



# The *Futuremover*

April 2020



## NEW BUSINESS MODELS TO COMBAT CLIMATE CHANGE INNOVATION OPPORTUNITIES

When the world is gripped by the corona virus it's not easy to deal with the issue of climate change as well. And focusing on analyses relating to the subject is even harder. The forecasts are bleak. But they're unleashing a surprising wave of dynamism, and helping people, technologies and many sectors to develop innovative solutions.

Recently the "McKinsey Global Institute" for socio-economic impacts investigated

the issue of climate change over the next 30 years in 105 countries. The Climate Risk and Response Study carried out by the leading management consultancy provides figures which show that action needs to be taken across the political, social and economic fields.

*Difficult times also bring out the best in human nature.*

So – always assuming that we don't reduce

our emissions – over the next 10 years 250 to 360 million people will have to live in extremely hot regions of the world. The devastating consequences affect not just people, animals and the natural world, they also inflict losses amounting to billions of dollars on entire national economies.

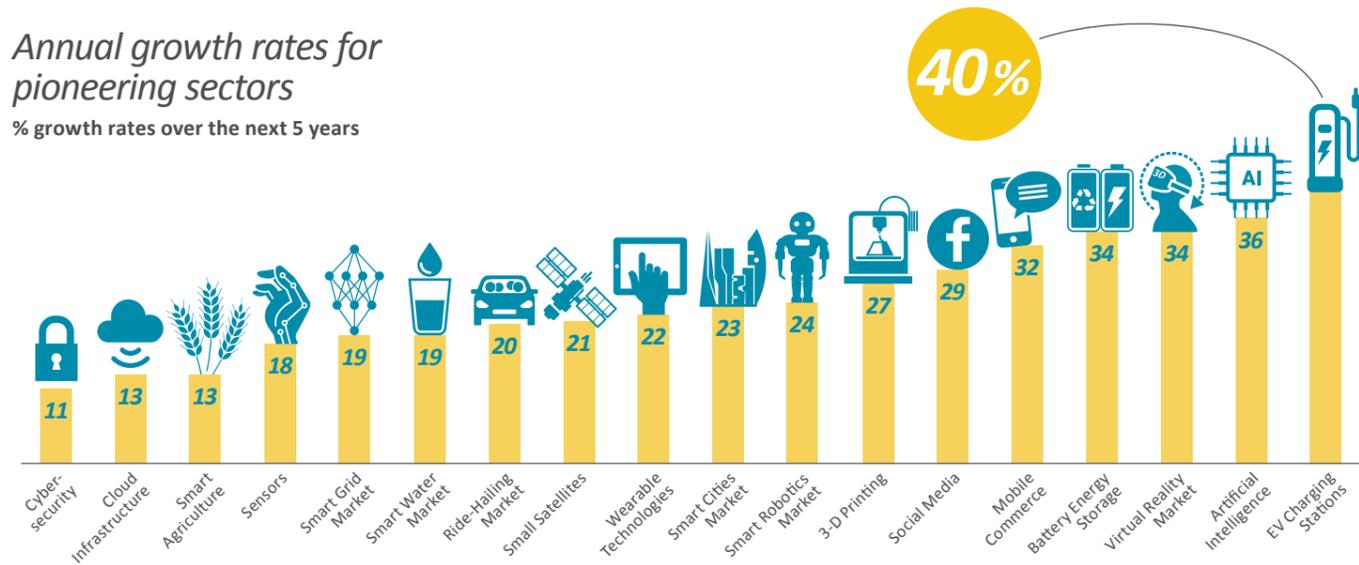
Due to the current situation this is perhaps not at the forefront of public concerns. **However, there are innovative rays of hope for the future ...**

Innovation opportunities

# A FRESH PERSPECTIVE

## Annual growth rates for pioneering sectors

% growth rates over the next 5 years



Source: various

In 2019 “climate hysteria” was chosen as the ghastliest neologism of the year in Germany – an expression which seems to vilify efforts to protect the climate, and to discredit important climate debates. It’s a good choice because the majority of scientists agree that our planet is getting warmer and warmer, and the consequences are no longer just a futuristic scenario. We’re already experiencing summer heatwaves and winters with little snowfall here and now. But giving up is simply not an option.

### Politicians have heeded the message that’s been promulgated by Fridays ForFuture & Co.

#### POLICY OF INCREMENTAL CHANGE

Politicians have heard the message put out by FridaysForFuture & Co. For instance, in the climate package that it has just passed the German Federal government has promised a real step change in its approach.

Too piecemeal and too faint-hearted is the judgment of environmental bodies and scientists. Switzerland is also keen to do its bit, but the independent online monitoring group “Climate Action Tracker” puts its efforts into perspective: “If all governments acted as Switzerland is doing, the level of

*“In future the economy will not only focus on efficiency, but also much more on resilience.”*

McKinsey partner, Hauke Engel

global warming could be as much as 3°C.” The EU had barely announced its ambitious “Green Deal” which is intended to make Europe climate neutral by 2050 before resistance to it sprang up, primarily from Member States in eastern Europe. The current position: it’s tricky.

