GLOBAL OPPORTUNITY REPORT 2016

Your guide to a world of opportunities

2016

LOSS OF OCEAN BIODIVERSITY

Uncontrolled seas – the majority of the high seas is common territory. Nobody owns it and nobody protects it. Three billion people depend on protein from fish, but global ocean biodiversity is suffering due to pollution from land and ocean activities.

OPPORTUNITIES:

CLOSING THE LOOP

Closing the loop is an opportunity to stop overfeeding the sea nutrients that are slowly killing it, but it is also an opportunity to reuse and recycle valuable resources. It is the circular economy of the ocean.

REGENERATIVE OCEAN ECONOMY

Developing ways to use the oceans that supports biodiversity is an opportunity to create resilience and long-term value for society and business.

SMART OCEAN

The oceans of the world are the last undiscovered frontier, which is slowly opening up to become smart oceans, this will enable us to make the right choices for sustainable development in the ocean space.

RESISTANCE TO LIFE-SAVING MEDICINE

We are entering a post-antibiotic era — where common infections and minor injuries can kill because the drugs don't work anymore. Antibiotics are in the meat that we eat, it leaks to drinking water and is overused by doctors - it's everywhere.

OPPORTUNITIES:

ANTIBIOTIC-FREE FOOD

Though still a niche in the food market, increasing consumer awareness is paving the way for a growing market in antibiotic-free food.

NEW BUSINESS MODEL FOR ANTIBIOTICS

A mix of innovative approaches to R&D, new forms of financing mechanisms and regulatory tools can help bring novel antibiotics to the market. It is an entirely new business model.

PRECISION TREATMENT

New diagnostic tools can help doctors prescribe narrow spectrum antibiotics which only target the bad bacteria at play. Precise diagnose for precision treatment bring down overuse of antibiotics.

ACCELERATING TRANSPORT EMISSIONS

Seven out of eight urban citizens breathe air that fails to meet WHO safe levels. Transport is mainly to blame, however, societies need mobility of people and goods to function and develop.

OPPORTUNITIES:

FLEXIBLE MOBILITY

A flexible transport system provides flexibility in travel times, forms of transport and service provider, while today many people's daily transport choices are being dicated by previous investments in for example a car.

CROWD TRANSPORT

The transport collaborative economy is opportunity to ride together and transport stuff together, which will bring down congestion and air pollution from emissions.

LOW TRANSPORT CITIES

Imagine living in a city where all your activities are within reach on foot, by bike or by a well-connected transport system. A low transport city is such a place.

A GENERATION WASTED

Youth all over the world are joining the ranks of the unemployed. Almost a quarter of the planet's youth are neither working nor studying. Jobless growth is now a global reality for the next generation.

OPPORTUNITIES:

FUTUREPRENEURS

Conventional thinking sees entrepreneurship as an alternative to the conventional corporate world, but bringing the two worlds together through corporate incubators is an opportunity to grow jobs.

THE DIGITAL LABOUR MARKET

Opportunity and talent are not evenly distributed. Digital technology can bring jobs to marginalised youth in remote corners of the world.

CLOSING THE SKILLS GAP

Education for a changing labour market needs to be flexible, giving youth the ability to learn skills in general or learn how to learn more when needed.

GLOBAL FOOD CRISIS

Today there is enough food for everyone on the planet, but still 795 million people go to bed hungry every day. Thirty to fifty percent of all food produced never reaches a human stomach. In 2050, the world has to feed nine billion people in a warmer world with lower yields.

OPPORTUNITIES:

NEW DIETS

A global dietary transition that includes putting more local produce and a varied source of proteins on our plates is an opportunity to put people, planet and our common prosperity on a healthy track.

SMART FARMING

Vast dissemination of advanced technological tools at an affordable price has meant that both large and small-scale farmers have new and more precise tools to produce more with less.

REDUCE FOOD WASTE

From our farms to grocery stores to dinner tables, much of the food we grow is never eaten. Reducing food waste is an opportunity to innovate along the value chain.

GLOBAL OPPORTUNITY REPORT

2016

Global Opportunity Report 2016, First Edition is published by DNV GL AS.

This report is based on information and sources that the authors regard as credible and accurate. Though both internal and external reviewers have commented on it extensively, we do not make any warranty on the information obtained from third parties.

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The survey reported on in this report was conducted in collaboration with the research company YouGov. There are a total of 5,567 completed Computer-assisted web interviews (CAWI) with persons with management responsibility working in companies with a minimum of 100–200 employees. The survey was conducted between 6 to 21 October 2015.

DNV GL AS,
Høvik, Oslo

This report is available at www.globalopportunitynetwork.org

PROJECT PARTNERS

DNV·GL

UN GLOBAL COMPACT

Mondaymorning
— GLOBAL INSTITUTE —

DNV GL AS

Driven by the purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. DNV GL provides classification and technical assurance along with software and independent expert advisory services to the maritime, oil and gas, and energy industries. The company also provides certification services to customers across a wide range of industries. Operating in more than 100 countries, its 15,000 professionals are dedicated to helping its customers make the world safer, smarter and greener.

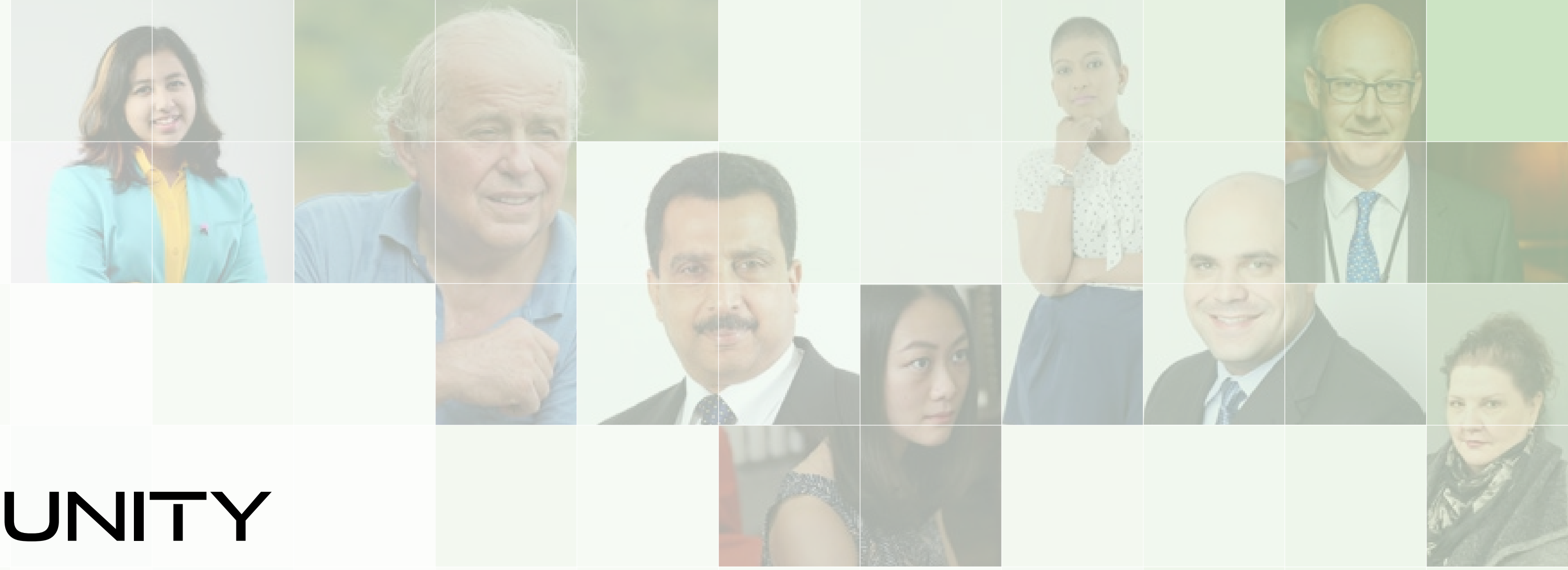
UNITED NATIONS GLOBAL COMPACT

The United Nations Global Compact is a call to companies everywhere to align their operations and strategies with ten universally accepted principles in the areas of human rights, labour, environment and anti-corruption, and to take action in support of UN goals and issues embodied in the Sustainable Development Goals. The UN Global Compact is a leadership platform for the development, implementation and disclosure of responsible corporate practices. Launched in 2000, it is the largest corporate sustainability initiative in the world, with more than 8,000 companies and 4,000 non-business signatories based in over 160 countries, and more than 85 Local Networks.

MONDAY MORNING GLOBAL INSTITUTE

Monday Morning Global Institute is Scandinavia's leading think tank. For twenty-five years, the company has developed a wide range of activities and projects through cross-sector partnerships. A common denominator in our projects is the desire to build sustainable and resilient societies.

Monday Morning Global Institute has founded Sustania, a global leading solution platform. Sustainia is a clear and achievable vision of a sustainable society built on scenarios in which readily available solutions, innovations and technologies are implemented on a large scale.



DEAR OPPORTUNITY LEADER,

We are in the midst of a seismic change in the way we organise our societies, run our businesses, and live our lives. Whether we all stand to benefit from this change is up to you. You are the one who can turn the myriad of interconnected risks we face into opportunities.

2015 was a groundbreaking year, ushering in a new development paradigm, with the Sustainable Development Goals launched by the United Nations – known as the Global Goals – and confronting the most severe dangers of climate change at COP21 in Paris. 2015 was also the year the first edition of the Global Opportunity Report was published, and the timing was no coincidence. Amidst the forging of global political deals on the future of development, the Global Opportunity Report highlighted concrete routes to reach the global aspirations for a sustainable and resilient world.

