



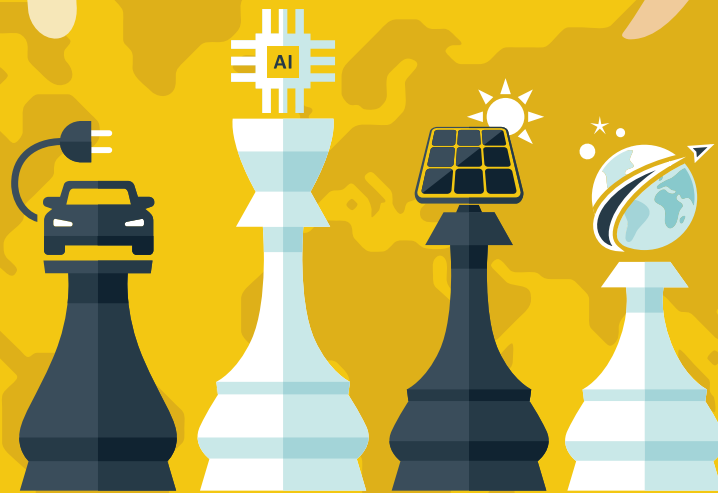
The *Futuremover*

2nd quarter 2019

BILANZ

OVERALL WINNER
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2019



THE GAME IS ON WEST VERSUS EAST

Earlier – those were the days when innovation was driven by the West and Asia was an extended workbench specializing in cheap production. When the Western world was assured of the USA's friendship and its function as a global police force. When walls fell and globalization promised economic power for all. When trade barriers opened and the internet created unlimited possibilities.

Nowadays, however, this familiar order is shifting like the Earth's tectonic plates. US President Trump is withdrawing from international treaties and embroiling the country in trade disputes. Britain wants to go back to being an island, and populists are testing the limits of our democracy. In the slipstream of the West's self-absorption, Asia is developing tremendous economic momentum. China has been the world's

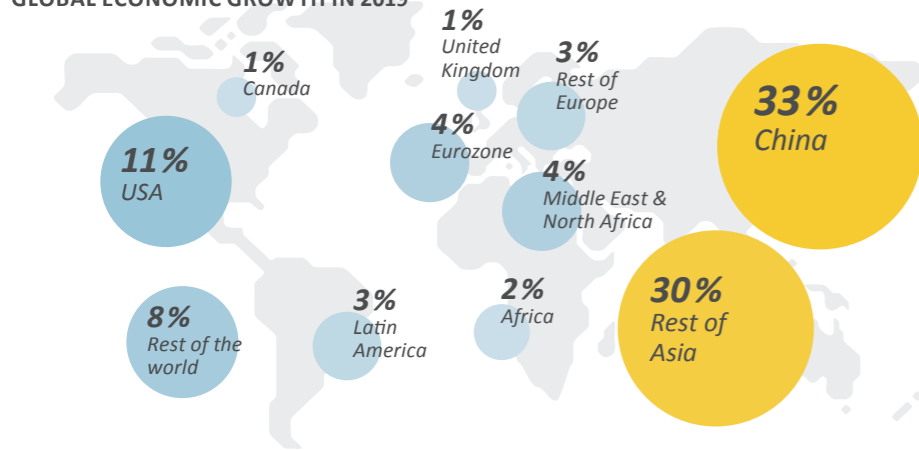
leading commercial power since 2010 and has had the world's second-largest economy since 2012.

The country is forging new strategic alliances and making huge, ambitious investments in projects such as the New Silk Road. Is this the end of the American age and the dawn of a century of Asian greatness?

West versus East

HUĀNYÍNG LÁI DÀO YÀZHĒU SHÍDÀI (WELCOME TO THE ASIAN AGE)

THE ECONOMIES THAT WILL MAKE THE BIGGEST CONTRIBUTION TO GLOBAL ECONOMIC GROWTH IN 2019



Source: IMF, Standard Chartered

The European Age (early modern times) and the age of Americanization are now being succeeded by the 21st century Asian Age. This has been confirmed by experts from Karl Pilny to Parag Khanna. What can the Asians do that we can't?

When we think of Asia, the first country that springs to mind is China. Yet the Asian region extends from the Arabian Peninsula and Turkey in the West to Japan and New Zealand in the East, Russia in the North, and Australia in the South. In other words, three and a half billion of the almost five billion people in Asia are not Chinese.

In all, Asia accounts for around 50 percent of the world's gross domestic product.

The Asian countries are linked by commercial, financial and infrastructural networks and account for around 50 percent of the world's gross domestic product. This is equivalent to almost two thirds of global economic growth. In concrete terms, this means that between 2015 and 2030, only USD 1 billion of the USD 30 billion in economic growth brought about by middle-class consumption is expected to come from today's Western economies.

ASIA IS ASIA IS ASIA IS ASIA IS ...?

By no means, because aside from their geopolitical affiliations, the individual nations differ considerably in terms of their values. Parag Khanna, the Indian-American political scientist, publicist and founder of "FutureMap", has stressed time and again how different the individual regions are in terms of technology, politics, market economy, freedom and society.

ASIA – PROGRESS THROUGH TECHNOLOGY

Asia is the platform on which technological history is written. Within just 20 years of the end of World War II, Japan had become the world's second strongest economic power. This also inspired "tiger economies" such as South Korea, Taiwan, Hong Kong and Singapore.

Several decades and reforms later, the Middle Kingdom decided to follow Japan's lead and learn from American technological innovation. Nowadays, China is a source of inspiration for technological and even environmental progress, as can be seen from the example of electromobility.

China already has more than 50 percent of the world's charging stations and 75 percent of its lithium ion batteries. In 2018, the global number of licensed e-vehicles exceeded the two million mark, and the



GLOBANCE FOOTPRINT

The future of our planet also depends on Asia.