#### CORPORATE CLIMATE CHANGE – THE BIG OPPORTUNITY

The McKinsey study urges companies to change their way of thinking. All economic or political activities should be reviewed in terms of their effect on climate change. Exemplary projects include technologies for building dykes, “cool rooms”, or drought-resistant varieties of cereals. There are other studies which highlight not just the risks, but also the opportunities. The Carbon Disclosure Project (CDP) is an organisation which specialises in climate risks, and at regular intervals it publishes large companies’ estimates of the financial effects of climate change. CDP reports that only a fraction of them disclose realistic data. Companies which are investing in the past, such as the

energy giants Exxon Mobil and Chevron, are behaving almost with indifference.

#### BALANCE SHEETS ARE FEELING THE HEAT

Alphabet Inc., Google’s parent company, is aware that rising temperatures will increase the costs of cooling its data centres. The Japanese conglomerate, Hitachi, Ltd., reckons that South-East Asia will be subject to extreme weather events, and it’s already looking for ways to make its supply chains more secure.

And there are firms which see climate change as an opportunity: 215 of the largest 500 companies in the world have estimated the potential cost of environmental risks to their business to be a billion dollars. But this compares to 2.1 billion dollars’ worth of new business opportunities provided by climate friendly products and services.

### Established companies and newcomers can benefit from each other.

#### NEWCOMERS BOOST ESTABLISHED FIRMS

We need to make every effort to prevent climate change hitting our economy like a thunderstorm. Established companies can benefit from newcomers, and vice versa.

*“We believe that climate change isn’t just the biggest challenge facing us right now – but precisely because of this it also represents a massive business opportunity.”*

Übermorgen Ventures



#### Established players:

**Microsoft:** Climate neutral by 2030.

**What exactly are they doing?** The company has undertaken to make its production activities climate neutral by 2030. In addition, Microsoft is investing 1 billion USD to set up a new climate innovation fund in order to promote technologies and methods for reducing, storing and eliminating CO<sub>2</sub>.

**Why’s that important?** CO<sub>2</sub> reduction is consequently becoming one of the key performance indicators for all internal and external corporate decisions. Experience shows that this brings about changes in attitudes more quickly than any lofty statements of intent. Public accountability keeps up the pressure to make improvements.

**Ikea:** The world’s largest furniture retailer.

**What exactly are they doing?** IKEA wants to become “climate-positive” by 2030. This means that the company wants to eliminate more CO<sub>2</sub> than is produced by its entire value creation chain. To do this it intends to completely transform the way in which it designs its products. In future, IKEA furniture will no longer be allowed to be single-use products.

**Why’s that important?** With its range of 9’000 different products IKEA is the world’s largest furniture retailer. Which is why the company gets through 18 million cubic metres of wood every year – enough to fill 7,200 Olympic-size swimming pools. The objective can only be achieved together with its suppliers. Getting them on board for this ambitious journey is the biggest challenge, but one which also offers the greatest potential.

**Patagonia:** The pioneering producer of sustainable clothing.

**What exactly are they doing?** For the production of raw materials Patagonia supports regenerative grazing systems. They maintain soil quality, increase the soil’s water retention properties, and every year they sequester more CO<sub>2</sub> per hectare. The company is even going as far as advising customers not to buy unneeded clothing, or encouraging them to repair worn clothes.

**Why’s that important?** As a “disruptive” pioneer Patagonia has an immense impact on the fabrics, fashion and outdoor sector. It’s a flagship company whose ambitions have spurred the whole sector to make innovations.

#### The Newcomers:

**Windcloud:** Lots of wind for more people.

**What exactly are they doing?** This provider of cloud computing services operates its data centres on a CO<sub>2</sub>-neutral basis and builds cost-effective infrastructure. And thanks to its state-of-the-art hybrid storage systems, even when there’s no wind.

**Why’s that important?** As the amount of data on the internet is doubling every 2 years, electricity consumption represents a huge expense. By using energy-efficient technologies and electricity generated from renewable sources, Windcloud operates the data centres for its customers in a sustainable and inexpensive way.

**Betteries:** The better battery.

**What exactly are they doing?** Used batteries from electric vehicles still have 70 percent of their original capacity left. They are converted into mobile energy storage systems for small businesses in developing countries.

**Why’s that important?** The company uses the car industry’s used batteries for the benefit of small businesses and farmers in developing countries. Betteries consequently supports the circular economy and lowers CO<sub>2</sub> emissions, and its production activities promote progress and have a positive impact in the developing countries.