The partners behind the Global Opportunity Network originally brought together their respective experiences within risk and opportunity management in response to an urgent need: We require new navigation tools to tackle our time's most pressing challenges in an increasingly complex and interconnected risk landscape. In order to thrive in this new landscape, businesses must look beyond their immediate interests and navigate a wider opportunity space that holds the key to future prosperity. With this starting point, the Global Opportunity Network engaged leaders across business, the public sector, and civil society in eight locations on five continents. Together, they turned five global risks into the 15 opportunities in the first Global Opportunity Report.

The report you are about to read is proof that the opportunity mindset has staying power. Like the first edition, this report focuses on five global risks. The risks covered by the second edition are: resistance to life-saving medicine, the worsening global food crisis, accelerating transport emissions, loss of ocean biodiversity, and a generation lost to unemployment. Based on these risks, we mapped 15 corresponding opportunities via a thorough review process with experts and a global survey engaging more than 5,500 leaders. The 2016 report thus continues to build the catalogue of opportunities the last report started, increasing the number of opportunities from 15 to 30. This catalogue will continue to grow in the coming years, as the Global Opportunity Network increases its membership and identifies new risks and opportunities.

This year, however, we do not stop at mapping the opportunities; we shed light on people who want to bring about positive change. Through portraits of opportunity leaders, the report investigates how the new opportunity mindset is taking hold. The change the Global Opportunity Network is instigating comes from the people comprising it. These individuals are not afraid to disrupt business as usual; they understand the power of actions to bring about systemic change, appreciate the power of strong and clear messaging, and look to the future with a strategic and an optimistic eye. Most importantly, the opportunity leader understands that risks are not to be avoided. Complex and interconnected global risks are the new norm. Hence, our approach must be proactive and engaging, rather than acting only once crisis has struck – because the difference between a risk and an opportunity is how soon you discover it.

If you are not already among the opportunity leaders, we invite you to join us in the Global Opportunity Network. As an opportunity leader, you are the main protagonist in the creation of safer, smarter, and greener businesses that make an impact beyond business. With the new strategic opportunity mindset and unprecedented possibilities of learning, co-creation, and innovation across industrial, technological, spatial, and cultural boundaries, the potential for change has never been better. Politicians have defined ambitious goals for the world. It is time for you to pursue opportunities to turn abstract dreams into concrete action.

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GROUP PRESIDENT AND CEO DNV GL

LISE KINGO
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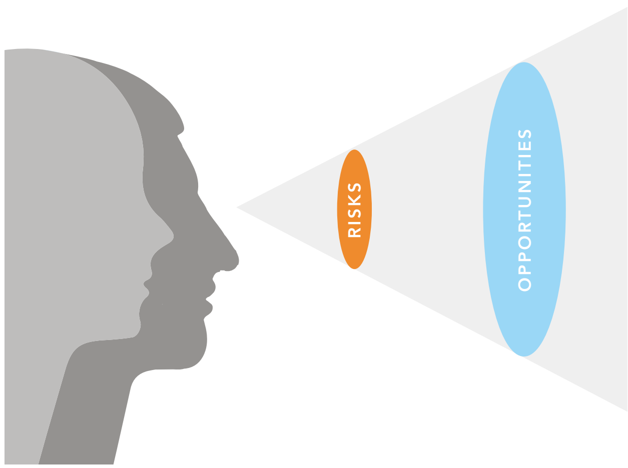
THE ROAD TO THE REPORT

HOW WE SEE IT

The report is rooted in the tension between global risks and opportunities. The concept of opportunity offers a perspective of the world where change is benficial, even on a large societal scale. From the two concepts of risk and opportunity emerges the third and final ingredient of the report – opportunity leadership. In combination, these three ideas inspire a fundamentally new way of looking at the world and exercising leadership. Opportunity leaders are what we call those who react to risks from the perspective of opportunities.

Allow us to share how we define risk and opportunity, and how we through an innovative collaborative process have worked with these terms for making this report.

OPPORTUNITY MINDSET: EMBRACING RISKS TO SEE OPPORTUNITIES



RISK

To be included in the report, a risk has to be systemic in nature. Systemic risks have the ability to break down an entire system as opposed to only impacting individual parts or components of it. Systemic risks are fuelled by globalisation and the rapid rise of technology. Faster communication, digital connectivity, increased mobility, and shorter trade and investment links are bringing people closer together. All these advantages from globalisation render the world more fragile by enabling risks to travel the globe at unprecedented speed, potentially changing entire systems along the way.

The systemic risks discussed in the report were selected based on a number of criteria. They have to be global in reach, which means they are significant enough to make headlines everywhere. In addition, a risk must be felt by multiple stakeholders as well as being both timely and actionable.

OPPORTUNITY

Opportunities are avenues of action that stakeholders in business, politics, finance, and civil society can choose to pursue when addressing global risks. They create value for societies and the planet, not just for individuals or businesses. An opportunity is different from a single business solution, because it addresses a risk at a systemic level through multi-stakeholder collaboration.

An opportunity is always inspired by a global risk and effectively works to address it. Therefore, it has the potential to change an entire system. Policy ambitions, such as the UN Sustainable Development Goals, can pave the way for new opportunities through the development of policies and financial incentives to encourage governments, business, and other stakeholders to engage in systemic change.

Lastly, opportunities are sustainable. We define sustainability as it was originally phrased in the Brundtland report: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

OPPORTUNITY LEADERSHIP

Changing systems starts with people who look at the world from an opportunity perspective and take action. They have an eye for spotting risk on the horizon as well as the ability to navigate through it and come out on the other side with innovative opportunities. They are people who represent a new breed of leaders capable of collaborating on an entirely new scale to elevate change from the micro to the macro level. These opportunity leaders have a number of characteristics enabling them to lead systemic change.

For one, they are system thinkers able to see and understand how individual projects, single initiatives, and policy measures influence an entire system. They see the big picture and actively try to change it by creating value for society, the planet, and business. Secondly, they possess the courage to challenge conventional thinking, and they dare to introduce disruptive ways of working. To them, business as usual is just not good enough, and a risk is an opportunity to introduce needed change. Thirdly, opportunity leaders are capable of spotting the right mix of partners required to elevate change to a societal scale.

HOW WE MADE THE REPORT

The Global Opportunity Report is the result of a process stretching over almost one year. Aiming to show how risks can be turned into opportunities, we produced the report-by means of a three-stage process.

1. **IDENTIFY RISKS** The starting point of the analysis is to select a set of global sustainability challenges and

risks to inspire the work. The five risks selected for this year's report are:

- *A Generation Wasted*
- *Resistance to Life-saving Medicine*
- *Accelerating Transport Emissions*
- *Global Food Crisis*
- *Loss of Ocean Biodiversity*

We do not claim that these risks are the only or necessarily the most prominent challenges facing the world today – but certainly all are of great importance.

2. **CO-CREATE OPPORTUNITIES** Eight panels on five continents were conducted to bring insights from local stakeholders and sustainability experts to the process. More than 200 people participated – a mix of professionals from business, academia, and civil society. Within these diverse groups, both with respect to business sectors and geography, many opportunities were identified.

   This material formed the basis for identifying the 15 opportunities presented in the report. In this process, both internal DNV GL and UN Global Compact resources as well as external experts provided input.

3. **SURVEY THE OPPORTUNITIES** The attractiveness of these 15 opportunities was subsequently measured in a global survey involving more than 5,500 private and public sector leaders from across the globe. We asked respondents how important a particular opportunity is for their country. This included evaluating its benefit for society and the capabilities their countries have to pursue the opportunity. The responses to these questions form the basis of the general ranking of opportunities (please see section "How We Collected Data" for more information).

   Respondents were also asked to evaluate the value of the opportunities for business by considering two questions. First, respondents were asked to consider the overall expected effect on their own business; second, they were asked how likely their own business is to develop new ventures related to the opportunity.

   Further, respondents were asked to evaluate how likely different stakeholder groups in their country are to support the pursuit of the opportunity.

   Each of the opportunities is presented together with information on how respondents have measured its attractiveness for society and business. For all of the opportunities, a range of related solutions were also identified. These solutions are examples of how opportunities are already exerting a positive impact on people around the globe.

WE WOULD LIKE TO THANK

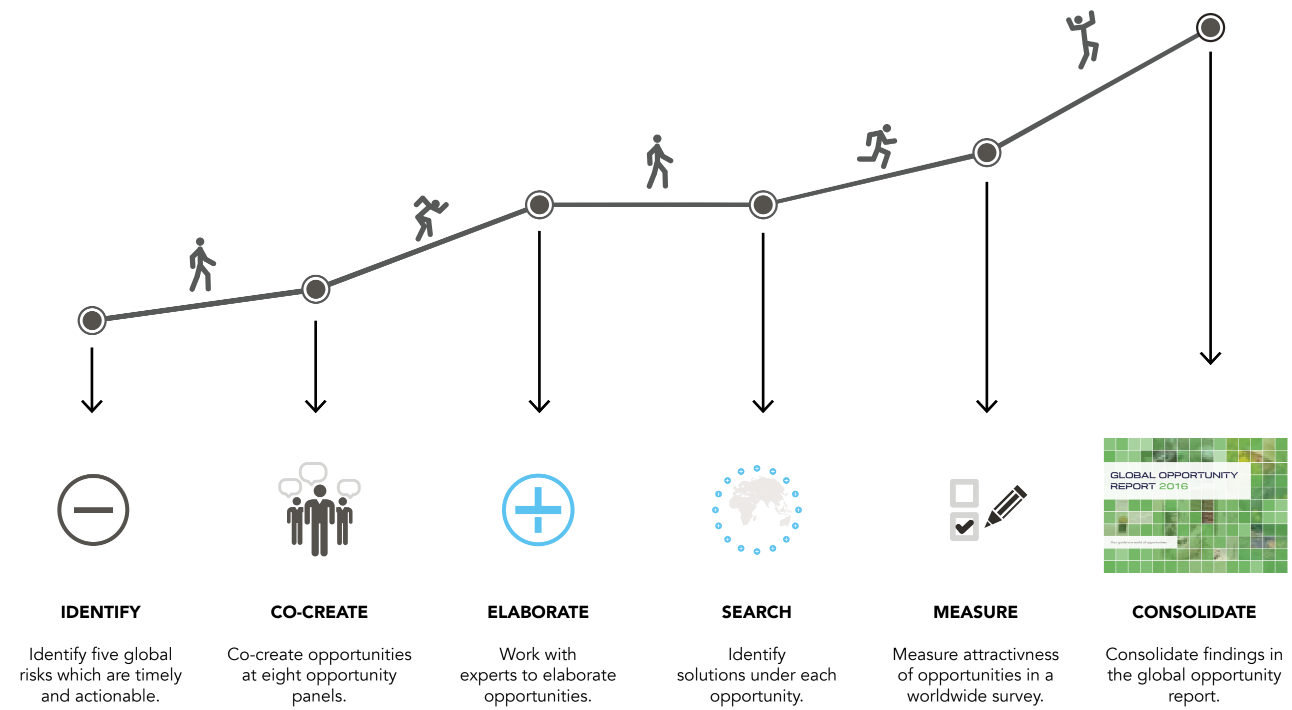
The Opportunity Panels are the foundation of the Global Opportunity Report and the underlying process of turning risks into opportunities. We are thankful that so many engaged opportunity minds around the world shared their reflections with us on the type of leadership required to turn global risks into opportunities.

