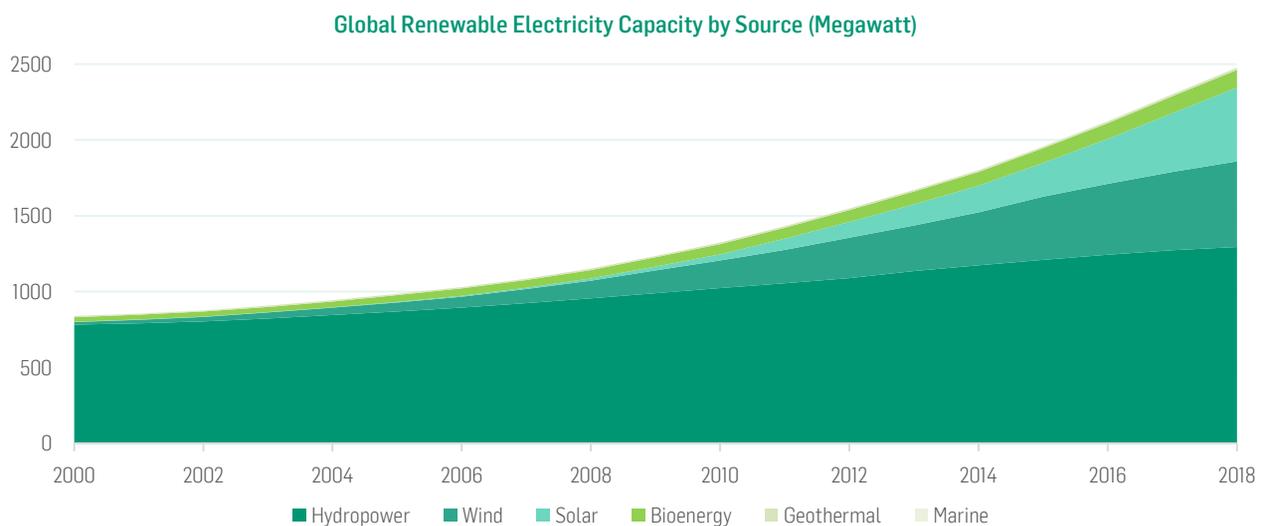
OECD Member Countries' Percentage of Threatened Mammal Species (% of Total Known Mammal Species) (As of 2015 or Latest Available Data)



Source: OECD

## Every Cloud has a Silver Lining

On the positive side, the global renewable energy generation capacity more than doubled between 2000 and 2017, whilst being expected to become the largest source of worldwide power generation by 2040.<sup>6,7</sup> More strikingly, solar and wind electricity generation capacity, rose from 1,227 to 486,085 and from 16,926 to 563,659 megawatt, respectively, between 2000 and 2017 – a fact that can, partially, be attributed to the dramatic drop of their unsubsidized levelized cost of energy.<sup>6,8</sup>



Multinational accords – such as the Paris Agreement on Climate Change – are also paving the way towards a more sustainable future. Another initiative geared towards ensuring an eco-friendlier future is the 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015 – which in part aims to set goals to tackle climate change and work to preserve our oceans and forests.<sup>9</sup>

[1] Ritchie, Roser (2017 / 2019), [Our World in Data, CO<sub>2</sub> and Greenhouse Gas Emissions](#)

[2] NASA, [Global Climate Change, Facts](#)

[3] OECD (2019), [Biodiversity: Finance and the Economic and Business Case for Action](#)

[4] Ritchie, Roser (2018), [Our World in Data, Plastic Pollution](#)

[5] Ellen MacArthur Foundation (2017), [The New Plastics Economy](#)

[6] IRENA (2019), [Renewable Electricity Capacity and Generation Statistics](#)

[7] BP Energy Outlook 2019

[8] Lazard (2018), [Lazard's Levelized Cost of Energy Analysis – Version 12.0](#)

[9] United Nations, [Sustainable Development Goals, Knowledge Platform](#)





powered by **ARTIS®**

To fight climate change, the world needs to rely more on renewable energy sources. Our **Solactive ARTIS® Sustainable Energy Index** tracks hydro, solar, and wind power companies.

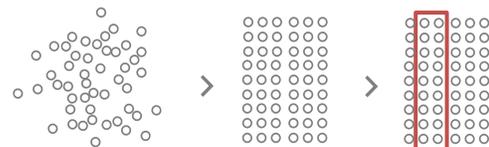
 **Investment idea**

Hydro energy in Canada and Norway, solar energy in Australia, and wind energy in Germany: The new normal in some countries is far from being standard in others. In 2018, less than one third of the global electricity was generated through the means of renewable sources.

Politics, multinational initiatives, and environmental awareness amongst citizens will most likely drive the energy revolution.

The index covers companies in the field of renewable energy production. As around 95% of the global renewable electricity capacity stems from hydro, solar, and wind energy, the index focuses on these sources.

 **ARTIS®**



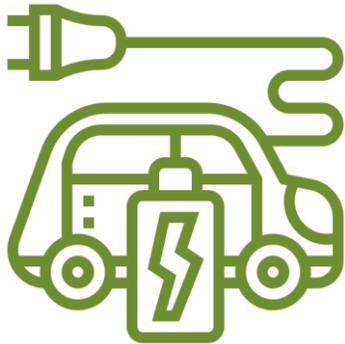
Companies are selected by ARTIS®, our proprietary natural language processing algorithm that allows us to build a deep understanding of the products and services a company offers.

To create such insight, ARTIS® goes through large volumes of publicly available information such as annual reports, business descriptions, or financial news and identifies which companies and to what degree they are relevant to the respective theme.

 **ARTIS® top picks**

- > Siemens Gamesa
- > Canadian Solar
- > NHPC
- > Brookfield Renewable Partners
- > Sunrun
- > Vestas





powered by **ARTIS®**

As the world evolves, its citizens will need to rely more on sustainable transportation sources. Our [Solactive ARTIS® Sustainable Transportation Index](#) tracks companies enabling sustainable mobility solutions worldwide.

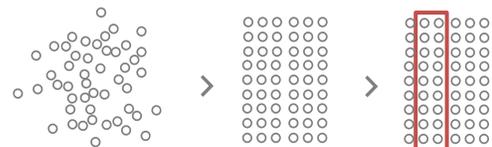
 **Investment idea**

Population growth, as well as its flock towards global metropolises, will prove to be a challenge for urban planners within the next generation.

Congested urban centers are not the only externality overpopulation may bring. A rise in pollution could also result from a worldwide increase in fossil fuel consumption by traditional means of transport.

Our index benefits from the rise in demand for electric vehicles, micromobility solutions, and other providers of alternative transportation. With increasing climate awareness, environment-friendly rail transport may gain attention, too. The Sustainable Transportation Index counts on a rethinking of mobility.