**Übermorgen Ventures:** A start-up for start-ups.

**What exactly are they doing?** Start-ups which demonstrably reduce CO<sub>2</sub> or promote climate neutrality are supported by the “Übermorgen Ventures” risk capital fund. The fund is worth CHF 20 million, and it already has several big-name investors on board.

**Why’s that important?** New ideas and start-ups need capital in order to get off the ground. Übermorgen Ventures aims to provide active support and assistance during the launch phase of start-ups. So that they can make a profitable contribution to stabilising the global climate.

Interview with Yale Professor Daniel C. Esty

# 40 BIG IDEAS FOR A SUSTAINABLE FUTURE

Daniel C. Esty, Yale Professor and author, on big ideas for a sustainable future.



We will need to modify our behavior to make sustainability more of a core value.

*“New technologies will almost certainly be part of the solution.”*

What are you trying to achieve with your book “Better planet – 40 big ideas for a sustainable future”, and why do we all need to read it?

All of us living in the 21<sup>st</sup> century face what I call the “Sustainability Imperative”. We must find ways to move toward a sustainable energy foundation for our economy and address other critical environmental issues including safe drinking water, the control of air pollution, and waste management. The book BETTER PLANET digs into this range of issues and offers a set of practical pathways for action. We see the book as providing a basis for the sort of debate and conversations which society must have in order to move onto a sustainable trajectory.

*There are creative ways to reach these audiences*

Which of your 40 proposals would you expect to be most surprising for our European audience?

Many of the solutions in the BETTER PLANET book are applicable on both sides of the Atlantic – a greater focus on systems thinking and design, more use of market-based policy mechanisms, the need for incentives to promote innovation, and the value of underpinning environmental policy with the very best science and data that is available. But the emphasis in several of the essays on communications might surprise Europeans. We still have a significant number of climate change “deniers” in the United States. And we have an even greater number of disengaged citizens. But there are creative ways to reach these audiences on their own terms and in their

own language, as Thomas Easley’s chapter “Hip Hop Sustainability” demonstrates.

**Are companies making progress?**

Transformative change will require efforts across society and across the business world – from tiny start-up companies to multinational corporations. I think we are seeing progress right across this spectrum. A number of countries have set up “green incubators” which are helping creative spirits and entrepreneurial companies to launch innovations that can make a difference in the sustainability domain. But big business is also stepping up to the challenge. Microsoft’s commitment to offset all of its greenhouse gas emissions – not just going forward but going back to the foundation of the company – represents one impressive example of sustainability leadership.

**Will new technologies save our planet?**

New technologies will almost certainly be part of the solution to the Sustainability Imperative that we face. One of the curious aspects of the environmental arena is how untouched it is by information technologies and other breakthroughs of our Digital Age. Almost every other aspect of society – from how sports teams pick their players to the way businesses use data to micro-target their marketing efforts – has been dramatically transformed by the world of Big Data. The environmental realm needs the same sort of application of technologies to its challenges. Technology breakthroughs will be important but are not sufficient. We will also need to modify our behavior to make sustainability more of a core value.

**Can you provide an example of smart policies which have been successfully implemented anywhere in the world and at scale?**

Despite the sense that the United States is in denial with regard to the issue of climate change, we actually have a number of states that are doing remarkable things to bring down emissions. For example, ten states across the Northeast and Mid-Atlantic states have set up a Regional Greenhouse Gas Initiative which provides a “cap and trade” system for GHG emissions that has reduced the region’s contribution to climate change considerably and created a flow of funds which are available for renewable power and energy efficiency investments.

## Daniel C. Esty

is the Hillhouse Professor at Yale University with primary appointments in the Yale Environment School and the Law School and a secondary appointment at the Yale School of Management.

Professor Esty is the author or editor of twelve books and dozens of articles on environmental and energy policy. His recent (edited) volume, **A Better Planet: 40 Big Ideas for a Sustainable Future**, was named a top book of 2019 by The Financial Times.

## of tomorrow Futuremovers



They make planted.chicken: Pascal Bieri, Eric Stirnemann, Christoph Jenny und Lukas Böni (from left to right)



# A CHICKEN WITHOUT THE CHICKEN PLEASE

*planted.chicken: Food for Future*

**Consumption of beef and pork is decreasing slightly – but people in Switzerland are developing an increasing appetite for chicken. The reasons for this are open to speculation. Is it down to chicken’s healthy reputation? Or are there already better meat-free alternatives to beef etc., such as Beyond Meat? A Swiss start-up is tackling this issue and serving chicken that doesn’t actually contain any chicken.**

Chicken is the only meat that is eaten by the followers of all religions. It has a fibrous consistency, it’s low-fat and protein-rich, and it inspires global cuisine to create unbelievably tasty dishes. On the other hand, pea protein, rapeseed oil and water don’t exactly sound like a treat for the taste buds. But these are precisely the ingredients for the “fake chicken” that is produced by the newly founded company, Planted Foods AG. The young entrepreneurs started working on “planted chicken” two years ago. At ETH Zürich they researched, stirred, kneaded, added spices, and above all carried out testing. No less a personality than Rolf Hiltl, a professional chef and high priest of veggie cuisine, tested planted.chicken in terms of its consistency, its cooking and roasting properties, and of course its taste. Apart from its amazing similarity to chicken meat, the new plant-based product outdoes the meat version in terms of its protein and roughage content.