Multiple concrete ideas were developed during the panels, many more than made the way into this report. We thank all the panel participants for lending us their time and thoughts in a process of collaborative and innovative problem-solving. This report would not have been possible without this inspiring global conversation.

All the co-created ideas were reviewed by experts several times during the editorial process. We thank each and every one of them for their critical and constructive comments, which have challenged and strengthened the analysis. In addition, the experts contributed their insights into the highly complex issues addressed in the report. This enabled us to develop a deeper understanding of the risks and enhanced our ability to explain opportunities to the reader in a clear and understandable manner.

A special thank you also goes to the more than 5,500 private and public sector leaders who participated in our global survey regarding the opportunities presented here. The support from all those involved means that the Global Opportunity Report 2016 represents a body of work with truly global roots.

THE GLOBAL OPPORTUNITY NETWORK



EXECUTIVE PERSPECTIVE

Business leaders are ready to tackle social challenges.

Business leaders see social challenges as among the most pressing risks they face. Of the more than 5,500 leaders surveyed worldwide, 42 percent answered that wasting an entire generation of youth to unemployment was at the top of their concerns among this year's five risks. Looking at the broader risk landscape, a similar trend emerges of societal risk being a top concern most notably unemployment, poverty, and hunger.

We tend to assume that business leaders are concerned only with short-term profits and not with societal well-being. However, the above findings demonstrate that social unrest and economic disparity damage everyone's prosperity. Indeed, today's most pressing risks are all concerned with human needs that we all share; a job for a life without poverty. It is the social glue of our societies. Poverty, hunger, and youth unemployment are eroding the foundation of progress – not only in the world's poorest countries, but within almost every country around the world. More than ever before, businesses must keep an eye on the wider risk and opportunity landscape in order to ensure current and future profits.

Business leaders can be the change makers COP21 asked for. The message from Paris clear that we need to mobilise new drivers of change. In addition, that business holds important keys to solving a major global challenge like climate change. This report documents that businesses have broadened their view on what is best for both society and for business.

SYSTEMIC RISKS PRESENT GLOBAL OPPORTUNITIES

As with every risk, there are opportunities to be pursued in this apparent crisis – indeed, this is the foundation of the Global Opportunity Network. Pursuing these opportunities is not simply a matter of making a bad situation a little

OPPORTUNITIES RANKED BY POTENTIAL POSITIVE IMPACT ON SOCIETY

Figure shows the overall ranking of all opportunities based on the share of responses for the opportunity that fall into the category "most positive." This is defined as respondents rating opportunities above 5 (on a scale from -10 to 10) on both the benefits to society and on societies' capacity to pursue the opportunities. Colours for the 2016 opportunities indicate which risk they address. In order to identify trends over time the two years are displayed separately.

	2015	2016
1	WATER-EFFICIENT AGRICULTURE	SMART FARMING
2	EVERYDAY HEALTH ENABLERS	THE DIGITAL LABOUR MARKET
3	FRESH WATER PRODUCTION	CLOSING THE SKILLS GAP
4	GREEN CONSUMER CHOICES	REDUCE FOOD WASTE
5	SMART WATER REGULATION	PRECISION TREATMENT
6	REGULATED ENERGY TRANSITION	ANTIBIOTIC-FREE FOOD
7	INNOVATIVE FINANCE FOR A HEALTHY GENERATION	REGENERATIVE OCEAN ECONOMY
8	ENERGY AUTONOMY	NEW BUSINESS MODEL FOR ANTIBIOTICS
9	EARLY WARNING AND FORECASTING SERVICES	FLEXIBLE MOBILITY
10	SMART CITIES	NEW DIETS
11	COMBAT NCDS WITH MOBILE TECHNOLOGIES	FUTUREPRENEURS
12	RURAL GROWTH INITIATIVES	CROWD TRANSPORT
13	COMPACT, GREEN AND CONNECTED CITIES	CLOSING THE LOOP
14	COST-EFFECTIVE ADAPTATION	SMART OCEAN
15	INVESTMENTS IN RESILIENCE	LOW TRANSPORT CITIES

Loss of Ocean Biodiversity · Resistance to Life-saving Medicine · Accelerating Transport Emissions · A Generation Wasted · A Global Food Crisis better, it is a matter of turning it around. Our future depends on the opportunity mindset.

The interconnected and complex nature of the five risks in this year's report call for systemic solutions. Youth unemployment is an urgent example of the threatening ripple effects of a generation without prospects.

Unemployment rates have reached particularly alarming heights in the Middle East and North Africa, where the lack of prospects for young people threatens to waste an entire generation. The untapped potential of millions of people has repercussions far beyond their immediate societies.

The good news is that opportunities for change can be found if a systemic approach is applied to solving the youth unemployment crisis. Tomorrow's professionals are today's children. A systemic approach looks at how the schools and higher education systems interact with youth and how policies and corporations mold youth and their skills and culture of working. We present concrete examples of systemic opportunities getting youth into work that relates to several of the Sustainable Development Goals.

With new thinking about education, knowledge-sharing, and entrepreneurship, aided by digital innovations, entire societies can be uplifted and several global risks mitigated.

BUSINESSES ARE THE NEW ACTIVISTS

So where do we go to pursue these opportunities for systemic change? The survey data shows that business leaders are perceived to be the new advocates for systemic changes, alongside civil society. While the task of tackling entrenched social problems once firmly belonged in the realm of government, a clear shift is taking place: progressive businesses are working for the society they want to operate in. This is not motivated simply by altruism, but rather by an increasing recognition that social risks are detrimental to the bottom line and may present business opportunities in addressing them.

A growing number of businesses must take the long view and look beyond their immediate interests to thrive. To this end, a new alliance is emerging between progressive businesses and civil society actors, who strive to achieve the same sustainable goals. This promises to strengthen the social bottom line on the sustainability agenda, together with the environmental and economic bottom lines, ushering a new kind of social capitalism. It is large scale societal change from the bottom up.

OPPORTUNITIES RANKED BY BUSINESS POTENTIAL

Leaders in private and public sector see great opportunities in getting youth back to work. Data shows that the three opportunities for job creation are top priorities for pursuing new business initiatives. Colours indicate the risk the opportunities address.

1	CLOSING THE SKILLS GAP
2	THE DIGITAL LABOUR MARKET
3	FUTUREPRENEURS
4	FLEXIBLE MOBILITY
5	LOW TRANSPORT CITIES
6	SMART FARMING
7	REDUCE FOOD WASTE
8	CROWD TRANSPORT
9	NEW DIETS
10	PRECISION TREATMENT
11	CLOSING THE LOOP
12	ANTIBIOTIC-FREE FOOD
13	SMART OCEAN
14	NEW BUSINESS MODEL FOR ANTIBIOTICS
15	REGENERATIVE OCEAN ECONOMY

Governments, on the other hand, exhibit a lack of political will to catalyse change. A particularly strong example is South America, where our data shows that the capacity to pursue change is consistently ranked much lower than the potential suggests. Low perceived political will is holding the region back, and trust is necessary for citizens and businesses to operate. Generally, in the survey, the governmental sector is perceived to have low capacity to act on opportunities, to demonstrate low political will, and to be least likely to pursue opportunities. When governmental bodies become hamstrung and do not see themselves as active players in an increasingly complex risk landscape, they become reactionary rather than proactive.

Successful pursuit of opportunities requires an optimal interaction between political regulations and innovation across sectors and frontiers. This interplay between government and business is exemplified by this year's top opportunity, smart farming. Governmental regulation of the use of water, fertilizer, and other inputs has encouraged farmers to turn to technology to help producing more food with fewer inputs. Innovation, at its best, is encouraged by the right framework, and governments can help drive this change.

TECHNOLOGY IS YOUR TOOL

This year's opportunities also show how much can be achieved despite hamstrung governmental leadership. Technology is perceived as a powerful tool in this regard, as the survey shows leaders globally believe technological capacity is availiable to pursue opportunities.

This year, as well as last, the top opportunity was based on people using technology to use fewer scarce natural resources and to ensure the fulfillment of basic needs. Technology plays an important role in all of the top opportunities this year. We see this exemplified in efforts to address youth unemployment by closing the skills gap via digital learning and large-scale health initiatives. In these efforts, the opportunity mindset is the driving force, while technology is the vehicle.