 **ARTIS®**



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 **ARTIS® top picks**

- > Aumann
- > NIO
- > Shimano
- > Stagecoach Group
- > Tesla
- > Union Pacific Railroad





powered by **ARTIS®**

The amount and kind of waste we generate on our Earth is increasing from day to day, and it is humankind's responsibility to address this problem accordingly. Our **Solactive ARTIS® Waste Management Index** tracks companies tackling the increasingly important issue of waste management.

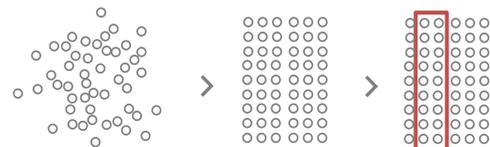
 **Investment idea**

Waste and its management are crucial topics. The amount of waste we are generating is growing on a daily basis and new kinds of waste are coming along with new innovations.

Given the negative consequences this issue represents for the environment and society, the Solactive Waste Management Index offers investors a great opportunity to take part in the promising and future-oriented waste management industry.

The companies that compose the index are particularly involved in solid waste management. These companies are set to enable cleaner and more sustainable societies worldwide.

 **ARTIS®**



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To create such insight, ARTIS® goes through large volumes of publicly available information such as annual reports, business descriptions, or financial news and identifies which companies and to what degree they are relevant to the respective theme.

 **ARTIS® top picks**

- > Waste Management
- > Casella Waste Systems
- > US Ecology
- > Waste Connections
- > Republic Services
- > Advanced Disposal Services



# SOLACTIVE ISS ESG BEYOND PLASTIC WASTE INDEX

## INVESTING IN REDUCING, REUSING, AND RECYCLING PLASTIC WASTE



The amount of plastic waste has been rising increasingly worldwide. Our [Solactive ISS ESG Beyond Plastic Waste Index](#) allows investors to gain exposure to companies that help in reducing, reusing, and recycling plastic waste.



### Investment idea

In 1950, global plastic production stood at 2 million metric tons per year. In 2015, production grew to 381 million tons of plastic, and the total sum of historically produced plastic reached 7.8 billion tons, which is around one ton per person alive.

The Solactive ISS ESG Beyond Plastic Waste Index addresses a problem that has become global.

The index provides an opportunity for investors to benefit from a global trend towards a greener future. It is designed to track companies that exhibit a significant commitment to reducing, reusing, or recycling plastics, and, therefore, in the minimization of plastic waste.



### ISS ESG



ISS ESG solutions provide ESG screening, ratings, and analytics designed to enable investors to develop and integrate responsible investing policies and practices into their investment strategies.

For the Solactive ISS ESG Beyond Plastic Waste Index, ISS ESG filters for companies that either enable a reduction in plastic consumption, plastic reuse, or plastic recycling. Companies that offer solutions to reduce plastic waste but are at the same time at the center of the plastic problem are not considered as eligible for inclusion into the index (for example, producers of primary plastic).

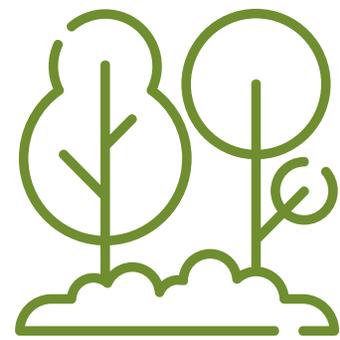


### Examples of index constituents

- > BillerudKorsnäs
- > Giant Manufacturing
- > Lenzing Group
- > Pennon Group
- > Renewi
- > Smurfit Kappa Group



**SOLACTIVE VIGEO EIRIS BIODIVERSITY INDEX**  
INVESTING IN THE DIVERSITY PROTECTION OF BIOLOGICAL SYSTEMS



It is essential to protect Earth's biological resources. This can be done by investing in companies that integrate the protection of biodiversity into their business strategy. Our [Solactive Vigeo Eiris Biodiversity Index](#) tracks companies fostering the protection of biological systems' diversity.



**Investment idea**

With at least 40% of the world's economy derived from biological resources, companies will have to take care of mother nature as natural interdependencies are under attack by human intervention.

Companies with a strong sustainable product line that preserve biodiversity are expected to be the winners of a structural rethinking.

Our index focuses on companies that protect the diversity of biological systems and offer sustainable goods and services with a connection to biodiversity. Therefore, it tracks companies making the biggest commitment to protect Earth's biodiversity.



**Vigeo Eiris**



Vigeo Eiris is a rating and research agency and evaluates social, environmental, and governmental (ESG) factors. Thereby, the company promotes responsible investment solutions and sustainable value creation.

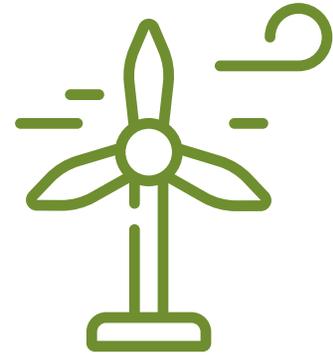
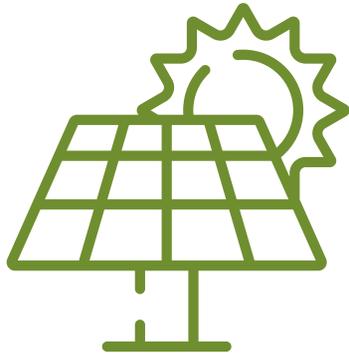
For the Solactive Vigeo Eiris Biodiversity Index, Vigeo Eiris calculates a Protection of Biodiversity-Score of listed companies based on their proprietary classification of the company's "sustainability objectives". As a result, such a score helps investors to identify fitting investments for their portfolio.



**Examples of index constituents**

- > Electricite de France
- > Iberdrola
- > Naturgy Energy Group
- > Neste Corporation
- > Norsk Hydro
- > West Fraser Timber





The world is facing a green-shift in global energy demand. Our [Solactive Renewable Capacity Weighted Bond Index](#) weights more heavily sovereign bonds issued by countries with a larger amount of renewable energy generation capacity relative to its benchmark.

 **Investment idea**

Despite mankind's over-reliance on renewable energy throughout most of human history, in 2018, less than 27% of global electricity was generated through the means of renewable sources.

Nonetheless, research shows that an increase in renewable energy consumption – both in absolute terms and relative to the countries' overall energy mix – is correlated with an increase in GDP.

Therefore, our Solactive Renewable Capacity Weighted Bond Index provides exposure to the economic performance of sovereign bonds of countries better suited to face the green-shift in global energy demand.

 **Index methodology**

The country universe of the index is that of the Solactive Broad Global Developed Government Bond Index. In the Renewable Capacity Weighted Bond Index, each country's sovereign bond basket is weighted proportionally to its relative renewable energy generation capacity with respect to the universe's total renewable energy generation capacity.

The data on energy generation capacity is obtained from the International Renewable Energy Agency (IRENA) – an official UN observer. IRENA's goal is to support countries in their transition to sustainable energy.