The Asia-Pacific region is responsible for 50 percent of global CO₂ emissions. North America and Europe produce 37 percent, while the rest of the world accounts for 13 percent. The figures for other critical environmental factors are similar.

This is why it was so important that China and India helped bring about the Paris Agreement on climate change in 2015.

On the other hand, the framework conditions for responsible economic activity in the East and West are deteriorating. The latest corruption report from Transparency International shows that the USA is dropping in the rankings; trust in European institutions is also declining, and the Asia-Pacific region is still well behind the West.

India is planning to build more than 100 new airports over the next fifteen years.

People's Republic has 60 percent of these. Over the next few years, almost 30 of the world's leading automobile manufacturers plan to invest USD 300 billion; this too is a consequence of China's prescribed licensing quotas for e-cars.

Vietnam has become Asia's leading manufacturing country.

AT HOME IN THE DIGITAL WORLD

800 million of the approximately 1.4 billion Chinese people use the internet on a regular basis. Baidu, Alibaba and Tencent are the Chinese counterparts of Google, Amazon and Facebook. WeChat isn't just a kind of Chinese WhatsApp, but an app for practically everything: social networking, e-commerce, taxis, dining, chatting, making payments. Artificial intelligence is used in every part of life. Over the next three years, 35 percent of all research funding for artificial intelligence will come from China. In fact, PricewaterhouseCoopers recently predicted that the use of AI would contribute USD 15.7 billion to the world's gross domestic product by 2030. China alone accounts for USD 7 billion, which makes the North American share of USD 3.7 billion pale into insignificance. It therefore comes as no surprise that China is the land of digital natives.

CHINA'S MILLENNIALS ARE OVERTAKING THE USA

Under 30, upper middle-class, well-educated, high earners, tech-savvy – millennials are hot property on the labor market. In China, this most popular of all target groups is as large as the entire population of the USA. What's more, unlike US millennials, they will be wealthier than their parents. Their enormous purchasing power and enthusiasm for technology is driving consumption and innovation.

Enthusiasm about China's development is naturally dampened by the control exercised by the one-party state. Censorship, espionage and propaganda are rife, both



Chinese millennials: under 30, well-educated and exceptionally tech-savvy

online and offline. One example of this is the social points system to be implemented by 2020, which will divide the Chinese into good or bad citizens depending on how faithful they are to the party line – rewards and punishments included.

Asia is on the way up. Perhaps we should bid farewell to the old friend/enemy formula, remain alert and catch on to the multi-polar world.



GLOBANCE FUTURE- MOVERS

DAVID HERTIG
Founding Partner & Head of Investments

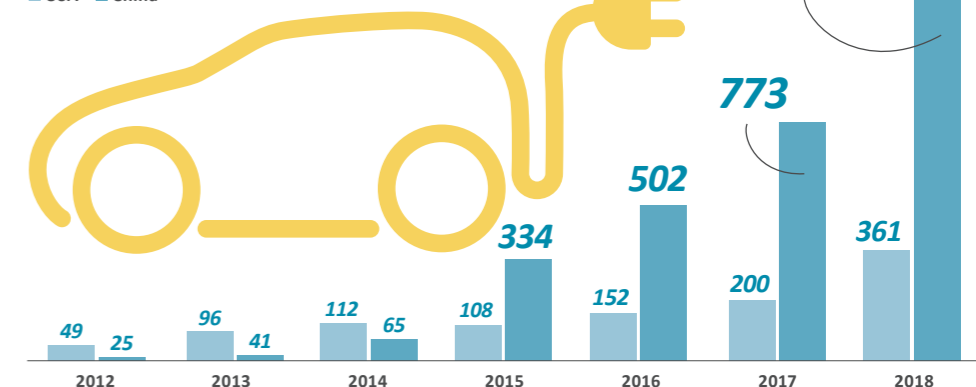
The far-reaching Chinese government program "Made in China 2025" could by all means also be labelled "Future Movers 2025". China is doing everything to boost future-oriented sectors and steadily expand its expertise in hi-tech industries. Mega-trends such as robot technology, aerospace, new materials, electrical mobility, biopharmaceuticals and renewable energies are right at the top of the list. The country is making skilful use of its planned economy and financial power to build up leading international companies that are well able to compete with Western technology giants.

Even though the West might not like it, the future movers of the East are advancing.

CHINA IS LEADING THE RACE

Estimated sales of electrically-powered vehicles in the USA and China (incl. hybrid vehicles)

■ USA ■ China



(* incl. hybrid vehicles), Source: InsideEVs, CAAM

Interview with China expert Stephan Scheuer

SILICON VALLEY IS LOCATED IN CHINA

Stephan Scheuer, editor of the business and finance newspaper ‘Handelsblatt’, talks about technological developments in China and the Western world.

China has caught up. At incredible speed. In what ways have they already forged ahead of the Western world?

Companies from the Far East are catching up in many industries. However, in no other industry have Chinese companies advanced as far as in the technology sector. The three online giants Baidu, Alibaba and Tencent are setting the pace. In China, they have developed with remarkable speed, not least because the Chinese government blocks competitors such as Facebook, Google and Twitter or makes it difficult for them to do business. However, Chinese corporations have now become so good that even companies in Silicon Valley are drawing inspiration from Chinese products. Some of the most interesting applications are found in the fields of mobile payment, online shopping and artificial intelligence.

China has an immense location-specific advantage.

What do the Chinese do better than us in terms of innovation?