### A REAL SOCIAL CHANGE RATHER THAN A FAD

Just recently Lukas Böni, the food technologist and co-founder of Planted Foods AG, appeared on the evening news programme of Germany’s ZDF TV channel and explained why this change is necessary: “If we want to feed ten billion people by 2050 then we can’t go on consuming as much animal protein as we do at

the moment.” The start-up with its constantly increasing number of employees is about to move into the historic building where the spice pioneer Julius Maggi used to work. Then they’ll be able to produce more meat-free chicken. Feeling hungry? Coop has already stocked up its food supplies.

### “planted.chicken” – a brief overview:

Environmentally friendly	Transparent	Healthy
<ul style="list-style-type: none"> <li>Cuts greenhouse gas emissions by ⅓</li> <li>Cuts agricultural land use by ⅓</li> <li>Only requires half the energy that’s needed to produce chicken</li> </ul>	<ul style="list-style-type: none"> <li>100 percent plant-based</li> <li>0 percent animal suffering</li> <li>Added ingredients from Europe and Switzerland, produced in Zurich</li> </ul>	<ul style="list-style-type: none"> <li>High protein and roughage content</li> <li>Contains essential amino acids</li> <li>No cholesterol, hormones, additives, antibiotics, gluten, or genetic engineering</li> </ul>

### FACTS AND FIGURES

**Founded:** 2019 **Employees:** 22  
**Locations:** Zurich, Kempththal as from May 2020  
**Website:** www.planted.ch

### Planted milestones:

October 2019	January 2020	2020
<b>Funding round</b> to raise 7 M CHF concluded <b>Marketing</b> in over 50 restaurants	<b>Coop</b> incorporates two new products into its range <b>Available</b> in new, additional restaurants	<b>Expansion</b> into additional European markets

# OUR WORLD OF THE FUTURE



## What is a Futuremover?

Futuremovers are companies which respond successfully to worldwide megatrends and develop solutions to global challenges.

They replace outdated business models with future-fit concepts while leaving a positive footprint. They build smart megacities, facilitate turnarounds in energy policy, back the circular economy or develop sustainable mobility platforms.



## Urbanization

- The Swiss Federal Institute of Technology Lausanne working in collaboration with the Cuban University "Marta Abreu" of Las Villas and the Indian Institutes of Technology in New Delhi and Madras, has developed a high-tech cement whose production generates 40 percent less CO<sub>2</sub>.
- An extensive study of 16 cities has found out that the Columbian city of Medellin has become a successful smart city because the technologies which are used there improve the safety of its citizens.



## Scarcity of resources

- Around 30 percent of all CO<sub>2</sub> emissions originate from agriculture. If you add in the associated processing, transportation, refrigeration and preparation activities, this figure jumps to 40 percent.
- New technologies such as high-tech tractors, the improved use of pesticides and fertilizers, and more efficient animal husbandry should help the world to stay within the 1.5 degree climate target.
- The market for plant-based foods is now worth about 4.5 billion USD. Planted.chicken and the Impossible Burger or Beyond Burger are climate-neutral, tasty alternative foods.



## Hyperloop

**Hyperloop wants to revolutionize transportation:** its aim is to transport people and goods within a tube at speeds of up to 1,200 kph. Two private US companies are going head to head in the race to make it a reality. However, before passengers and freight can speed through the tubes, the two competitors have to overcome various problems, such as safety, thermal loading, and its integration into the existing infrastructure.

Globalance Footprint 50



## Nidec Corporation

**Nidec Corporation is a Japanese manufacturer of electric motors which has its headquarters in Kyoto.** The company develops energy-saving electric motors for industry and households as well as renewable forms of energy, and it benefits from the clean tech boom. For instance, Nidec is building a factory right now near Shanghai for the production of engines for electric, hybrid and hydrogen-powered cars.

Globalance Footprint 68



## Itron Inc.

**Itron Inc. is a US technology and services company.** Its products and services enable customers to analyse their energy and water consumption data. For instance, the company provides intelligent meters which form the basic infrastructure for energy-efficient "smart cities".

Globalance Footprint 52



## Cervest

**Cervest is a key player in the field of smart farming.** The company specialises in data-based modelling for atmospheric sciences, meteorology, hydrology and agronomy. Proprietary AI can be used to provide accurate climate forecasting based on huge volumes of complex data. Despite increasing climate volatility, such forecasts enable precise predictions of crop yields, or of qualitative changes affecting agricultural land, to be made.