 **Most overweight index constituents (relative to the benchmark)**



# FUTURE WAY OF LIFE



Global society is evolving rapidly. Consequentially, our lifestyles are changing alongside with it. On the one hand, global improvements in health and education levels have resulted in longer lifespans, as well as in better quality of life. On the other hand, technological developments are shaping not only the way we consume and spend our leisure time but also how we interact and socialize with one another in a digitalized world.

As continuous changes in demographic and lifestyle trends are taking place along with a catch up by emerging economies towards better living standards and higher wealth levels, an ongoing shift in the consumer behavior space is expected. Companies that serve the customer needs of today and tomorrow by offering adequate goods and services will benefit from the dynamic changes of society. The requirements to digitalize and cater an ageing – and more urbanized – global population are among the top challenges for companies to adjust for towards the society of the future.

### What does Solactive do in the Field of Future Lifestyle?

Solactive's "Future Way of Life" index family is set to benefit from the developments of firms well suited to meet the necessities of a continuously changing society. Our perspective is that companies that are able to better adapt to previously-unthinkable and non-stopping global evolutions will not only profit from but also grow alongside them. Such beneficiaries stem from a wide array of businesses, from the online gaming and streaming sectors, to the builders and developers of future cities – as well as consumer-oriented companies growing in a rising degree of consumerism.

### Future Way of Life – Our Index Offering

We are constantly working on new thought-provoking index concepts related to demographics and the future lifestyle in order to make this trend easily accessible for the investment community. Our inspirations for these concepts are derived from closely monitoring and evaluating long-term shifts in economic and societal activity. Indices we have created within this space are the following:

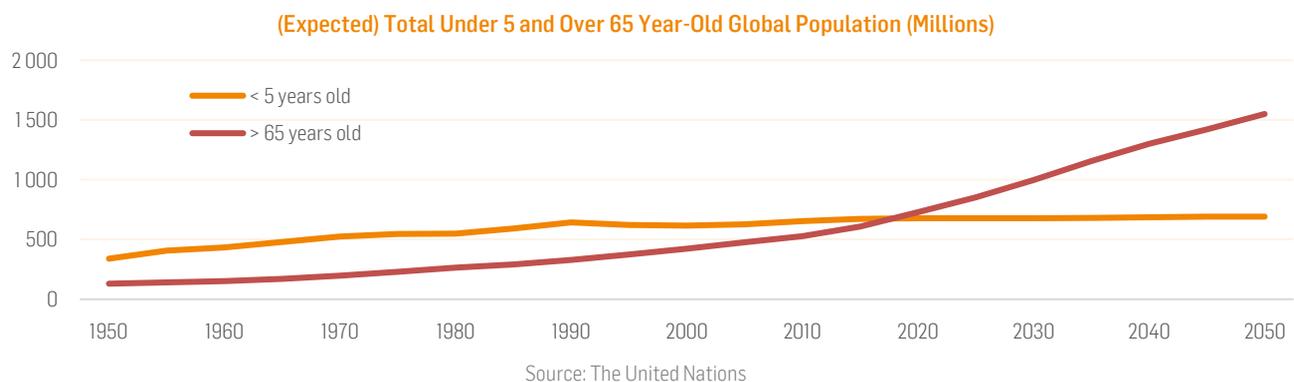
- > Solactive ARTIS® Future of Entertainment Index
- > Solactive ARTIS® Food Delivery Index
- > Solactive Remote Work Index
- > Solactive Beyond Basic Consumption Index
- > Solactive Fast-Growing Consumer Companies Index
- > Solactive Equileap Gender Equality Index Family



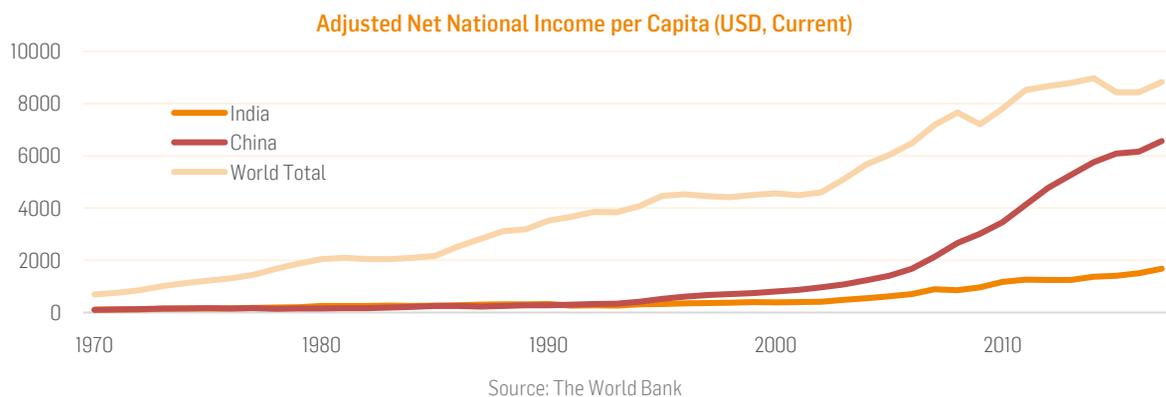
## The World is Changing

The world we live in will continue to change in the years and decades to come. The global population will further increase, demographic and social changes appear to be unstoppable, and the way we conduct our daily activities will be affected by technological progress.

A two billion increase in global population to a total number of 9.7 billion in 2050 is expected over the next 30 years. The eight countries with the highest expected population growth rates are all emerging markets. Europe and Northern America, on the other hand, are only expected to grow by a total of 2% until 2050.<sup>1</sup> At the same time, society grows older. Globally, people with 65 years and older outnumbered children under five for the first time in history in 2018. In Europe and Northern America, 25% of the population is expected to have at least 65 years of age by 2050.<sup>1</sup>