Chinese companies have an immense location-specific advantage. China is the world’s biggest online nation. More than 800 million people in China are now online. And almost all online users speak the same language. This is a unique opportunity for companies to accelerate the process of making their products available to a mass public. In the early days, Chinese companies copied ideas from other countries. However, they subsequently improved upon them step by step. WeChat, for example, was originally a copy of WhatsApp. Nowadays, the Chinese program can do much more than the US model. Many Chi-



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“More than 800 million people in China are now online.”

nese use the app for every aspect of their online lives: from shopping through making phone calls to paying medical bills.

Have the Americans and Europeans lost touch?

No, not yet. When it comes to artificial intelligence, the USA is way ahead. In Europe, there are only a few really large online corporations. However, we have a number of strong midmarket companies. These are the ‘hidden champions’ that from their provincial locations have often developed the world’s best products in a specific niche. If they can rise to the challenges of digitalization, they will be able to move Europe a long way forward in the long term.

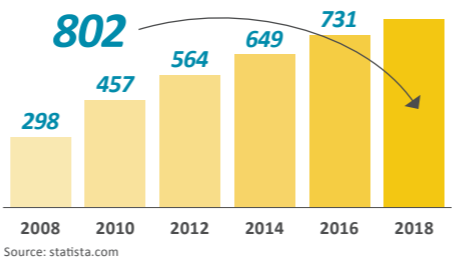
What does this mean for Europe in geopolitical terms? How should we organize ourselves?

Stephan Scheuer

Stephan Scheuer’s book “The Master Plan: China’s Road to Global High-Tech Dominance” (currently only available in German) deals with the rise of China’s digital corporations.

He is now the technology editor for ‘Handelsblatt’, having previously spent five years as its China correspondent. From the publication’s central office in Düsseldorf, he writes about the global telecommunications sector, the IT industry and Chinese companies in Europe. He studied International Relations in Berlin, London, Beijing and Marburg.

CHINA HAS ALMOST 2.5X AS MANY INTERNET USERS AS THE USA HAS INHABITANTS
Internet users in China (in millions)



We have to do all we can to make sure our companies remain globally competitive. There are numerous widely varying approaches to this. For one thing, I don’t believe that data protection is an obstacle. On the contrary, I expect that high standards in Europe could become a major selling point in the long term. This is one way in which European businesses could acquire global clients in the future

Should we close ourselves off to investments and takeovers from China?

No, that would be wrong. Isolating ourselves wouldn’t achieve anything. In the long term, we can only hold our own if our companies remain innovative. It is wrong to assume that we can secure our future by blocking investors from China, for example. However, Europe should push for equal opportunities in China. It isn’t fair that Chinese companies can buy into almost all industries in Europe but many areas in the People’s Republic are taboo for investors from Europe.

Futuremovers



The KITRO-Team: Naomi MacKenzie, Tarek Jost, Dominic Mösch, Anastasia Hofmann, William Downey

A third of all global food production is wasted.



SWISS START-UP COMBATS FOOD WASTE

KITRO – because food waste should be binned

Two Swiss women have come up with a solution to food waste: a smart waste receptacle that is almost as intelligent as its inventors. A waste bin against millions of tons of waste food – can this work?

Kitro is the name of the Zurich-based start-up that is becoming a true game changer. While studying at the École hôtelière de Lausanne, the two founding partners, Naomi MacKenzie and Anastasia Hofmann, gained an insight into the harsh reality of work in kitchen and service areas. Here they found themselves facing a problem that many people had previously not even recognized as one: enormous quantities of usable food are thrown away every day.

THROWING AWAY FOOD MEANS THROWING AWAY MONEY

Naomi and Anastasia began investigating food waste more thoroughly. Sustainable food handling became their mission – not as an expression of concern, but in order to develop a process that would culminate in the first ever fully automated solution for reducing food waste. After all, wasting food also means wasting money. And this is the point at which large-scale caterers sit up and take notice.

THE FIRST WASTE BIN THAT CAN THINK, CALCULATE AND GIVE ADVICE

What’s the difference between a communal waste bin and a Kitro box? The box contains software based on image processing and machine-learning technologies. This software was taught to recognize and differentiate waste. As soon as something is thrown into the box, the software identifies what it is and how

much there is. This tracking procedure gives the user, in this case the kitchen, a regular analysis report – and with it an overview of the waste produced, the resources wasted, and above all the cost this entails. This data can then be used to plan the quantities of food purchased more efficiently.

Kitro is still in the pilot phase. The screen in the Mensa café at the Université de Lausanne is already showing how much food is saved each week. The SV Group, a Coop restaurant and other universities are also saving food by using the Kitro concept. A considerable number of catering firms have expressed an interest – taking steps to reduce food waste is therefore gaining ground in public awareness. And if companies can increase their profit margins at the same time, all the better, don’t you think?

FACTS AND FIGURES

Founded: 2017	Employees: 5
Locations: Zürich, Lausanne	Web: www.kitro.ch
Users of KITRO include: Coop Restaurant, ETH Zürich, Mercure Hotels, Mövenpick, Université de Lausanne, Swiss Re, V-Zug	

Result after 12 pilot studies:

>20 tons measured food waste	+40 % reduction in food waste	CHF 400.– weekly savings on food costs
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THE GAME IS ON



What is a future mover?

Future movers are companies that react successfully to global mega-trends and develop solutions to global challenges.

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



"MAKE AMERICA GREAT AGAIN"

- U.S. President Donald Trump has set up numerous initiatives and programs under his campaign slogan "Make America Great Again".
- The USA levies punitive tariffs of 10 to 25% on various products from China with a total commercial value of more than USD 250 billion.
- The EU states and Switzerland are also affected. Tax cuts for households and companies are aimed at extending the country's economic lead over Asia and Europe still further.
- Donald Trump recently signed the initiative "Accelerating America's Leadership in A.I." to ensure that the USA continues to lead the way in developing and implementing artificial intelligence.