Globalance Footprint 83



## Patagonia Inc.

**Patagonia Inc. is a Californian manufacturer of outdoor clothing.** Since 2011 Patagonia has been encouraging people to repair, recycle and reuse (worn) clothing and to donate it to other people. Patagonia's "Don't buy this jacket" advert in the "New York Times" made headlines. The advert highlighted the excellent "green credentials" of the company's products, but it also urged people to only buy what they really need.

Globalance Footprint 83



## Sunrun Inc.

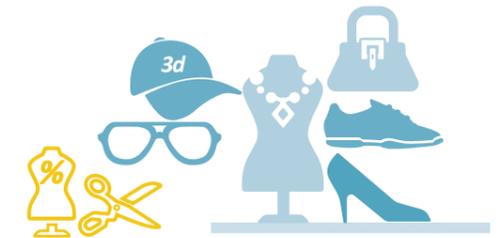
**Sunrun Inc. is the US market leader for solar electricity which is headquartered in San Francisco.** The company funds, operates and maintains solar panels, incl. battery storage devices, which are installed on the roofs of people's homes. Home owners pay a monthly fee to Sunrun over a period of 25 years which is less than their previous electricity bill. This model is proving to be very popular. Turnover is growing by more than 20% a year.

Globalance Footprint 61



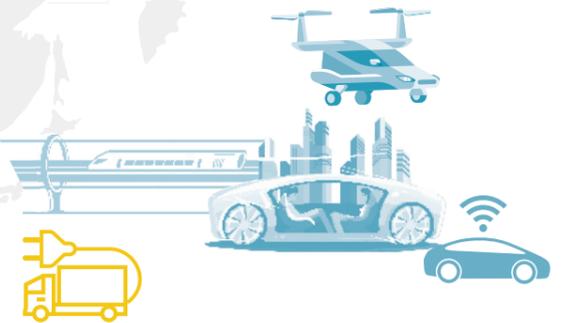
## Climate and energy

- Bertrand Piccard's Solar Impulse Foundation is looking for 1000 solutions to be provided by companies which protect the environment while also being profitable. The solutions are awarded with a certificate by the foundation, and consequently they also gain access to the research and development activities of the participating companies.
- Ecosia is an ecological search engine based in Berlin. The company donates 80 percent of its surplus revenue to not-for-profit nature conservation businesses. In February 2019 Ecosia announced that it had planted 50 million trees.
- The University of the Sunshine Coast (USC) has developed a battery which stores the power provided by 6,000 solar panels that have been installed on the roofs of the campus. Electricity consumption has simultaneously been cut by 40 percent.



## Consumer society

- Neonyt takes place in Berlin every year – it's the world's biggest trade fair for fashion, sustainability and innovation. More than 210 sustainable labels show that fashion can also be produced in a fair, environmentally friendly manner and yet still have mass appeal.
- With its "Move to Zero" initiative Nike aims to cut the CO<sub>2</sub> emissions and waste produced by the company to zero.



## New Mobility

- The Hypermotion Lab in Frankfurt is a platform for disruptive and future-oriented issues such as flying taxis and drones, hyperloop systems or artificial intelligence.
- The Dutch "Lightyear" company has unveiled the first prototype of a solar car that's capable of travelling for long distances. Fitted with a relatively small battery, it's meant to have a range of up to 725 kilometres.

The future is becoming female

# FEMALE FOR FUTURE



**The Finns are governed by women.** Prime Minister Sanna Marin (2nd from right) with her ministers, Li Andersson, Katri Kulmuni and Maria Ohisalo (from left) Image: AFP, Lehtikuva

**Masculine qualities are domineering, feminine ones promote harmony. Women are more empathetic, men are more insensitive. Women don't really want to have a successful career, but for men it's crucial. Which of these statements would you subscribe to?**

Whether we're baby boomers or digital natives, it's astonishing the qualities that we ascribe to each other. But do they really apply, or are we just propagating stereotypes which have shaped us for centuries? The journalist and trends analyst, Matthias Horx, thinks that we live in a kind of virtual gender universe where we keep on repeating the same thought patterns. Nevertheless, in 2011 he was already predicting that women would become a "megatrend" of the future.

*Throughout the world women are demonstrably outperforming men in the education field.*

## FEMALE MANAGEMENT DESERVES MORE THAN RESPECT

Women's influence on society, politics and the economy is growing all the time. It's a globally recognised fact that women are outperforming men when it comes to education. This is having an impact on management positions. Numerous studies show that companies are more innovative and

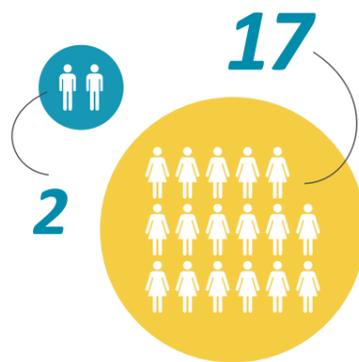
successful if women also have a say in how things are done. The Washington-based Peterson Institute for International Economics has for example investigated 22'000 companies in 90 countries. Conclusions: if the proportion of women in senior management positions rises by 30%, net turnover increases by 15%.