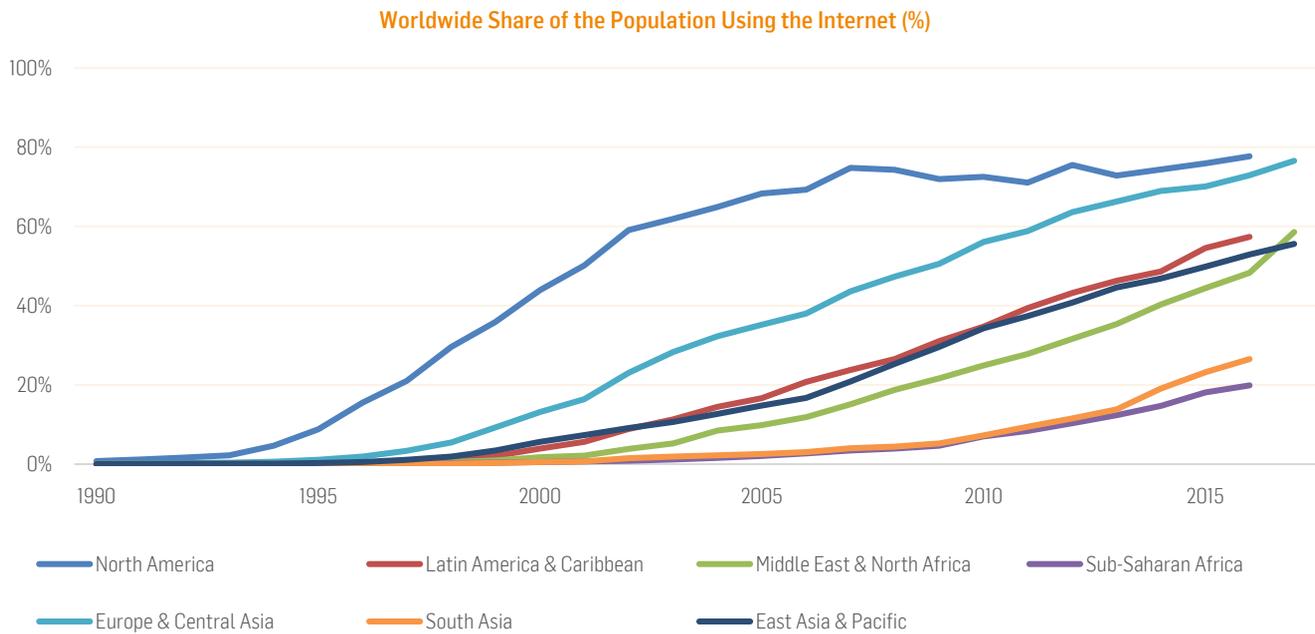


Although perception and reality are different within many economies, income inequality declined in recent decades on a global scale. This reduction was mainly due to a convergence of lower towards higher income levels. Particularly, rising income levels of countries like China and India significantly contributed to this development.<sup>2</sup> According to the IMF, 85% of the global population lives in emerging and developing economies – a fraction that is rather expected to increase over the next decades.<sup>3</sup> In the emerging markets, improving education and continued economic growth will lead to an increase in the number of middle-class consumers.



## A Changing Lifestyle, an Evolving Consumption Behavior

The evolution of consumption and global citizens' behavior enables companies to gain from the future way of life. Economic growth and technological progress are key drivers of changing lifestyles.



Source: [www.ourworldindata.org](http://www.ourworldindata.org) and References Therein

The way we communicate, commute, consume, and work, as a society, is changing. For instance, the emergence of smartphones has had a major impact on consumption behaviors, and the growth of e-commerce reflects this trend. While it is estimated that e-commerce sales grew to \$29 trillion in 2017, there are currently around 3.2 billion active smartphone users.<sup>4,5</sup> In addition, other industries are set to benefit in major ways – like the global games market, which will likely generate revenues of around USD 150 billion in 2019.<sup>5</sup>

[1] United Nations, Department of Economic and Social Affairs, World Population Prospects 2019  
 [2] Darvas, Zolt (2019), Global interpersonal income inequality decline: The role of China and India  
 [3] Lagarde, Christine, IMF (2016), The Role of Emerging Markets in a New Global Partnership for Growth  
 [4] United Nations, Press Release (2019), Conference on Trade and Development  
 [5] Newzoo, Key Numbers





powered by **ARTIS®**

Our center of attention is becoming ever-more digital. From streaming to videogames, our means of entertainment have recently changed radically. Our **Solactive ARTIS® Future of Entertainment Index** tracks companies set to benefit the most from the future developments in the world of entertainment.

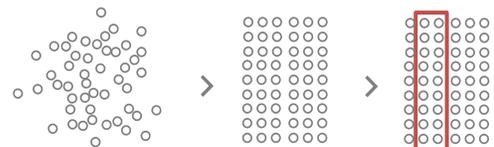
 **Investment idea**

Technology has been evolving exponentially. Global citizens access digital ways of entertainment that were previously inconceivable: from being able to choose which movie to watch amongst thousands of films without leaving the comfort of our homes, to being a click away from playing videogames against countless gamers worldwide.

Our life is becoming more digital by the day, and the way we spend our leisure time is, consequently, doing so as well.

The Solactive ARTIS® Future of Entertainment Index is exposed to companies offering video and music streaming, and to those in the videogaming industry.

 **ARTIS®**



Companies are selected by ARTIS®, our proprietary natural language processing algorithm that allows us to build a deep understanding of the products and services a company offers.

To create such insight, ARTIS® goes through large volumes of publicly available information such as annual reports, business descriptions, or financial news and identifies which companies and to what degree they are relevant to the respective theme.

 **ARTIS® top picks**

- > Apple
- > Netflix
- > Walt Disney Company
- > Activision Blizzard
- > NetEase
- > NVIDIA



**SOLACTIVE ARTIS® FOOD DELIVERY INDEX**  
INVESTING IN COMPANIES THAT DELIVER OUR FOOD AND GROCERIES



powered by **ARTIS®**

With a change in the way we work, consume, and live, the possibility to obtain food and groceries on a mobile and flexible way is crucial for our modern life. The **Solactive ARTIS® Food Delivery Index** tracks companies which profit from the development of the on-demand delivery industry.

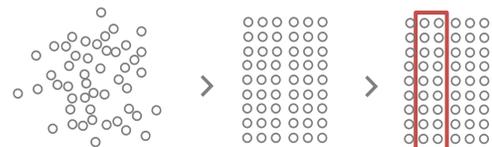
 **Investment idea**

Ordering food while working from home or doing grocery shopping remotely while picking up the kids. All of this is possible nowadays through new services and platforms provided by restaurants, supermarkets or e-commerce companies that increase customers' convenience and overcome their lack of time or mobility.

In times of digitalization and improved supply chains, these services will soon be regarded as standard services and will shape the future of the food industry.

The Solactive ARTIS® Food Delivery Index is composed of stores or restaurants providing delivery services or platforms.

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 **ARTIS® top picks**

- > Uber
- > Grubhub
- > Dominos Pizza
- > Yum!
- > Amazon
- > Papa Johns



**SOLACTIVE REMOTE WORK INDEX**  
INVESTING IN COMPANIES ENABLING THE REMOTE WORKPLACE



powered by **ARTIS®**

New technologies are greatly enabling remote workplaces. As we become increasingly able to work remotely, companies providing the services necessary for it are posed to reap the benefits of this transition. Our **Solactive Remote Work Index** tracks companies enabling the remote workplace.

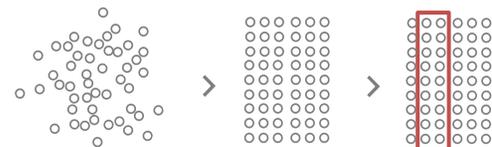
 **Investment idea**

From applications that allow coworkers to communicate remotely, to cybersecurity companies securing their clients' networks, new technologies are making remote workplaces more feasible by the day.

To gain exposure to firms paving the way towards a more decentralized work environment, we have created our Solactive Remote Work Index. With it, investors can gain exposure to the companies benefitting the most from the shift towards the flexible office.