At its core, the opportunity mindset is about embracing risk to see opportunities. The challenges we face are more complex and interconnected than ever before. Whether we are tackling poverty or resource depletion, we must be smarter about how we organise ourselves.

The opportunities in this report show there is great reason to be optimistic. After all, creativity was never about an abundance of options, but about being imaginative within the constraints you find yourself under. The best opportunity leaders embody this mindset, and the world needs them more than ever.

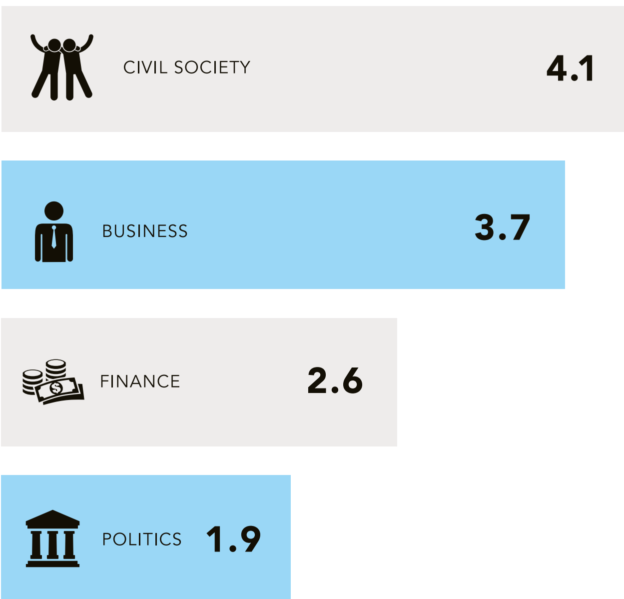
THE 10 MAIN MESSAGES

The ten main messages are concrete takeaways to inspire leaders in business, civil society, and politics to start turning global risks into opportunities for collaborative action. Each main message has its roots in the opportunity chapter, where you will find its supporting data.

The survey shows that leaders from different societal groups look optimistically at our ability to pursue systemic change across five sectors and nine regions.

WHO WILL BACK UP THE OPPORTUNITIES

How likely the stakeholder group is to advocate for the opportunities - global average for all opportunities on a scale from -10 to 10



BUSINESS IS THE NEW ACTIVIST

Our survey shows that business is perceived to be among the top advocates for all 15 opportunities. Only civil society is perceived as a stronger advocate.

The business sector in general is perceived to be an actor pushing for sustainable change. It is also evident that business and civil society are on the same page regarding the opportunities they can be expected to advocate most strongly for. Hence, we can expect new forms of solution alliances to emerge between business and civil society for collaborative actions to change societies from the bottom up.

TECHNOLOGY IS AN OPPORTUNITY DRIVER

In four out of the top five opportunities, technology will play a significant role in enabling private and public leaders to act in an effective manner.

The survey has tested the capacity to pursue all 15 opportunities across three dimensions - technology, economy, and political will power. Of these three dimensions, technological capacity is consistently perceived to be the lowest barrier to change. Hence, technology is a strong driver of all 15 opportunities. However, the data shows that it tends to be a weaker driver in lower Human Development Index (HDI) regions, pointing to a need for technology transfers for a number of opportunities to be realised.

SMART FARMING IS THE TOP OPPORTUNITY

Sustainable and more efficient production of food using technology and digital solutions is the top opportunity in 2016. Business believes that the world is willing and able to change how we produce food by making farming smarter. It is a mature opportunity, adaptable across geographies and scale, and with readily available solutions in the market. This year's top opportunity shares similarities with last year's number one: water-efficient agriculture. Both are driven by a mix of resource scarcity and digital solutions, encouraging farmers to use technology to target inputs.

SMART FARMING IS THIS YEAR'S FAVOURITE

SDGS THE JOB DESCRIPTION FOR BUSINESS

The survey shows that all 17 United Nations Sustainable Development Goals (SDGs) hold potential for business as business leaders see opportunities across the full list of SDGs.

SDG number eight, on decent work and economic growth, is the highest rated in terms of business potential, followed by SDG number three on good health and well-being. These are also the SDGs that are perceived to hold the greatest potential to direct societies onto a sustainable development track; hence, what is good for business is also good for society.

The SDGs with the lowest potential business opportunity are those concerning inequality - both in terms of gender and income – as well as the goal on partnerships for the SDGs. The survey also revealed that the knowledge about the SDGs is lower in high HDI countries and in the lower levels of corporate management.

CIVIL SOCIETY FIGHTS TO CHANGE FOOD SYSTEMS

Globally, civil society can be expected to fight hardest for changes to the current food system. The survey shows that the top three issues for civil society out of the 15 opportunities are all related to how we produce food.

At the top of the advocacy agenda of civil society is food waste reduction, followed by a transition to smart farming and then antibiotic-free food production. Of these opportunities, political will power is lowest in relation to antibiotic-free food making it an advocacy agenda civil society may find to be an uphill battle.

THE OPPORTUNITY MANAGER IS AN ASIAN WOMAN

Across all 15 opportunities surveyed, women are more positive than men, the young are more positive than the elderly and than respondents in lower HDI countries are more positive than leaders in high HDI countries. This year's 'opportunity manager' is an Asian female leader under age 30. She works in the service or manufacturing sector.

Chinese respondents in general stand out from all other regions with a consistently positive outlook both on the ability of the region to make systemic change happen and the positive benefits to society of these changes. Chinese women are the most positive of the survey respondents.

READY TO PURSUE THE MOST PRESSING RISKS

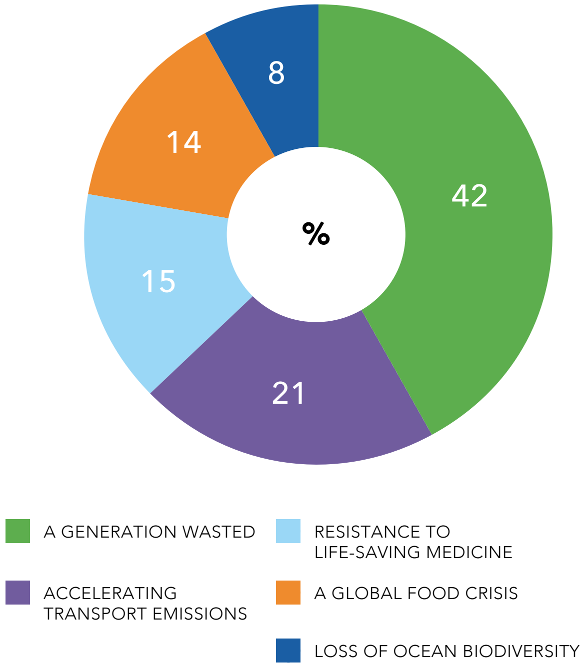
Leaders in private and public sector are most concerned with societal risks across the world according to the risk ranking this year.

From all corners of the world, private and public sector leaders echo the same message. Unemployment calls

SUSTAINABLE DEVELOPMENT GOALS

OPPORTUNITY MANAGER

PERCEPTION OF MOST PRESSING RISK



for urgent action, as it is rated the most pressing risk this year as well as last. The good news: the opportunities addressing youth unemployment dominate the top four on the opportunity ranking this year. In addition, the top three opportunites ranked for new business initiatives are all opportunities to address youth unemployment. The message is clear: leaders are ready to pursue opportunities to address the most pressing risks.

POLITICAL WILL IS SEEN AS HOLDING US BACK

From the three dimensions of capacity tested - political will power, technological capacity, and financial capacity - political will power consistently scores low across all nine geographical regions, except China.

Looking at which of the four surveyed stakeholder groups is perceived as most likely to advocate for change, the same trend repeats itself; respondents do not expect that politicians will actively advocate for change to the same extend as the other stakeholders.

Answers from governmental sector respondents reveal that even they do not believe government has the capacity to pursue many of the opportunities. In addition, all of the respondents in the government sector show the largest gap between the perception of being affected by the opportunities and their expressed likelihood to pursue the same opportunities. Hence, it paints a picture of a public sector that sees opportunities, feels affected by them, but does not have the capacity to act on them.

The combination of perceived low capacity and limited political will power underlines the need and benefit of collaboration across sectors where global and systemic change is needed.

SOUTH AMERICA IS READY FOR CHANGE

South America is the region with the largest gap between its belief in positive change arising from the opportunities, and its capacity to pursue opportunities. The survey reveals that South America's low level of capacity to pursue change is due to a general perception of a lack of political will. It points to a large positive effect if the trust is restored in the political system.