*Rated better in terms of leadership qualities.*

And women are considered – even by male managers – to be more efficient than men at all levels within a hierarchy and in virtually all operational areas.

### WOMEN ARE BETTER LEADERS THAN MEN

According to an analysis based on thousands of 360° interviews which was carried out by Zenger Folkman in 2019, women outscored men in relation to 17 of the 19 abilities which differentiate excellent managers from average or poor managers.



Source: Zenger Folkman 2019



## GLOBALANCE FOOTPRINT

**DIANA STREBEL**  
Deputy Chairman of the Board of Directors of Globalance Bank

*Multi-tasking, complexity management and versatility are encoded in women's DNA.*

By 2019 a total of 866 Nobel Prizes were awarded in the five conventional categories: 787 went to men, 52 to women, and 27 to organisations. In proportional terms women won just 5.7% of the prizes incl. the Economics Nobel Prize.

This is unlikely to change because only men are in the position to – and willing to – focus their life entirely on one subject, invention or achievement.

However, while the great inventions made by men in the 20<sup>th</sup> and 21<sup>st</sup> centuries have led to a complex, globalised and interconnected world, they have unfortunately also led to capitalist patterns of behaviour which are environmentally damaging.

Now the era of women is coming. Managing complexity through the use of emotional and social skills is precisely what virtually every woman finds herself doing in her daily life: as a homemaker, a business woman, or a manager. These talents and skills will in future provide the leadership that will be needed to bring the challenges facing our planet into line with our economic and ethical principles. Female for Future!

In an experiment at New York University a female professor presented students with identical CVs and qualifications for a woman and a man. When asked who they would prefer to work for, most decided on the woman. In a similar experiment ten years earlier the result was completely different.

*Just remind me again – what are male domains?*

So stereotypes can be broken down and role models can change. And they are doing. The gaming industry has noticed that gaming consoles are becoming increasingly popular with women. Kate Edwards is the American female founder of Geogriphy, a large international provider of games, e.g. focusing on characters, character profiles, design and culture. Edwards is also the head of Global Game Jams – a global programming marathon lasting several days which promotes the development of innovative ideas in the gaming sector.

Or have you heard of Omaima Al-Najjar? She's a blogger from Saudi Arabia who fought against the driving ban for women which was lifted in 2018. Today the activist lives as a political refugee in Italy, and she's continuing to champion the cause of oppressed women in her native country.

*30 percent of the world's wealth is owned by women.*

### FEMALE FOR FINANCE

30 percent of the world's wealth is owned by women. That's 44 billion euros – so there's no reason for not talking about money.

The qualified economist and financial journalist Dani Parthum was horrified to find that she wasn't taking proper care of her own finances. For the last three years she has been sharing her accumulated wisdom concerning wealth, pensions and investments with other women on geldfrau.de. Natascha Wegelin, aka "Miss Money Penny" founded her first company at the age of 26 and her podcast encourages women to take control of their own finances. And there are good reasons for doing this – because

women have to worry about their financial future much more than men do – due to part-time working, parental leave, divorce, and having a longer life expectancy.

*Money is power. For women it provides the power to shape the future.*

Women are right to see money as having the power to shape the world. So investments are used to make the world more receptive to environmental and social issues, and to wider societal issues. According to a study (YouGov, June 2018) women are more interested in sustainable investments than men are. It is precisely this fact which should act as an additional incentive for women to take leading roles in the financial and economic sectors.

An example of a woman who is doing just that is Sallie Krawcheck. After working on Wall Street for 20 years she founded an investment platform for women which is created by women – and which is so successful that Melinda Gates has become one of its investors. The top manager has another real insider tip: **"Invest like a woman"**.



**Helena Helmersson:** CEO of the Swedish fashion house Hennes & Mauritz (H&M) Image: H&M group



## GLOBALANCE FUTURE-MOVERS

**NATALIE BAKI**  
Portfolio Manager

### Women Matter

There are now numerous studies which demonstrate that "gender diversity" has a direct, positive effect on business success. For instance, the McKinsey consultancy firm examines this aspect in detail in its "Women Matter" series of studies.

In the case of corporations in Europe, America and Asia there is a positive correlation between having a higher proportion of women in senior management roles and the financial performance of the companies. A classic example of this is "Sunrun Inc.", a business in the Globalance portfolio which has achieved full pay parity.

Lynn Jurich, the co-founder and CEO of Sunrun, has made it clear that "fair and equal pay for all genders and races is a fundamental human right, and part of Sunrun's ethos." Sunrun was the first US solar business to reach this milestone after pledging itself to wage equality in 2016 under the Obama government.