The index provides exposure to the following fields: cloud technologies, cybersecurity, online project and document management, and remote communications.

 **ARTIS®**



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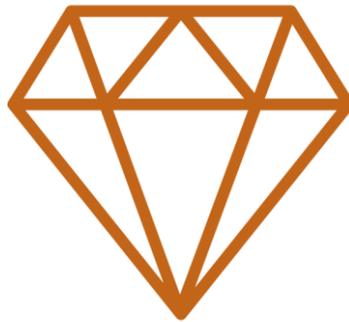
 **ARTIS® top picks**

- > Zoom
- > 8x8
- > Okta
- > Upland Software
- > Box
- > VMware



## SOLACTIVE BEYOND BASIC CONSUMPTION INDEX

### INVESTING IN COMPANIES SATISFYING OUR NON-ESSENTIAL NEEDS



Global wealth has risen steadily over the past couple of decades. As global citizens become wealthier, their tastes and desires will become more refined. Our [Solactive Beyond Basic Consumption Index](#) tracks companies offering goods and services that lie beyond our basic necessities.



#### Investment idea

According to the World Bank, the world's PPP-adjusted GDP per Capita (constant prices) rose by almost 190% between 1960 and 2018. This great surge in global wealth has enabled citizens worldwide to cover their basic necessities to a large extent.

As the general populace becomes increasingly able to obtain basic nutrients and find adequate shelter, its desires and tastes will tend to shift towards less necessary goods and services – from high-end apparel to entertainment at casinos.

The Solactive Beyond Basic Consumption Index is exposed to companies offering goods and services that lie beyond our basic necessities.



#### Index methodology

The equity universe of the index is that of the Solactive GBS Developed Markets Large & Mid Cap Index.

Out of this universe, we filter for companies in one of the following industry sectors: Apparel/Footwear, Apparel/Footwear Retail, Casinos/Gaming, Department Stores, Electronics/Appliance Stores, Electronics/Appliances, Hotels/Resorts/Cruiselines, Internet Retail, Media Conglomerates, Motor Vehicles, Movies/Entertainment, Other Consumer Specialties, and Recreational Products.

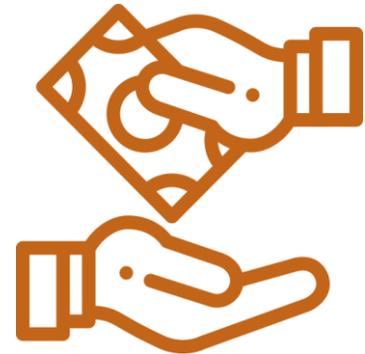
Out of the resulting universe, we select the top-50 companies by EBITDA margin. The final universe is weighted according to the companies' free-float market capitalization.



#### Top index constituents

- > Walt Disney Company
- > Kering
- > Nintendo
- > Activision Blizzard
- > LVMH Moët Hennessy Louis Vuitton
- > Compagnie Financière Richemont





Consumer spending has boosted global economic output. Firms increasingly exposed to this growth in consumption will reap the benefits it will convey to the overall economy. Our **Solactive Fast-Growing Consumer Companies Index** tracks consumer-oriented companies growing at a steady pace.



### Investment idea

Between the turn of the century and the end of 2017, the consumption expenditure of households and non-profit institutions serving households globally has risen at an annualized rate of about 2.8%.

This rise in consumption has largely influenced and driven economic growth all around the world. Some of the agents that benefit the most from this increase in consumer spending are set to be the companies able to continuously deliver the goods demanded by our society.

The Solactive Fast-Growing Consumer Companies Index tracks consumer-oriented companies with an increasing revenue stream.



### Index methodology

The equity universe of the index is that of the Solactive GBS Developed Markets Large & Mid Cap Index.

Out of this universe, we filter for companies in one of the following Economic sectors: Consumer Non-Durables, Consumer Durables, and Consumer Services. Furthermore, we drop companies that have not experienced a growth in annual sales during each of the five years previous to the selection date.

Out of the resulting universe, we select the top-40 companies by (four-year) average annual sales growth. The final universe is weighted according to the companies' free-float market capitalization.



### Top index constituents

- > Amazon.com
- > Netflix
- > Starbucks
- > Booking Holdings
- > Charter Communications
- > Walgreens Boots Alliance





Gender equality is gaining more and more relevance in modern society. Consequently, companies are increasingly incorporating gender equality strategies into their organizational culture. Our **Solactive Equileap Gender Equality Index Family** tracks firms fostering gender equality in their organization.



### Investment idea

Gender diversity has come to the attention of society and businesses. Many significant steps have been taken to generate more equal societies worldwide. Thanks to these initiatives, our modern world is unarguably the most equal one gender-wise in recorded history.

Diversity may not only provide benefits to society in general but also to firms incorporating gender equality policies within their ranks. This fact follows if greater diversity of gender potentially leads to diversity of thought as well.

The Solactive Equileap Gender Equality Index Family provides investors exposure to firms committed to gender equality within the corporate sphere.



### Equileap



Equileap provides data and insights on gender equality in the corporate sector. In 2019, their research coverage exceeded 3,500 companies in 23 developed economies. Those companies represent 98 million employees.

The Equileap Gender Scorecard focuses on the criteria gender balance in leadership & workforce, equal compensation & work life balance, policies promoting gender equality, commitment, transparency & accountability, as well as so-called alarm bells.

The scoring results provide the input for the index construction. The equity universe of the index family is flexible within the space of developed markets.



### Top companies with respect to the Equileap's Gender Equality Scorecard

- > Diageo
- > Mirvac
- > Bank of America
- > L'Oréal
- > Telstra
- > Stockland



# FUTURE HEALTH AND WELL-BEING



Over recent history, progress in areas such as vaccination and sanitation have dramatically increased our life expectancy. We expect that technological breakthroughs in disciplines such as healthcare, robotics, nanotechnology, genomics, and biotechnology will continue to significantly improve our health and well-being. These improvements will fundamentally change how we prevent, diagnose, and cure diseases. Indeed, sustaining well-being besides treating illnesses will increase in importance for humankind. In this context, healthy nutrition plays a key role.

Each breakthrough and innovation, while reshaping our understanding and expectation of healthcare, are also coming with their own challenges. Increasing lifespan and costs are putting an additional strain on our healthcare system. To rise up to the challenge, measures to boost efficiency are enabled through big data and mobile health technologies, allowing non-traditional companies to enter the medical markets, as for instance in the fields of diagnosis and monitoring.

### **What does Solactive do in Health and Well-Being?**

Solactive's "Future Health and Well-Being" index family is set to benefit from the societal shift towards a better quality of life, as well as from medical and technical innovations such as genetic modification. This shift will push companies to provide evermore focused patient care and innovations that will drive growth in a number of sectors – from pharmaceuticals and computer science to nutrition. Therefore, we are committed to develop indices composed of companies that are shaping a healthier future.