PayPal

PayPal is a US-based online payment service that is primarily used for online commerce. PayPal has 254 million active users in more than 200 markets who can pay in more than 100 currencies. The company, with headquarters in San José, was founded in 1998 by Elon Musk, Peter Thiel and others. In direct comparison (number of users and rating), PayPal clearly loses out to Alipay. At the end of 2018, PayPal was valued at USD 100 billion.

Globalance Footprint 64



Vestas A/S

Vestas A/S, based in the Danish city of Aarhus, is the world's biggest wind farm producer. As of the end of 2018, the Danes were responsible for 60,000 wind turbines in 76 countries with a total installed capacity of 82 GW. In 2018, the company generated annual revenues of EUR 10.1 billion. The top Asian company comes in 3rd: the Chinese company Goldwind has achieved a capacity of 41 GW in 20 countries and revenues of EUR 3 billion.

Globalance Footprint 85



Go-Jek

Based in Indonesia, Go-Jek was launched in 2015 as a ride-hailing app and has developed into a leading mobile platform with a wide range of services such as parcel dispatch (Go-Send), delivery services (Go-Mart, Go-Food), and most recently mobile payment services (Go-Pay). Company figures state that the app has been downloaded 125 million times and handles 100 million transactions every month. Go-Jek is currently valued at USD 10 billion.

Globalance Footprint 71



Flipkart Pvt Ltd.

Flipkart is the Indian answer to Amazon. Founded in 2007, this e-commerce company has a market share of around 40% and an annual sales turnover of USD 6.2 billion. In India, Flipkart is (still) bigger than Amazon; however, Amazon is investing aggressively and recently disclosed a growth rate of 82%, significantly higher than Flipkart's growth rate of 47%. In August 2018, US retailer Walmart bought 77% of Flipkart equities, with the company being valued at USD 22 billion.

Globalance Footprint 67



BYD

In 2018, the Chinese market leader sold 248,000 hybrid and electrically powered vehicles, more than half of its total production. BYD is also the market leader for electrically powered buses and has its own battery production facility with a planned output of 24 GWh for 2019. Listed at just under USD 20 billion, BYD brings less weight to the stock market than the competition and is therefore attractive in terms of price potential.

Globalance Footprint 56



JinkoSolar

JinkoSolar is a Chinese company and the world's biggest photovoltaic concern with almost 6,600 megawatt solar modules. This size is a critical advantage, as the price war in the solar market is won by mass. JinkoSolar operates four production facilities in China, South Africa and Malaysia. In 2017, the concern generated revenues of more than 4 billion USD.

Globalance Footprint 72



HORIZON 2020

- One of Europe's answers to the technological supremacy of China and the USA is called "Horizon 2020".
- Switzerland has also re-joined this pan-European research and innovation program.
- The top priorities of the 77 billion Euro funding pool are scientific excellence and the provision of risk capital for technological innovations in European industry.