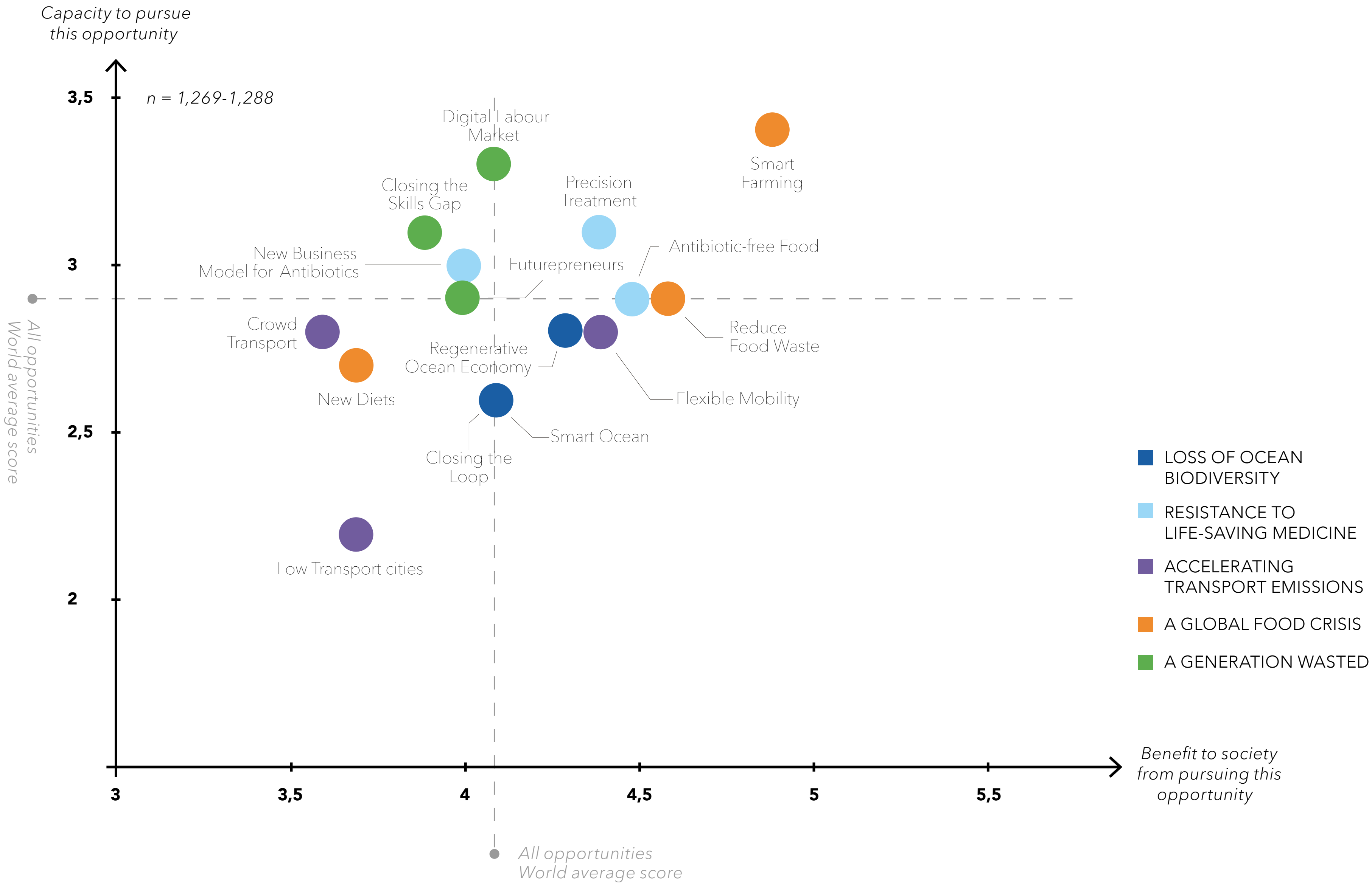
THE MIDDLE EAST AND NORTH AFRICAN REGION IS BECOMING MORE CAUTIOUS

The MENA region consistently rated opportunities significantly lower compared to last year. The same goes for the belief that change will be beneficial to society. It is only in relation to the opportunity to reduce food waste that the MENA region has a more positive outlook than the world average. However, another food related opportunity; antibiotic-free food is the opportunity the region rates lowest of all 15.

SECURING FOOD AND GETTING YOUTH INTO WORK DOMINATES THE TOP FOUR OPPORTUNITIES

ALL OPPORTUNITIES ARE ASSESSED POSITIVELY

Overall results for all opportunities when assessed on their benefits to society and on the capacity of respondents home countries to pursue them. All opportunities are rated positively. The average is 4.1 and 2.9 on the two axis on scales are going from -10 to 10.



GLOBAL GOALS ARE GOLDEN OPPORTUNITIES

Business across the world sees opportunities in all 17 Sustainable Development Goals. They will drive new markets for the next 15 years

NEW BUSINESS OPPORTUNITIES

2015 was a year of grand political ambitions channelled into the Sustainable Development Goals. These ambitions can be turned into concrete business opportunities – given the right mind-set and urgent action.

First, the mind-set. Our survey of more than 5,500 public and private sector leaders around the world shows a readiness for action and an appreciation of the challenges we face. Business leaders – 83 percent of our respondents being private business leaders – are especially concerned about Sustainable Development Goals (SDGs) related to well-being, good health and jobs – in short, the creation of decent lives.

The survey reveals that these "back to basics" SDGs has the biggest impact for good business as well for a sustainable society. However, neither these nor any of the 17 SDGs can be tackled by the public sector alone. Luckily, public and private sector leaders see business opportunities in all of them – and they are ready to seize them.

The survey reveals that these "back to basics" SDGs have the biggest impact for good business as well for a sustainable society.

Second, the urgency. The long list of SDGs illustrates both the urgency and the complexity of the challenges the world faces. Questions of inequality, health, and poverty are inextricably linked with climate change, land degradation and ocean biodiversity. And our time for addressing them is running out. If we are to solve these global problems within the 15 year timeframe set, we must pursue concrete opportunities for change. This report, and last year's report, is full of them. We do not claim that the opportunities are easy shortcuts to achieving the SDGs, but they can inspire us to operationalise the broad ambitions behind the goals.

The opportunities demonstrate new ways to make the best of systemic risks, thus bringing the world closer to a safe and sustainable future. See opposite page for an overview of how the opportunities are linked to the SDGs.

MAKING PROSPERITY POSSIBLE

Zooming in on the five risks presented in this year's Global Opportunity Report, 42 percent of the leaders we asked across the world singled out youth unemployment as the most pressing issue to solve. We saw a similar concern last year, with unemployment rated as the most pressing risk of all. Particularly since the 2008 financial crisis, generations of young people risk being wasted to a life without future prospects and prosperity.

Not having a job equals to loss of income, low self-esteem, loss of identity, and loss of a sense of purpose for many youths today. This loss of talent and opportunity has personal, societal, and sometimes even global repercussions.

The leaders we surveyed understand this growing risk and the immense potential for prosperity that can be unleashed if it is addressed correctly. Our data shows a consistent belief that decent work is the SDG holding the greatest potential for business opportunities.

Our data shows a consistent belief that decent work is the SDG holding the greatest potential for business opportunities.

In tackling youth unemployment, we are not only challenged by the aftermath of the global financial crisis. The much bigger challenge is digitalisation of work processes, which threatens to make 50 percent of the current work force obsolete. Even though digitalisation threatens to rob jobs it is also a driver of job creation in some parts of the world. The ever changing skill landscape makes it even more urgent that we think creatively about new opportunities for young people.

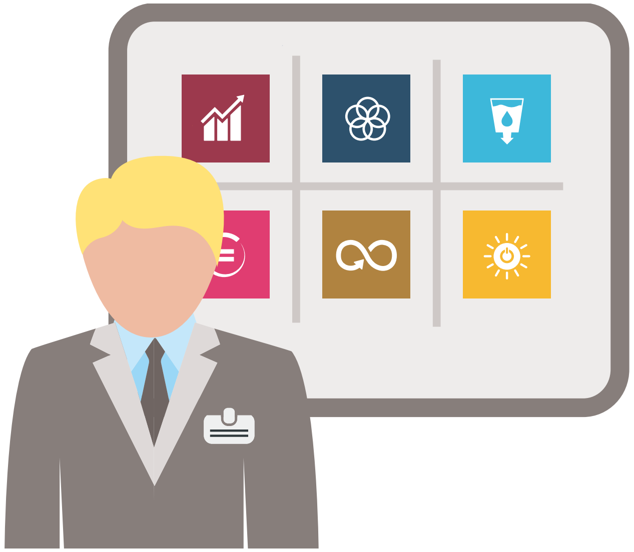
In this report, we present opportunities for decent work by way of bringing job opportunities to disadvantaged youth or removing barriers to entrepreneurship through digital innovations. It is clear that there is not one silver bullet to job creation, but rather many opportunities that we must build upon to ensure decent lives for all, now and in the future.

OPPORTUNITIES ARE STRATEGIES TO REACH THE SDGS

The opportunities have been linked to the SDGs by analysing how the opportunities contribute to the underlying 169 targets of the SDGs

	NO POVERTY	ZERO HUNGER	GOOD HEALTH & WELL-BEING	QUALITY EDUCATION	GENDER EQUALITY	CLEAN WATER & SANITATION	AFFORDABLE & CLEAN ENERGY	DECENT WORK & ECONOMIC GROWTH	INDUSTRY, INNOVATION & INFRA-STRUCTURE	REDUCED INEQUA-LITIES	SUSTAINABLE CITIES & COMMUNITIES	RESPONSIBLE CONSUMP-TION & PRODUCTION	CLIMATE ACTION	LIFE BELOW WATER	LIFE ON LAND	PEACE, JUSTICE & STRONG INSTITUTIONS	PARTNER-SHIPS FOR THE GOALS
CLOSING THE LOOP	○	●	○	○	○	●	○	○	●	○	○	●	○	●	○	○	○
REGENERATIVE OCEAN ECONOMY	○	●	○	○	○	○	○	●	●	○	○	●	○	●	○	○	○
SMART OCEAN	○	○	○	○	○	○	○	○	○	○	○	●	○	●	○	○	●
ANTIBIOTIC-FREE FOOD	○	●	●	○	○	○	○	○	●	○	○	○	○	○	○	○	○
NEW BUSINESS MODEL FOR ANTIBIOTICS	○	○	●	○	○	○	○	●	●	○	○	○	○	○	○	○	●
PRECISION TREATMENT	○	○	●	○	○	○	○	●	○	○	○	○	○	○	○	○	○
FLEXIBLE MOBILITY	○	○	○	○	○	○	○	○	●	○	●	●	○	○	○	○	●
CROWD TRANSPORT	○	○	○	○	○	○	○	○	●	○	●	●	○	○	○	○	○
LOW TRANSPORT CITIES	○	○	○	○	○	○	○	○	●	○	●	●	○	○	○	○	○
FUTUREPRENEURS	○	○	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○
THE DIGITAL LABOUR MARKET	○	○	○	●	○	○	○	●	○	●	○	○	○	○	○	○	○
CLOSING THE SKILLS GAP	○	○	○	●	○	○	○	●	○	●	○	○	○	○	○	○	●
NEW DIETS	○	●	●	○	○	○	○	○	○	○	○	●	○	○	○	○	○
SMART FARMING	●	●	○	○	○	○	○	○	○	○	○	●	○	○	○	○	○
REDUCE FOOD WASTE	○	●	○	○	○	○	○	○	○	●	○	●	○	○	○	○	●

SDGS ARE THE JOB DESCRIPTION FOR BUSINESS



A HEALTHY FOUNDATION

The public sector rates the SDG number 3 concerning health and well-being, highest on both dimensions: good for business and good for society. Our survey respondents particularly see healthy people as a determining factor for keeping public health expenditures down and ensuring long-term societal sustainability.