### **Future Health and Well-Being – Our Index Offering**

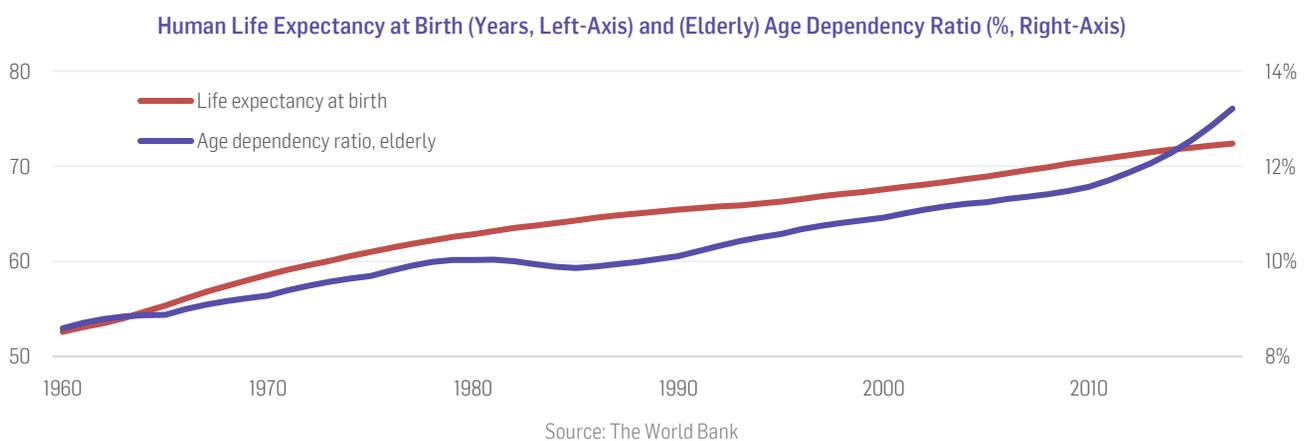
Companies operating at the forefront of maintaining and improving humankind's healthiness and well-being are at the center of Solactive's research endeavors. Science and developments in fields such as innovative healthcare and healthy nutrition offer plenty of investment opportunities. We are constantly working on new index ideas and concepts in this space – please find a list in the following:

- > Solactive Fast-Growing Healthcare Companies Index
- > Solactive ARTIS® Machines in Healthcare Index
- > Solactive ARTIS® Biotechnology Index
- > Solactive ARTIS® Oncology Index
- > Solactive ARTIS® Future of Nutrition Index



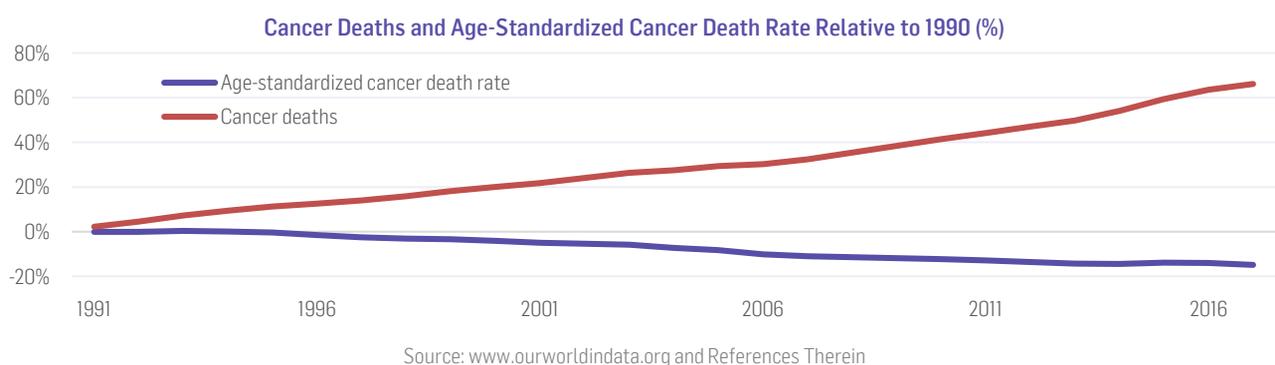
## Living Longer. Becoming Older?

Throughout the past centuries, a multiple set of factors have influenced the healthcare landscape in diverse ways. Increases in life expectancy during the 19<sup>th</sup> and early 20<sup>th</sup> centuries were driven by progress in sanitation, housing, and education. These improvements caused a steady decline in early and mid-life mortality. The latter half of the twentieth century was characterized by a new phenomenon: the decline in late-life mortality.<sup>1</sup> This fact is reflected by a close to a 20-year increase in expected lifespan at birth between 1960 and 2017, alongside an almost 5 percentage point increase in elderly age dependency ratio (the proportion of elderly people not in the labor force to the total population in the labor force) during the same time period.<sup>2</sup>

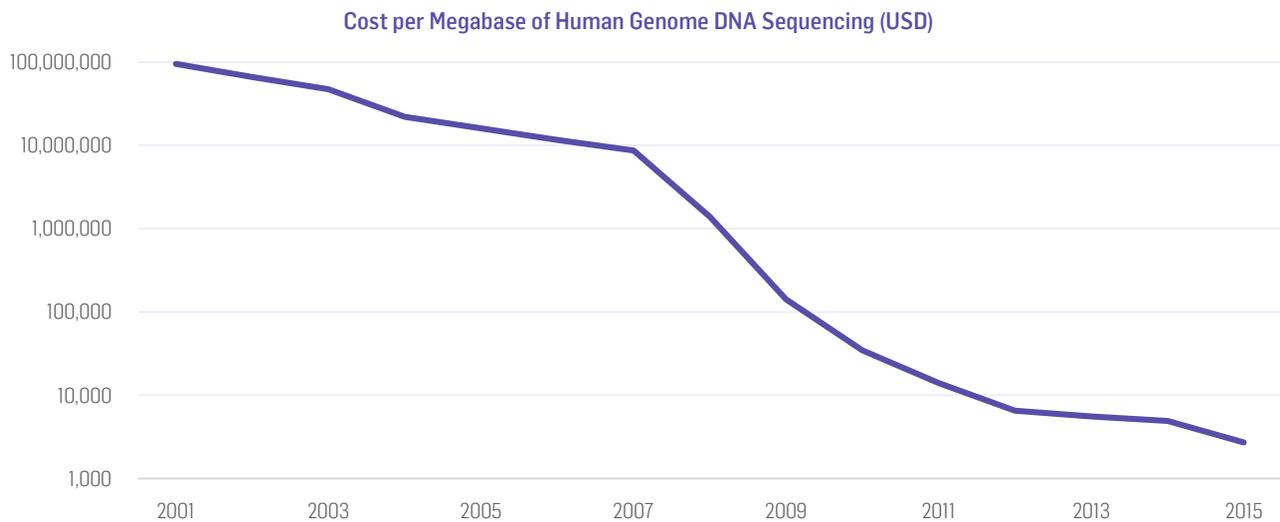


## From Treating Illnesses to Sustaining Wellness

As healthcare investments lead to further scientific innovation, long past will be the days humanity fights preventable diseases such as Malaria. As science advances, the main focus of financial – as well as human – capital will be channelized on tackling increasingly complex issues. Advancements can already be observed in the fight against cancer. Even though the number of cancer deaths increased by over 66% between 1990 and 2017, the age-standardized cancer death rate dropped by 14.94% during the same timespan.<sup>3</sup>