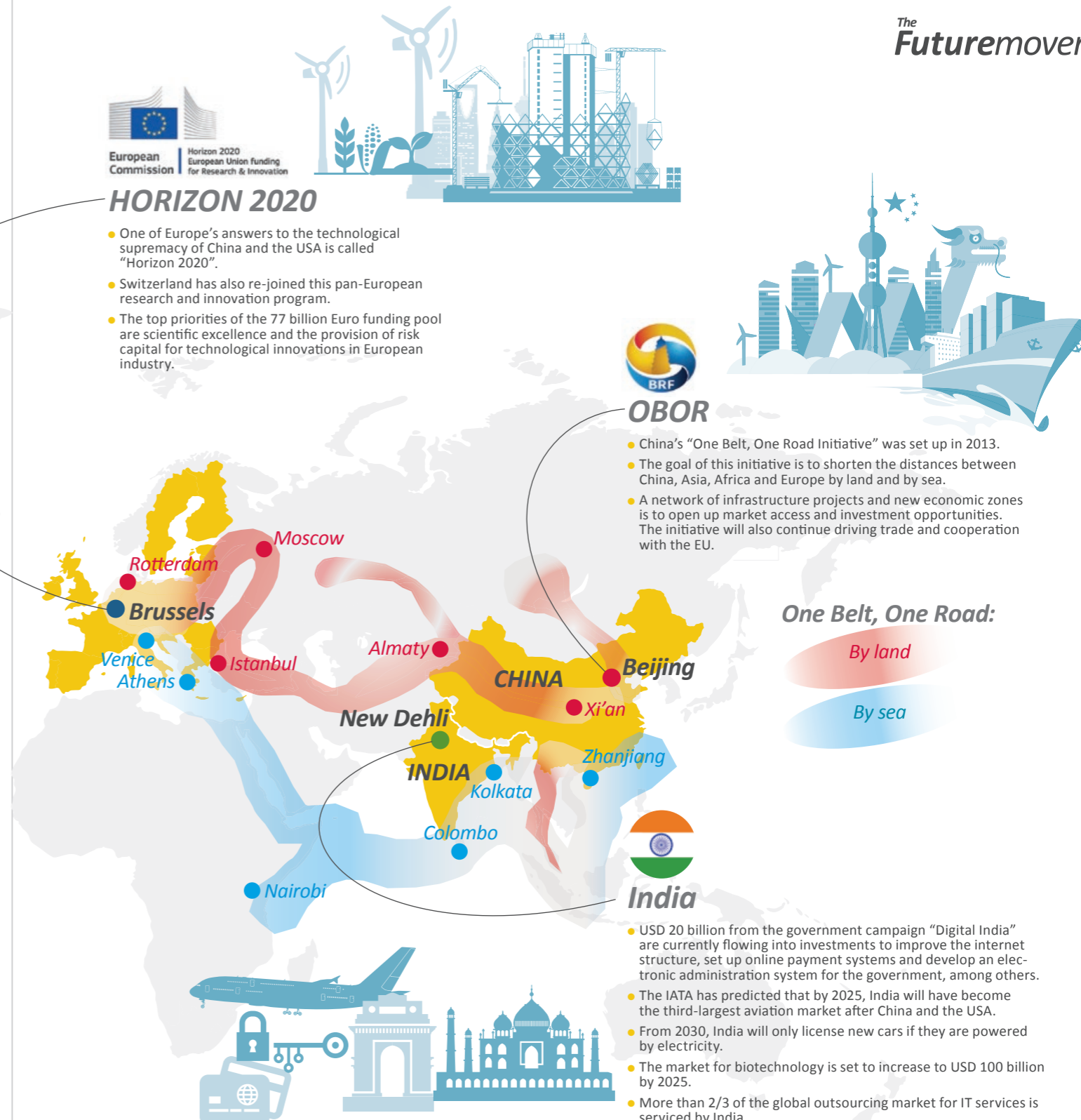
OBOR

- China's "One Belt, One Road Initiative" was set up in 2013.
- The goal of this initiative is to shorten the distances between China, Asia, Africa and Europe by land and by sea.
- A network of infrastructure projects and new economic zones is to open up market access and investment opportunities. The initiative will also continue driving trade and cooperation with the EU.

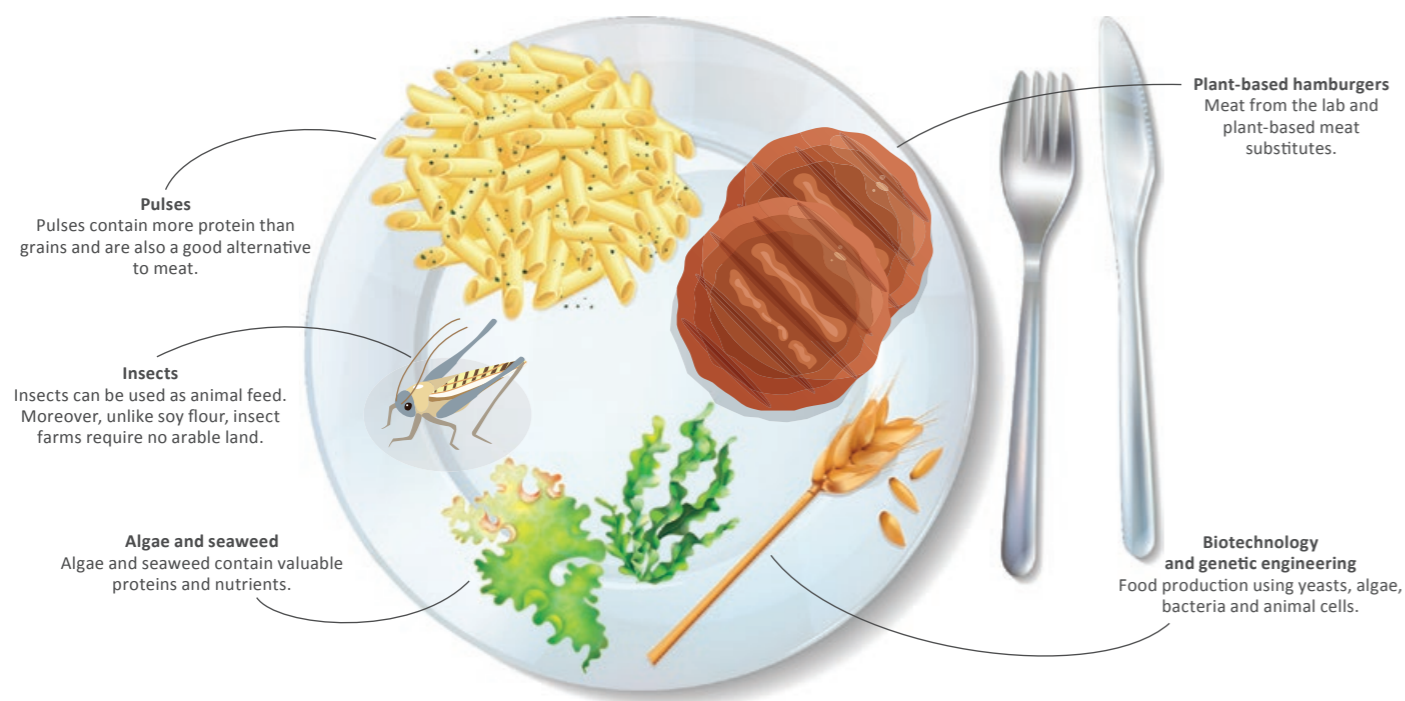
One Belt, One Road:

By land

By sea



WHAT WILL WE BE EATING TOMORROW?



A celebrity footballer eats a steak coated with gold leaf. Two German students retrieve food from a supermarket and are made to pay a fine. 2.2 billion people worldwide are overweight. 820 million people are suffering from starvation and malnutrition. Something can't be right.

Hardly any other topic has as many social, political, psychological, cultural, medical and even religious aspects as food. Between diet mania and weeks of "gormandizing", concerns about the future are quickly forgotten; however, they do not go away. According to the UN, there will be nearly ten billion people on our planet by 2050. By then, we will need up to 265 million additional tonnes of protein each year:

Food should not be underestimated as a factor in climate protection.