Health as an economic and social foundation for society is challenging. Governments everywhere are struggling to manage the rapidly increasing costs of health care, projected to rise 5.2 percent a year between 2014 and 2018 at a global level. This increase is partly driven by the health needs of aging populations, growing populations, and the rising prevalence of chronic diseases. In low and medium HDI countries diseases once thought to be challenges for affluent countries alone, such as cardiovascular diseases, cancer, diabetes and other non-communicable diseases (NCDs), have emerged as the leading cause of death and disability.

We expect the public sector to drive new markets in preventive health care. Innovative leaders will pursue new opportunities for collaborative action between the public and private sector to keep populations healthy through investments in healthy lifestyles. One example is the promotion of new diets with less meat, included in this year's opportunities. Opportunities from last year's Global Opportunity Report, such as everyday health enablers, innovative finance for a healthy generation, and combating NCDs with mobile technologies are also concrete avenues to help achieve this SDG.

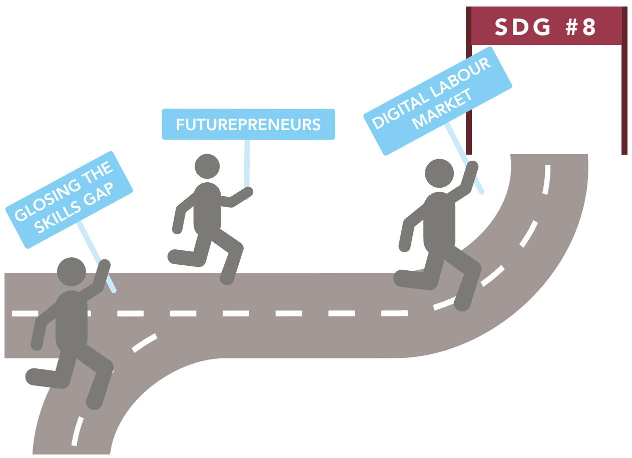
We expect the public sector to drive new markets in preventive health.

NEW PARTNERSHIPS FOR CHANGE

Our survey shows that business leaders see opportunities across all the 17 SDGs and are tuned to advocating for systemic change almost to the same extent as civil society. With this in mind, we predict – and welcome – that businesses will reach out to citizens and organisations to co-create solutions rooted in good and sustainable societies.

The opportunities in the report for getting youth back to work and for improving public health are examples of collaboration between citizens and business to the benefit of all.

OPPORTUNITIES CAN HELP US REACH THE SDGS



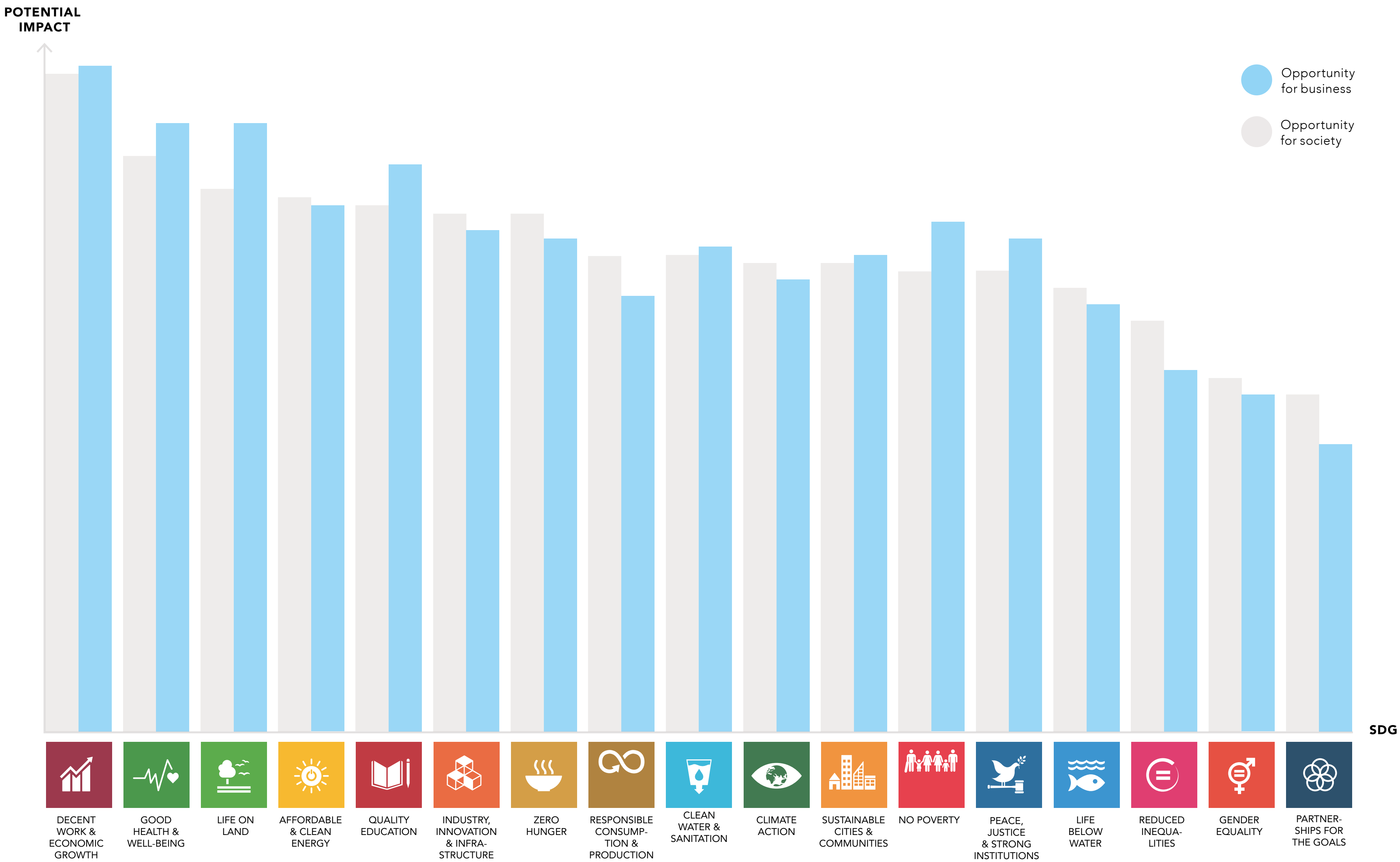
Our survey reveals one immediate challenge in incentivising these new partnerships is that lower levels of management, particularly managers in high HDI countries, are not very well aware of the SDGs. Targeted information efforts may thus be needed to further fuel the drive of business, upon which change depends.

The majority of the opportunities in this report are based on existing technologies and modes of collaboration making them ready to pursue and scale up.

The majority of the opportunities in this report are based on existing technologies and modes of collaboration making them ready to pursue and scale up. Given the urgency of tackling global risks such as climate change, food shortage, and unemployment, only lack of knowledge and political will are holding back change. Opportunities in this report can help turn ambition into reality; the time to pursue them is now.

BUSINESS LEADERS SEE OPPORTUNITIES ACROSS ALL 17 SDGS

How respondents find the SDGs to impact on sustainable development and new business opportunities - bars indicate percentage of respondents who have selected the SDG



MEET THE OPPORTUNITY LEADERS

Read about opportunity leadership and meet eight opportunity leaders from the opportunity panels around the world

NATURE OF AN OPPORTUNITY LEADER

People who see societal challenges as opportunites for business and beyond.

The transition to a more sustainable society will not happen on its own. To be able to move from seeing risks to discovering opportunities, we need people who embrace the opportunity mindset. These people will – with a positive outlook – uncover opportunities for growth, development, and societal change. We call them opportunity leaders.

At the eight opportunity panels, we met opportunity leaders, who shared with us what opportunity leadership means to them. Here is what they emphasised:

- Cultivating solutions based on collaboration
- Act to change the future
- First and best mover
- Asking "Why not?" instead of "Why?"
- Inspiring others to do their best
- Cultivating a new vision

Conversations held along our global opportunity tour pointed to four characteristics of an opportunity leader.

DISRUPTOR OF HABITS

If you are bold enough to think you can change the world, you are likely to be one of the rare individuals who end up doing exactly that. Many people, as creatures of habit, tend to find comfort and a sense of security in repetitive behavior. We spend half our time awake, repeating the same actions or thoughts without thinking. We get stuck in habits and routines, rather than trying to do things differently. An opportunity leader is a disruptor of familiar habits in organisations and in businesses, and in society at large. It is a person pursuing a passion rather than trying to fit in.

FUTURE NAVIGATOR

You can't ask people to trust the future because they have real needs right now. The future is abstract, while the present is concrete. The future is something most people put off thinking about for later, for tomorrow or the day after. But opportunity leaders are curious about what the future holds and how they can contribute to shaping what is to come. They take charge and change the course of history.