The commercialisation of our genetic material

# THE GENIE'S OUT OF THE BOTTLE

Do you remember? In 1993 ambitious scientists used the blood of a mosquito trapped in amber to create real dinosaurs. These perky creatures which are 65 million years old then – to everyone's great surprise and shock – started hunting people. Steven Spielberg's "Jurassic Park" dramatically showed what unscrupulous DNA experiments might possibly end up doing. Is that now turning into reality?

The discovery of the genetic fingerprint in 1984 revolutionised the work of criminal defence lawyers and the police. The Codis US DNA profile database stores the genetic profiles of roughly 14 million people. It has been used to solve about 465,000 crimes, but also to acquit many innocent people. So it's hardly surprising that there's a real gold-rush mentality among scientists.

*Genetic research is an exciting field, and it's also becoming a lucrative business model.*

### GENTESTS TO GO

Leading providers of commercial genetic testing are "23andMe", "AncestryDNA", and "MyHeritage". For about USD 200 you learn not only about your likelihood of getting cancer or suffering from diabetes or Alzheimer's disease, but you can also extend your knowledge of your ancestors. About 26 M people around the world think they have found out the percentage of their inheritance which they owe to, for example, Irish, Polish or African ancestors. What



**Gentests to go.** Leading providers of commercial genetic tests include "23andMe", "AncestryDNA" or "MyHeritage". Image: mauritius images

*Soon parents will be able to use a test to choose the "right embryo".*

many people are less aware of (according to studies this could be up to 100 M people by 2021), is that as users of these tests they're giving away their most personal and valuable information: their own DNA.

### GENETICALLY CORRECT ONLINE DATING AND PERFECT BABIES

The US start-up "Genomic Prediction" provides a test for artificial insemination. The test is intended to ascertain from the embryos that are produced whether you will subsequently suffer from specific illnesses, or if you will be of very short stature, or be endowed with lower than average intelligence. So future parents can choose the "right embryo". George Church, a US genetic researcher, is currently developing a dating app which should prevent people who are predisposed to the same illnesses from "pairing up". Who could ever think

that this is a bad idea, or as Deanna Church, a genetic scientist at the Inscripta biotech company recently remarked: "I definitely wouldn't recommend anyone to pay for such services."



### GLOBALANCE FOOTPRINT

*We have the right not to know.*

**As if recognising phoney genetic tests wasn't already difficult enough, we're overwhelmed by the speed with which new, recognised genetic test procedures are being developed.**

Individually and collectively. So we should ask ourselves if it's really desirable to want to find out as much as possible about our genetic risks. Test results are quite literally life-changing. They're bound to throw up psychological dilemmas. Our society as a whole must grapple with the ethical issues that are involved. In particular, we have to resist a certain weight of expectation on the part of society which suggests that there is a moral duty to get tested. Because we have the right not to know. Since 2007 this has been enshrined in Switzerland in the Federal Act on Human Genetic Testing (HGTA, currently being amended). It allows anyone to refuse to have the information provided by genetic tests passed on to him/her, or to refuse to have the test carried out in the first place.

Planet Gotchis

# HAVE FUN SAVING THE CLIMATE

Flying, eating, shopping – can't we do anything now without having a bad conscience? An environmental engineer, an environmental scientist and a designer think that making things is better than shaming people.

The three Swiss women are currently developing an app which aims to improve users' personal CO<sub>2</sub> footprints. Without adopting a moralistic approach, but using fun, personalised options. Planet Gotchi provides a community of people who can swap ideas and take part in exciting challenges which range from taking the bus to having "veggie days".

*"Flight- or food-shaming is counterproductive. We have to encourage people rather than punishing them if they don't have a sustainable lifestyle."*

Sara Cerar, environmental scientist at ETH Zurich and co-founder of Planet Gotchi



Malaria project in Zanzibar

# DRONES HUNTING DOWN MOSQUITOS

**WHO's latest report, a child dies of malaria every two minutes. Marsh fever is one of the most persistent infectious diseases, and it's transmitted via mosquito bites. As well as preventive medical treatments, medicines and mosquito nets, a new project now provides the prospect of relief.**

Typical symptoms of malaria, e.g. shivering, a raised temperature and fatigue, only occur a few days or even a few weeks after a person becomes infected. Often it's then too late for many affected people: if left untreated the disease can be fatal. Last year it killed 408,000 people.

*In 2019 408,000 people succumbed to the infection.*

The figures have admittedly gone down slightly, but the WHO's stated objective of cutting the rate of infections and deaths by 40% in the period from 2015 to 2020 has not been able to be achieved.