THE EARTH IS SICK OF OUR HUNGER

But where can we get our food if we are unable to steal it from nature? The cultivatable areas of the world are already being exploited to the limit. The "Planetary Boundaries Concept" developed by Johan Rockström and Will Steffen has set eight thresholds for a healthy planet. Two of them have already been exceeded: these

One third of all the food produced ends up being thrown away.

relate to biodiversity and the nitrogen and phosphorus cycles. The damage is irreversible. Food should therefore not be underestimated as a factor in climate protection. The IPCC world climate council has confirmed that agriculture is responsible for around 30 percent of all CO₂ emissions. After adding processing, transport, refrigeration and preparation, this figure rises to 40 percent. Moreover, around one third of all the food produced ends up being thrown away.

THE PROBLEMS ARE ON THE TABLE.

The good news: industry, research and technology are hungry for alternative forms of food, particularly sustainable ones. They may seem somewhat strange to those of us who are creatures of habit. However, even potatoes were despised at first.

NEW PROTEIN SOURCES: INSECTS AND PULSES

Insects are rich in protein but require little feed, care or space. For animal and fish farmers, they are a sustainable alternative to standard feed. In the EU, insects have



GLOBALANCE FOOTPRINT

PETER ZOLLINGER
Head of Impact Research

The ATNI Index (Access to Nutrition Index, 2018) analyses the contribution made by the food industry.

Less than one third of the 23,000 foods inspected can be classified as "healthy".

This is the most important conclusion drawn by this independent evaluation of the world's 22 biggest food corporations. The ATNI Index is also the most important yardstick for influential investors. Only those companies that have recognized the signs of the times are truly future-fit.

Generally speaking, remarkable progress has been made with recipes that require less sugar, salt and fat. However, the challenge is still considerable: one in three people worldwide are either obese or malnourished.

been licensed as food since 2016; the market potential for flour, snacks, noodles and meat substitutes has been growing ever since. In spring 2018, IKEA – to mention just one example – announced that it is working on a sustainable menu in cooperation with the innovation lab Space10. This menu is to include "neatballs" – a type of meatball made of mealworms.

Other protein-rich foods include pulses such as lentils, peas, lupini and other beans, which need less water and fertilizer than grain does. They are now being rediscovered not only as a food staple, but also as an alternative form of feed.

VEGETABLES FROM THE WATER: ALGAE

30 million tonnes are already being fished out of the sea. Rich in protein and minerals, algae are not only served in salads but also used as meat substitutes, natural dyes, thickening agents and even to replace eggs. Microalgae cultivated in so-called photobioreactors can for example also be grown on house walls – welcome to urban farming.

40 percent of harmful greenhouse gases are linked directly or indirectly to our food.

IKEA is serving meatballs made of mealworms.

NEW TECHNOLOGIES ARE EXPANDING OUR CULINARY HORIZONS

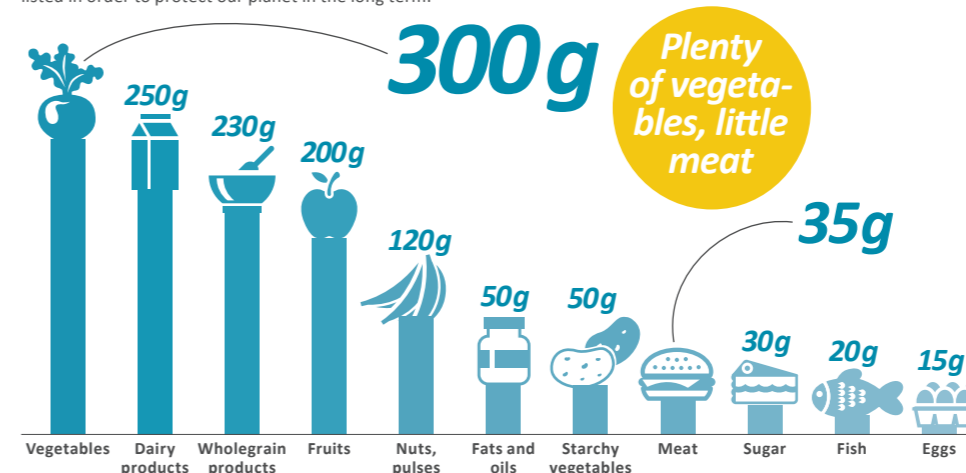
Health, diet and the environment are inextricably linked and constitute one of the driving forces behind cellular agriculture. Biotechnology that uses yeasts, bacteria, algae or animal cells is creating new foods for humans and animals. Gene technology is enjoying wider acceptance provided it is transparent and environmentally friendly.

The "fermenter method" is already being used to produce milk without cows. Textured vegetable proteins manufactured as meat substitutes are becoming increasingly sophisticated and better-tasting. Blockchain technology for secure food tracking, AI that creates personalized diet plans, smartwatches that measure blood sugar levels, or 3D printers that act like kitchen machines and print out entire menus: these are just the appetizers in a future-fit, healthy, ethical diet.

FOR DESSERT: OUR EATING HABITS

A study carried out by the University of Oxford predicts that greenhouse gas emissions could be cut by two thirds by 2050 if all people immediately stopped eating meat. It is unlikely that we will make this cut, but perhaps we will assume greater personal responsibility in the future. Bon appetit!

CLEAN AND HEALTHY This diagram shows the maximum amount in grams that you should eat of the foods listed in order to protect our planet in the long term.



Source: The Lancet: Lucas et al, 2019



GLOBALANCE FUTURE-MOVER

DAVID HERTIG
Founding Partner & Head of Investments

The market for healthy foods, vitamins, supplements, fitness, medical products and pharmaceutical products is booming. Innovative future movers are positioning themselves successfully in these growth sectors:

Origin Enterprises plc – better harvesting thanks to digitization. The Irish agricultural service provider is a leading specialist in the areas of resource optimization, harvesting technologies and agricultural process optimization using cutting-edge technologies.