WALKER

A participant at the opportunity panel in Sao Paulo said: "Opportunity leadership is less talk but more transformative action." Opportunity leaders do not sit around waiting for the world to change. Rather, they spot opportunities and then go for it. Opportunity leadership is inspired action because it inspires others to break away from the comfortable path of modest achievement to excel, to change one self and to change the world. The opportunity leader is the new entrepreneur of our time, someone who makes things happen and communicates clear and strong messages. One who does not shy away from addressing greater societal challenges.

ASK "WHY NOT?"

In San Francisco, the message was that opportunity leaders ask "Why not?" when faced with solutions to a problem. Even big problems and complex solutions do not intimidate the opportunity leader. She or he does not complicate things but instead develops clear ideas that can be implemented. The enthusiasm of the opportunity leader is contagious; she or he injects energy into conversations and groups. Positive thinking is their outlook on life in general, which helps them see opportunities where others see only risks. The attitude of an opportunity leader is positive, looking at a bright future.

THE EIGHT OPPORTUNITY LEADER PORTRAITS

Over the coming pages, you will meet opportunity leaders from the eight opportunity panels, who will share thoughts and reflections on opportunity leadership and what it means to their work and life. They represent true opportunity leadership from all over the world and from various business sectors. Last year we introduced the opportunity mindset and this year you will meet some of the people embracing it in their everyday work. These people are more important than ever because they pursue the opportunities whereby creating the systemic changes called for by the Sustainable Development Goals. Their stories can inspire others to act whereby further fuelling the opportunity movement.

OPPORTUNITY LEADER

Our survey also gave us insight as to where in the world people are the greatest believers in systemic change. The data shows that Chinese and Indonesian women under the age of 30 are equipped with an opportunity mindset. They believe in opportunities for systemic change, and they have a positive outlook on our collective ability to pursue opportunities for a sustainable future. It is a woman working in the service or manufacturing sectors, and her favorite opportunity is "Futurepreneurs," followed by "Smart Oceans."

EMPOWERING YOUTH

KEHKASHAN BASU
Founder and President, Green Hope

When asked about the global agenda that excites her most, Kehkashan responds that "the greatest opportunity lies in the empowerment and effective engagement of future generations." She has not hesitated in pursuing this agenda herself with unwavering determination. "Every day is a new beginning full of latent opportunities that are just waiting to be fulfilled."

A BORN ACTIVIST

Kehkashan started her engagement with environmental work at age eight. When asked about this early beginning to her activism, she brushes the age question aside: "I have always been passionate about the environment, and when I turned eight I felt that I was old enough to take action myself." She planted a tree on that day, and her commitment grew rapidly from there. She never doubted her path: "I am born on the 5th of June, which is the World Environment Day. I have always felt that it was preordained for me to work for Mother Earth and become an eco-warrior."

"When I turned eight I felt that I was old enough to take action myself"

According to Kehkashan, "opportunity leaders are visionaries who do not let the trees crowd their vision of the forest. They base their decisions on their impact on the betterment of society." She has lived by this principle throughout her 15-year lifetime. At the age of 12, she was elected as the Global Coordinator for the UNEP Major Group for Children and Youth. Though all of her predecessors had been adults, Kehkashan took on the task unhesitatingly. "I wanted to prove that age has nothing to do with capability," she explains.

ECO-WARRIORS UNITE!

Kehkashan is engaged in causes addressing both gender bias, the lack of educational opportunities for children in developing nations, and environmental protection. But the issue at the core of her activism is the lack of opportunities for youth involvement in the many sustainability processes, in particular in some UN bodies. For Kehkashan, the importance of involving young people is self-evident: "It is our future that is at stake, so it is imperative that we are involved in all aspects of agenda-setting, policy making and implementation. We do not want to inherent a dry, barren planet just because we couldn't voice our opinion."

"We do not want to inherent a dry, barren planet just because we couldn't voice our opinion"

By founding her own organization, Green Hope, Kehkashan is working to get other young people involved. The organization is run entirely by young people, with the youngest member being seven and the oldest 27. "We do not have adults telling us what to do. We chart our path ourselves. I started the organization at 12 and over the years we have become a trailblazer in the field of sustainability." She seeks out this same passion in other young eco-warriors in order to set a new youth-driven sustainability agenda: "we want people who actually care about the issue so it benefits the community as well as them, because they will get pleasure from the work. Whatever comes from the heart stays."

CORPORATE ACTIVISM

HARI HEGDE
Global Head of Operations and Business, WIPRO Limited

"You need abundant curiosity and must look beyond the apparent." That is Hari's recipe for turning a risk into an opportunity. "It is about your ability to look into the future, connect trends, and use the same forces that work against you to your advantage." In brief, being a successful opportunity leader is about "shaping your future strategy to leverage those emerging risks."

BEYOND CORPORATE SOCIAL RESPONSIBILITY

As Head of Operations at Wipro, a global IT company based in Bangalore, Hari appears to live and breathe this philosophy. He prompted the Karnataka State Water Network to improve the water situation in his city, implemented energy efficiency in all of Wipro's productions, and worked to improve urban mobility in Bangalore, together with local authorities, to the benefit of his own employees. "If I can get 20 percent more of our employees into a better-serviced public transportation system, that is 7,000 vehicles off the road; benefits in decongestion, opportunity in reduced parking, higher productivity, and so on is far beyond what you are investing." In all of these cases, the initiative started as a means of mitigating risks, but as soon as he explored the solutions available, "that's when opportunities of a much greater magnitude emerged."

"We are talking about how you actively participate in a sustainable world and how by doing good business you also do good to the planet"

Hari sees himself as part of a wider development in a globally connected world. With new technologies and social media, people have the means to be heard and get involved. "Businesses don't exist in isolation; they exist in societies," he explains. And so, it is only right for businesses to get active. "It is beyond the typical corporate social responsibility. I think we left that far behind. We are talking about how you actively participate in a sustainable world and how by doing good business you also do good to the planet. That is the idea. I might even take the liberty of calling it corporate activism."

THE INEVITABILITY OF INNOVATION

This activism appears to come naturally to Hari. With every investment he is involved in, he asks himself if this is an opportunity to create a model that can become a self-regenerating force multiplier. "That is what drives me, and that's what bothers me. Not to let go of opportunities and to make a difference. Every opportunity I do not make use of, is an opportunity I have lost."

"If you look at sustainability and what needs to be done, it is not rocket science"

This approach, according to Hari, is a self-evident consequence of simple awareness about the state of our planet. "I call it the inevitability of innovation," he says. "If you look at sustainability and what needs to be done, it is not rocket science. Much of it is simple things. It is a shift in our thinking process that is needed. Doing more with less is just a shift in the way you think. The way we work today is not going to work forever."

THE BIG PICTURE

FLORA LAN
Leader of Greennovate

A career in social entrepreneurship is not what Flora anticipated. As an economics student, she planned to work for an investment bank and have her many years of studying pay off with a prestigious job. But her path changed when she discovered Greenovate, a sustainability consultancy, and started working on youth education: "I helped them spread the message of sustainability among young kids and high school students, and the students loved it." Travelling around China to 14 provinces and hundreds of schools, Flora saw the costs of environmental damage with her own eyes. She could not think of more meaningful work than trying to make change by changing mindsets.

CONNECTING THE DOTS

Now the leader of Greenovate, Flora helps companies and nonprofits develop their message and connect with stakeholders around the sustainability agenda. She is convinced we need new narratives about the good life. "The way we are doing things under the current definition of success is not going to work," she says. To make a change, her work focuses on education and redefining the way we do business,

> ***"Sustainability at the end of the day is about system-thinking"***

adopting a more holistic approach. "How can governments work with businesses? How can businesses work with art? How can artists work with people in rural areas?" she asks. "It's all connected, and people must play on their own strengths to make change happen."

Opportunity leaders are characterised by their belief in systemic change, and Flora is no exception. "Sustainability at the end of the day is about system-thinking," she says. "When people realize that it's about system-thinking, they practice it in every part of their lives. That's the bigger picture I want to show."

NO FEAR OF FAILURE

Having built new opportunities and solutions from the ground up, Flora knows what it means to take a risk. But fear of failure does not take up much space in her mind: "I'm not a risk thinker, I'm a trier.

> ***"I'm not a risk thinker, I'm a trier"***

When I try something, things may fall apart, or they may grow. And when they fall apart, I just try again." Flora is part of a new generation of young change makers who see great potential in the challenges of our time. Inspired by the opportunities for connecting across geographical and cultural boundaries, she is always looking for people who share her mindset and mission. In the digital age, "You can find people who share your passions and connect with them." From there, who knows what you can build. After all, these days "it's not about how big you are. It's about how big your impact is."

BREATHING OPPORTUNITIES

SIMON BIRKETT
Founder and Director, Clean Air in London

An engineer turned banker, Simon stumbled into activism through a lengthy battle with his local council against "rat-running" in his London neighborhood. As he looked into traffic congestion in his city, he soon found out about the shocking state of the air he and his fellow Londoners were breathing.

"...if we do achieve clean air, we will achieve many other objectives at the same time, such as less noise, better quality of life, and better public health and so on"

He decided to make air quality a problem that decision makers could not ignore. "I thought clean air was a perfect issue to campaign on, because it is an issue that people can understand, but there are also powerful laws in place to actually force the politicians to get on with fixing the problem." Even more importantly, "if we do achieve clean air, we will achieve many other objectives at the same time, such as less noise, better quality of life, and better public health and so on."

DISRUPTIVE DETERMINATION

Simon has shown great determination to turn a societal risk into an opportunity. For Simon, achieving clean air is not just about the absence of pollution. It is about the creation of better societies and better lives.

"The opportunity is to tackle air pollution through a mixture of political will, lifestyle changes and technology to reduce local air pollution. And if we succeed, we can show the rest of the world how to achieve the wider sustainability objectives." he is now advicing the UN environment programme.