In the mid-term, leading discoveries could stem from research in genome editing or artificial intelligence, whereas in the long-term, developments could even be made in fields as advanced as designer babies, brain-computer interface, or 3D printed organs.<sup>4</sup>



Source: [www.ourworldindata.org](http://www.ourworldindata.org) and References Therein

As cures are discovered for currently incurable illnesses and citizens worldwide become able to live longer lives, the demand for goods and services that enable a better quality of life will increase accordingly. This fact can be reflected – for example – by the 1.8% compound annual growth rate (CAGR) of the health and wellness packaged food industry relative to the 1.3% CAGR of the overall packaged food industry between 2013 and 2018.<sup>5</sup> A parallel rise can be observed in the health and fitness industry. In the United States, for instance, this industry has grown at about 3-4% annually over the past decade and has no sign of slowing down.<sup>6</sup>

[1] Nature. Life expectancy around the world has increased steadily for nearly 200 years.

[2] World Bank. Health Nutrition And Population Statistics.

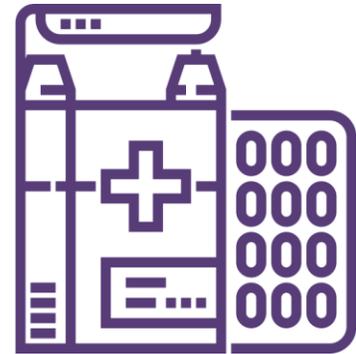
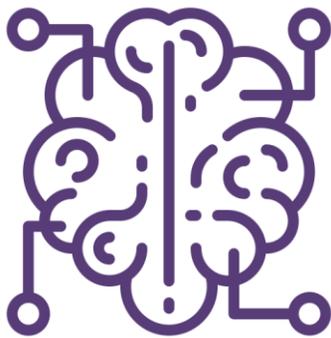
[3] Ritchie, Roser (2019), Our World in Data, Cancer.

[4] The Economist. The future of healthcare.

[5] Mascaraque (2019), Top 5 Trends in Health and Wellness.

[6] Midgley (2018), The Six Reasons The Fitness Industry Is Booming.





Healthcare is being shaped by continuous discoveries. Firms exposed to these innovations in the healthcare sector will reap the benefits they will convey to humankind. Our [Solactive Fast-Growing Healthcare Companies Index](#) tracks healthcare companies growing at a steady pace.



### Investment idea

The healthcare industry is currently facing multiple tailwinds in the form of continuous scientific discoveries. This set of innovations are set to shape the industry, as well as humanity as a whole.

At the same time, the benefactors of this set of creations will benefit in the increasing level of well-being within our society. Biotechnology companies' continuous investments in research and development will translate into higher and fast-growing revenues. Consequently, the providers of these firms' capital should benefit as a result.

The Solactive Fast-Growing Healthcare Companies Index tracks healthcare companies with an increasing revenue stream.



### Index methodology

The equity universe of the index is that of the Solactive GBS Developed Markets Large & Mid Cap Index.

Out of this universe, we filter for companies in the Healthcare economic sector. Furthermore, we drop companies that have not experienced a growth in annual sales during each of the five years previous to the selection date.

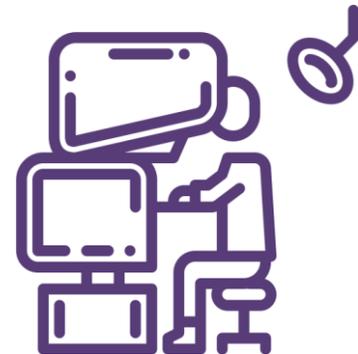
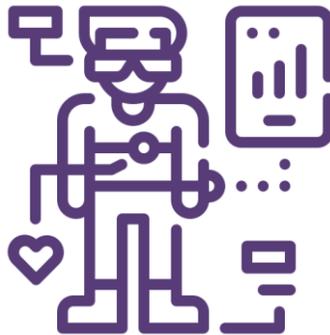
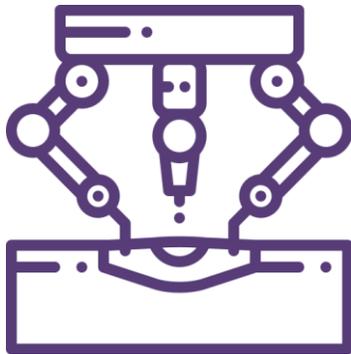
Out of the resulting universe, we select the top-30 companies by (four-year) average annual sales growth. The final universe is weighted according to the companies' free-float market capitalization.



### Top index constituents

- > UnitedHealth Group
- > Medtronic
- > Illumina
- > Celgene
- > Edwards Lifesciences
- > Thermo Fisher Scientific





powered by **ARTIS®**

New technologies are shaping our society. Healthcare is one of the sectors set to benefit the most from technological disruption. Our [Solactive ARTIS® Machines in Healthcare Index](#) tracks companies revolutionizing healthcare via advanced technological devices.

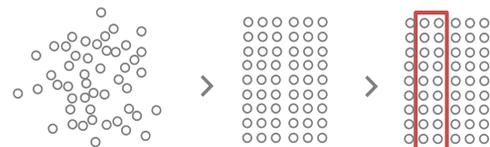
 **Investment idea**

Technology and digitalization are disrupting the healthcare system.

Wearables are changing how we interact with our health. The flow of data provided by wearables enables individuals to better prevent injuries and improve their wellness, and medical staff to react accordingly to patients' needs. In addition machines such as robot-assisted surgical and advanced diagnostic imaging devices enhance medics' capabilities in improving their patients' lives.

The Solactive ARTIS® Machines in Healthcare Index is exposed to companies offering cutting-edge healthcare robotics, diagnostic imaging, wearable and Internet of Medical Things solutions.

 **ARTIS®**



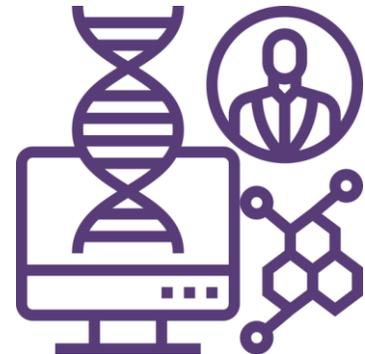
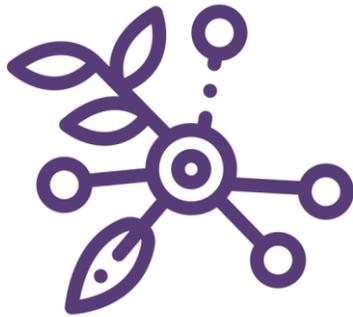
Companies are selected by ARTIS®, our proprietary natural language processing algorithm that allows us to build a deep understanding of the products and services a company offers.