Finless Foods Inc. – fish from the test-tube. Companies that offer healthy alternatives to conventional meat products are currently experiencing a boom in business. They include this (still privately-owned) American biotech company, which uses stem cells to promote the sustainable production of fish and seafood in the lab.

Novo Nordisk A/S – fighting the consequences of obesity. The metabolic disorder diabetes is one of the diseases of civilization: there are more than 400 million people with diabetes worldwide. The Danish company Novo Nordisk A/S is the global market leader in insulin and diabetes treatments. It offers the widest and most effective range of products in the entire industry.

Robots in hospitals

OPERATION ARTIFICIAL INTELLIGENCE

Telemedicine, sick notes by WhatsApp, blood pressure measurements by Smart-watch. The digital world promises smart healing – but what does it feel like when we literally put ourselves into the hands of artificial intelligence?

The patient is lying anaesthetized on the operating table. Far from being a “Grey’s Anatomy” style hero, the surgeon is a machine with four arms made of steel and electronics. “Da Vinci”, the robot manufactured by the US company Intuitive Surgical, has been in use worldwide ever since it was licensed in 2000.

The doctor operates on the patient in Paris from his office in Berlin.

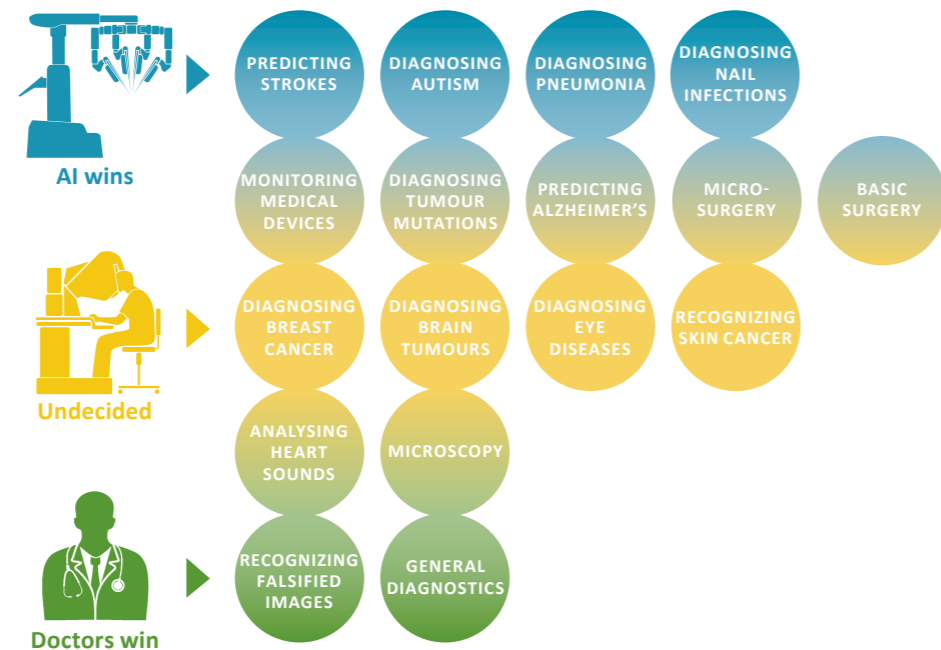
“DOCTOR ROBOT, TO SURGERY PLEASE!”

No gory details; all you need to know is that the robot is operating, but the surgeon is pulling the strings. He is sitting a few metres away in a kind of cockpit, controlling the robot by foot pedal and joystick, and can follow the operation by 3D camera in order to make corrections or break off the procedure. Users are convinced of the benefits of this electronic assistant, which is mainly used in the fields of urology and gynaecology: greater precision, reduced physical stress, less blood loss, faster wound healing. However, the extremely high investment costs are the other side of the coin. Due to its patent policy, “Da Vinci” still has a monopoly in hospitals, but the market is on the move.

SWISS TECHNOLOGY ATTRACTING ATTENTION

Surgeons and engineers at the University of Bern recently succeeded in implanting a hearing prosthesis using a robot they had developed themselves. On the basis of computer-supported data – such as bone density and tomography images – the robot blindly drills a precise mini-tunnel just 1.8 millimetres in diameter. This leads to the inner ear, where the implant is positioned

ARTIFICIAL INTELLIGENCE (AI) VERSUS DOCTORS – WHICH IS BETTER?



Source: IEEE Spectrum

GLOBALANCE FOOTPRINT

Recognizing the limits of artificial intelligence

The field of artificial intelligence must not be left solely to programmers.

New ethical dilemmas are constantly arising, dilemmas that affect society as a whole and therefore have to be solved politically. Blind faith in technology is just as ineffective as categorical resistance. Advocates and critics are of the same mind with regard to the biggest risks and are calling for legal limits to prevent too much concentration of power and ensure sufficient transparency. Even technology pioneers such as Elon Musk are calling for restrictions on advances in AI in order to prevent unintentional developments and leave enough time for dialogue and the setting of a legal course.

precisely to give deaf people back their sense of hearing. The goal is to be able to offer this operation on an outpatient basis very soon.

FASTER CANCER DIAGNOSIS – INCREASED CHANCES OF A CURE

The sooner breast cancer is recognized, the greater the chances of a cure. One more reason for an international team of researchers to work on a robot that uses MRI and ultrasound technology to improve breast cancer biopsies.

In future, robots will be able to identify cancer cells within just four hours.

Tissue can be sampled with greater precision so that cancer cells can be identified in just four hours rather than after several weeks. Moreover, AI can overcome constraints of space as well as of time. At the beginning of January, a Chinese surgeon operated on an animal located 50 kilometres away for the first time. The high-speed 5G network made it possible to control two robot arms in real time. And the animal is doing well.