### 93 PERCENT OF ALL INFECTIONS OCCUR IN AFRICA

Whereas South American countries largely have malaria under control, it's a disease which hits Africa particularly hard – a continent that's already afflicted by major problems. But it's precisely here that a very pro-

mising pilot project is being developed. And it's a project which is being carried out on the Tanzanian island of Zanzibar by an international team: scientists from Kenya and the Netherlands are joining forces with the Chinese manufacturer of civilian drones, DJI, and getting to grips with the root of the problem by directing drones to standing bodies of water and spraying them with Aquatain AMF.

*Drones spray the pesticide Aquatain AMF over standing bodies of water.*

The silicone-based liquid is deposited as a fine film over the mosquito larvae, and it suffocates them before they can pupate and hatch out. This is a biodegradable agent and it's also approved in Europe. If the experiment works, the world will have one less problem to deal with.

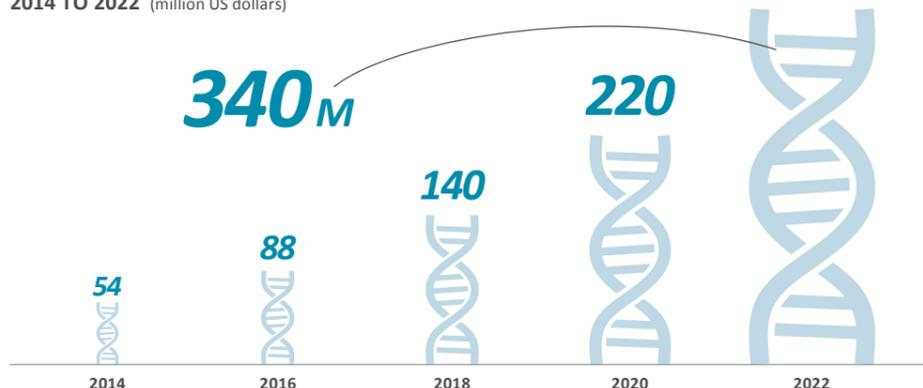
*"If the results of this test are as positive as we think they will be, it could provide a huge boost to efforts to combat malaria."*

Wolfgang Mukabana, University of Nairobi



On the Tanzanian island of Zanzibar a drone made by the Chinese DJI company sprays a field with insecticide. The government's stated aim is to completely eradicate malaria from the archipelago by 2023. Image: -/DJI/dpa

### FORECAST TURNOVER FOR DIRECT-TO-CONSUMER (DTC) GENETIC TESTS 2014 TO 2022 (million US dollars)



Source: Statista 2020

# GlobalanceCockpit

# 50% FEWER COWS

*The likely outcome if vegetable proteins become a popular part of people's diet: by 2030 the number of cows in the USA should be reduced by half.*

Source: Think Tank RethinkX

	<p><b>Economy</b></p> <p>Proportion of government bonds that will be impacted by more stringent climate and forestry protection legislation in the 2020s (percent)</p> <p>Source: London School of Economics and Political Science (LSE)</p>	<table border="1"> <thead> <tr> <th>SWEDEN</th> <th>ARGENTINA</th> <th>BRAZIL</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>28</td> <td>34</td> </tr> </tbody> </table>	SWEDEN	ARGENTINA	BRAZIL	1	28	34
SWEDEN	ARGENTINA	BRAZIL						
1	28	34						
	<p><b>Health</b></p> <p>Meditation goes mainstream: turnover of meditation apps such as Calm, Headspace and Breethe (M USD)</p> <p>Source: techcrunch.com</p>	<table border="1"> <thead> <tr> <th>2015</th> <th>2017</th> <th>2019</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>55</td> <td>195</td> </tr> </tbody> </table>	2015	2017	2019	8	55	195
2015	2017	2019						
8	55	195						
	<p><b>Technology</b></p> <p>Average range of electric vehicles (kilometres)</p> <p>Source: de.statista.com</p>	<table border="1"> <thead> <tr> <th>2016</th> <th>2019</th> <th>E 2022</th> </tr> </thead> <tbody> <tr> <td>271</td> <td>364</td> <td>491</td> </tr> </tbody> </table>	2016	2019	E 2022	271	364	491
2016	2019	E 2022						
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	<p><b>Society</b></p> <p>Proportion of global food miles by method of transport (percent)</p> <p>Source: Our World in Data</p>	<table border="1"> <thead> <tr> <th>RAIL</th> <th>ROAD</th> <th>SHIPPING</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>31</td> <td>59</td> </tr> </tbody> </table>	RAIL	ROAD	SHIPPING	10	31	59
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	<p><b>Environment</b></p> <p>Annual amount spent lobbying against more stringent climate legislation (M USD)</p> <p>Source: InfluenceMap</p>	<table border="1"> <thead> <tr> <th>CHEVRON</th> <th>SHELL</th> <th>BP</th> </tr> </thead> <tbody> <tr> <td>30</td> <td>48</td> <td>55</td> </tr> </tbody> </table>	CHEVRON	SHELL	BP	30	48	55
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