To create such insight, ARTIS® goes through large volumes of publicly available information such as annual reports, business descriptions, or financial news and identifies which companies and to what degree they are relevant to the respective theme.

 **ARTIS® top picks**

- > Apple
- > Intuitive Surgical
- > iRhythm Technologies
- > RadNet
- > TransEnterix
- > Lantheus Holdings





powered by **ARTIS®**

Progress in biological research is shaping our society's healthcare system. Humanity at-large is set to benefit from this set of discoveries. Our [Solactive ARTIS® Biotechnology Index](#) tracks companies revolutionizing healthcare via biotechnologies.

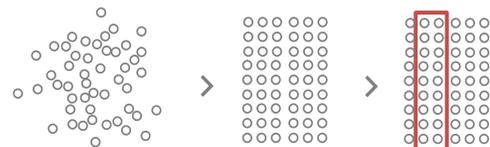
 **Investment idea**

Biotechnological advances are having a considerable impact on healthcare. Biotechnology enables companies to lower the prices of mainstream drugs used to cure common illnesses and helps create drugs to treat rare diseases.

Within biotechnology, genomics – in particular – has seen remarkable advances in the past decade. Indeed, improvements have enabled better personalized medicine using patients' genetic information. The cost of gene testing is expected to further decrease in growing computer power and improving data collection methods.

The Solactive ARTIS® Biotechnology Index is exposed to companies in the biotechnology industry.

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 **ARTIS® top picks**

- > CRISPR Therapeutics
- > Sangamo Therapeutics
- > Editas Medicine
- > Intellia Therapeutics
- > Illumina
- > Bluebird Bio





powered by **ARTIS®**

Worldwide, millions of lives have been shaped by cancer. However, recent scientific discoveries have made the successful fight against it more feasible than ever before. Our **Solactive ARTIS® Oncology Index** tracks companies at the forefront of the fight against cancer.

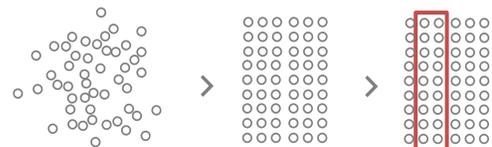
 **Investment idea**

Cancer has been one of the illnesses that have most clearly defined the healthcare landscape over the past couple of decades. In the United States alone, almost 2 million people were expected to be diagnosed with cancer in 2018. In that same year, over 600 thousand people were expected to pass away because of the disease.

Nevertheless, recently multiple firms have made a significant progress to fight off cancer. Efforts in research and development will lead to a diminishing cancer mortality rate.

The Solactive ARTIS® Oncology Index is exposed to companies at the forefront of the fight against cancer.

 **ARTIS®**



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 **ARTIS® top picks**

- > Seattle Genetics
- > Celgene
- > Amgen
- > Genmab
- > Verastem
- > Bristol-Myers Squibb





powered by **ARTIS®**

You are what you eat! A healthy life is largely derived from a well-balanced diet. Our **Solactive ARTIS® Future of Nutrition Index** tracks food companies that operate at the front lines of improving the world's nutrition.

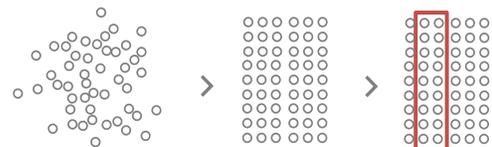
 **Investment idea**

There are two main reasons why food-related investments are gaining traction: First, because consumers' awareness regarding healthy dieting is expected to further increase in the years to come. Secondly, because feeding the world's rising population is becoming more and more of a challenge.

The UN's Sustainable Development Goals 1 (No Poverty), 2 (Zero Hunger), and 3 (Good Health and Well-Being) are directly related to the future of food.

The index focuses on companies that actively shape the future of the nutrition industry. Examples of its constituents are supplements, natural organic food, and science-based nutrition providers.

 **ARTIS®**



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 **ARTIS® top picks**

- > Beyond Meat
- > United Natural Foods
- > USANA Health Sciences
- > Simply Good Foods
- > Chr. Hansen Holdings
- > Hain Celestial Group

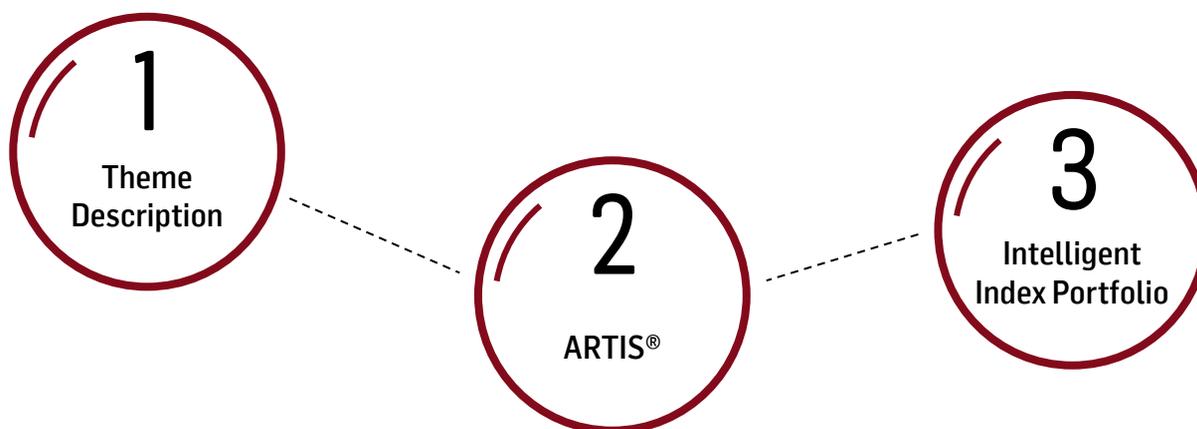


# ARTIS<sup>®</sup>

POWERED BY INNOVATION

Solactive's dedicated and skilled team of data scientists and developers work meticulously on a new generation of index development engines, making use of the latest technological infrastructure to apply cutting edge machine learning and natural language processing to a huge amount of data. The result is **Solactive's Algorithmic Theme Identification System: ARTIS®**.

ARTIS® is Solactive's proprietary natural language processing software that identifies thematic exposures in companies by analyzing more than 500,000 text documents. It functions as a multi-dimensional classification tool that generates a deeper understanding of the products and services a company offers, especially when that company is active in multiple markets and offers various product lines. As such, we use ARTIS® to find companies that are relevant players in the respective theme and use that universe to create indices.



### The Three Pillars



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