Drone saving coral reefs

FIND THE STARFISH!

It's a well-known fact that drones are taking over our airspace. It is less common to see them underwater, as is now the case on the Great Barrier Reef – to the benefit of the endangered coral reefs.

When the “RangerBot” – as the underwater drone is called – is out and about, the crown-of-thorns starfish should quickly make itself scarce. This is because they are being hunted by the mini-submarines developed by researchers at Queensland University of Technology (QUT), Google and the Great Barrier Reef Foundation.

A task that was previously performed with great effort by divers has now been taken over by the underwater drone “RangerBot”.

This spiny species, which due to increased algae growth has multiplied at astonishing speed, eats coral. It is responsible for around 40 percent of coral erosion – an additional burden for the coral reef off Australia's north-east coast, which is already vanishing due to climate change and environmental destruction. The RangerBot now performs the task that was previously carried out with great effort by divers. A fully charged battery enables it to glide autonomously through the water for a whole eight hours. Two cameras help it navigate, while two others use AI to identify the greedy starfish, which are then sent to the happy hunting grounds by an injection of poison administered by the RangerBot. All this with an accuracy rate of almost 100 percent and without placing any strain on the rest of the ecosystem.



The underwater drone “RangerBot” on the lookout for coral-eating crown-of-thorns starfish. Image: Great Barrier Reef Foundation

Blockchain technology

WWF SERVING UP TRANSPARENCY

How would our food taste if we knew what it actually has to go through before it ends up on our plate? The WWF is seeking clarity and using blockchain technology for this purpose.

WWF Australia and BCG Digital Ventures are serving up the platform OpenSC. Right at the top of the list of ingredients is blockchain technology, which is said to be impervious to manipulation and offers consumers and manufacturers consistent transparency with regard to the cultivation, processing and delivery of foods. All the information can be retrieved using QR codes – thus shedding light on an industry that is notorious for scandal.

The WWF is combining new technologies with environmental protection.

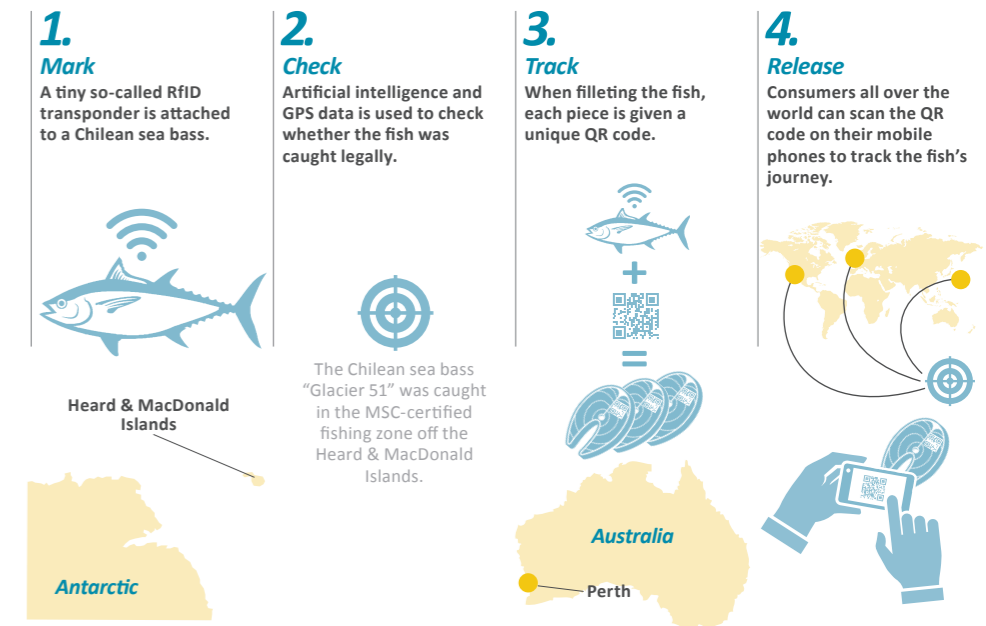
This enables participating companies to clearly distance themselves from vague manufacturing practices and gain an advantage over the competition, while consumers can make responsible, self-reliant purchases.

This in turn whets the appetite: “The system has a promising future and could also cover other areas such as palm oil and wood,” says Paul Hunyor, Head of BCG Digital Ventures Asia.

“OpenSC will give us an unprecedented degree of clarity as to whether the foods we eat are contributing to the destruction of habitats and species.”

Dermot O’Gorman, CEO WWF-Australia

AN EXAMPLE OF HOW “OPENSOC” CAN TRACK FISH CAUGHT IN THE WILD








Source: WWF-Australia

Globalance Cockpit

125,000 JUMBO JETS

This is the weight of the global e-waste (electrical and electronic waste) that we produce each year and mostly “dispose of” rather than recycling.

Source: www.weforum.org

	Economy Number of patents registered in 2018 Source: www.presseportal.de	USA 43'612	GERMANY 26'734	JAPAN 22'615
	Health Proportion of the population suffering from malnutrition in percent Source: www.bpb.de	1970 28%	1990 19%	2017 11%
	Technology Growth forecast for the biotechnology sector (average annual growth rate, CAGR) Source: Frost & Sullivan	CHINA 18.1%	USA 7.6%	EUROPE 5.2%
	Society Percentage of adults aged over 15 with basic reading and writing skills Source: https://ourworldindata.org	1820 12%	1960 42%	2016 86%
	Environment Global production of plastics (in millions of tons) Source: Statista.com	2002 200	2005 230	2017 348

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