Simon will not be stopped by a lack of political will. On the contrary he has shown the determination to pursue all opportunities for increasing pressure on politicians. Through a mixture of media attention, avid social media use, juridical investigation, constant contact with politicians, and above all vigilance, Simon has pushed clean air to the top of the agenda in London and beyond. He calls his own approach "disruptive in a constructive sense." To be successful, impatience and tenacity are key. "The way to get big changes in any walk of life is to pursue transformation in a way that takes the wall down overnight," he asserts.

"The way to get big changes in any walk of life is to pursue transformation in a way that takes the wall down overnight"

TAKING DOWN WALLS

Some of the walls Simon has worked on taking down include forcing the successive governments to release official figures for the number of people affected by air pollution, prompting parliamentary inquiries, and successfully encouraging the European Commission take legal action against the UK on the issue of air pollution. This year was the first time ever that the World Health Assembly held a debate about local air pollution, three years after the World Health Organization declared diesel as carcinogenic to humans. Simon also praises the adoption of the new Sustainable Development Goals, which have placed local air pollution at the forefront of the political agenda, and the Paris agreement at COP21, which acknowledged the "right to human health." This is recognition from the highest levels of world government that this is a big issue that must be addressed.

MEANINGFUL INVESTMENTS

KARISSA SAMUEL
Founder, Ntshulisa Foundation

"I want to be part of the solution," Karissa explains, while speaking passionately about youth unemployment in South Africa. And being part of the solution for Karissa means disrupting business-as-usual. "How is a hungry, uneducated child going to benefit from a pretty wall?"

"I want to be part of the solution"

Companies in South Africa in particular love painting schools and planting unsustainable fruit gardens with no plan, no strategy, and an illusion that a four by four spinach garden is going to feed a school of 400 kids."

IMPACT ACTIVIST

Karissa is on a mission to expand the field of social impact by showing companies they can use their resources better and smarter by actually doing good, specifically for unemployed youth. According to the Black Economic Empowerment Act, South African companies are obliged to contribute to the empowerment of black citizens. Her organization, The Ntshulisa Foundation, helps companies live up to their legal obligation in a meaningful way.

"We must think of a social return on investments"

The quest has not always been easy, but with tenacity Karissa has won many critics over since starting TNF in 1998. "Chief Financial Officers across the land did not like my face," she recalls. While companies were used to doing the bare minimum to meet their obligations, she insisted they increase their ambition – for their own and their community's sake. "We have to integrate sustainability strategies. We can't just think of the bottom line as a standard return on investments – we must think of a social return on investments as well."

WATCH CHANGE GROW

It is a question of making a social change alongside economic returns. The crime, hopelessness, and societal fragmentation resulting from youth without prospects has direct consequences for businesses – not to speak of the untapped potential of thousands of young people who have never had the chance to prove themselves. "Youth unemployment and education is not just a poor kid problem. It's an everyone problem," the South African opportunity leader concludes.

"Youth unemployment and education is not just a poor kid problem. It's an everyone problem"

To seek opportunities for change, Karissa reaches out to both the disempowered and the empowered: "I love to find a disenfranchised, exceptionally talented young person and then just blast them with opportunities and watch them blossom. On the other end of the spectrum, I love dealing with a visionary business leader and blast them with information and convince them why they should change." Over nearly two decades, the Ntshulisa Foundation has gained many long-term corporate partners and seen countless young people grow up to live fulfilling lives as active members of society. Karissa's method is working.

SOLUTION ENTHUSIASM

JAN-OLAF WILLUMS
Chairman, Inspire Invest and ZEM - Zero Emission Mobility

"I am a typical engineer. When I see an opportunity for a solution, I just have to do something about it." This enthusiasm is a driving force in all of Jan-Olaf's work, and one he would add to the list of characteristics of the opportunity leader. In addition to being a systems-thinker, having the courage to challenge conventional thinking, and being capable of spotting the right mix of partners for change, Jan-Olaf believes an important trait is being impatient and optimistic, especially in challenging times.

PIONEERING OPPORTUNITIES

In Jan-Olafs' own words, "today's challenges require a new kind of leader, who can spot synergies and connect ideas from one area to another." He has demonstrated this kind of leadership throughout his career. For example, he was at the forefront of introducing electric cars, launching the THINK as the first fully EU-approved electric vehicle, in 2007.

"today's challenges require a new kind of leader, who can spot synergies and connect ideas from one area to another"

Later, in order to convince people that electric cars actually work, he launched the concept of car-sharing for electric cars. This resulted in Move About, a European electric car-sharing company for businesses Jan-Olaf founded and is Chairman of today. """With this company, we introduced to corporations what we know today as the sharing economy, allowing them to enter the arena with no risk and become comfortable with electric cars. This to me is turning a risk into an opportunity."

The list of pioneering initiatives Jan-Olaf has been involved with is long. He was a co-founding director of the World Business Council for Sustainable Development, put climate and CSR at the forefront of the agenda at Storebrand, Norway's largest financial institution, and co-founded a solar company at a time when few believed in its feasibility in a cloudy country like Norway. In 2009, he launched the fast-growing battery company ZEM, today a key player in the greening of the shipping industry. "This is generally the case – you see that sustainability can be tremendously useful when you start early, take the risk to become a pioneer, and are willing to stay through long enough. Then you create opportunities by being first at showing what this new world could look like."

CHANGING MINDSETS TO MAKE A CHANGE

Looking at the wider shift towards the opportunity mindset, Jan-Olaf is optimistic: "When I was a young student, it was considered radical to want to do something more with your life than simply earning money."

"When I was a young student, it was considered radical to want to do something more with your life than simply earning money"

This is changing, Jan-Olaf believes. "An increasing number of the big banks and financial institutions, but also many successful entrepreneurs, want to think further ahead. That is why the trend towards impact investments is growing stronger and stronger." From his own experience as part of the Toniic Impact Investing Network, the trend is clear: "People want to make a change, not just make money."

A PERFECT PUBLIC PARTNER

DEMETRA J. MCBRIDE
Director, Office of Sustainability, County of Santa Clara

Twelve years ago, Demetra left her job as a lawyer and producer in the film industry after a chance encounter with Al Gore and the cause of climate response at a dinner party left her "riveted, captivated, inspired, feeling as though there was a great deal of focus and purpose there." Driven by this purpose ever since, she has worked tirelessly, first in Florida and now in California, to bring together the best sustainable innovators in cutting-edge public projects. Today, as Director of Santa Clara County's Office of Sustainability and Climate, she spearheads initiatives as innovative as the Silicon Valley, the region she calls home.

INNOVATIVE GOVERNMENT

Pursuing public-private partnerships is key to her efforts. Enabling her success is her office's large network of contacts, from Silicon Valley and non-profits to governmental agencies, research institutions, and universities. Whatever the sector, she looks for opportunity leaders who "see how an impact in one system cascades into others and how you can use that dynamic to develop ideas that have a multi-dimensional impact." Exactly because of its complexity and far-reaching implications, Demetra thinks "sustainability is becoming more of a standard in organisations both in the private and public sectors."

"sustainability is becoming more of standard in organisations both in the private and public sectors"

Creating the right partnerships is not without its challenges, however. "In my work with the private sector, I constantly hear 'we really want to work with government but it's hard to trust them to be nimble, responsive and innovative'." To respond to this need, Demetra is working to create innovation incentives "where we are more in focus, more on the fast track and more flexible in terms of innovation, so we can work more on the same clock as the private sector."

CHANGING THE CONVERSATION

Demetra's approach is working. With the Silicon Valley 2.0 project, she and her team have spent four years creating a regional climate adaptation platform that shifts the focus from climate mitigation to adaption, emphasising the cost of inaction rather than action. The platform not only includes a geospatial map of climate impacts for 2050 and 2100, but also 40 asset layer maps for of areas such as transportation, energy, water, and communications infrastructure, as well as

"We find that adaptation has become, a very keen interest and a key focus"

ecosystem services, parcels, and buildings. "The tool allows you to assess the economic impacts of the loss of those assets. When people were introduced to the tool, the conversation got quite different." Where people previously saw climate adaptation as a far-off and expensive reality, they now see it as a necessary current investment. "We find that adaptation has become, in California and places like Miami and New York, a means to optimise the present and liberate the future," she says.

SUSTAINABLE DISRUPTION

MATHIAS AZEREDO DE ALMEIDA
Sustainability Director, Marfrig Global Foods

"In the short term, sustainability is good for the company in a marketing sense, and in the medium- and long-term sustainability ensures that you have a product in the future." This mindset neatly captures Mathias approach to sustainability. He has led the sustainability efforts of the Brazilian beef trader Marfrig since Greenpeace launched a 2009 report castigating Marfrig, Bertin, JBS, and other leading cattle companies for driving Amazon deforestation and climate change.

"We cannot solve this problem alone"

WORKING THE VALUE CHAIN

In response to Greenpeace's fierce criticism, Marfrig – the world's fourth-largest beef trader – immediately took a lead in ending destruction in the Amazon. "We are trying to develop the idea that by buying from farmers who are responsible, people will support the cause of fighting deforestation and environmental damage." The company's entire value chain has undergone dramatic changes to protect both labourers and the planet. Mathias hopes to encourage the entire industry to think differently: "We cannot solve this problem alone. We are sharing the results and benefits to get more awareness from people, and after COP21, I expect we will see more commitments from other companies, too." For Mathias, these initiatives are driven by measured calculation rather than moral obligation. "I am not an environmentalist," he asserts. Rather, he understands that if his industry does not take care of the environment, there will be no business to run in a few decades. "For the meat industry, sustainability is really a strategic issue. Not everyone realises this, but they will." Indeed, sustainability and business are becoming increasingly interlinked, according to Mathias. "Sustainability is facilitating business, and this trend will only increase," he predicts. "While quality of the end product is the most important thing for sales now, in 20 years, sustainability will be just as important."

"Sustainability is facilitating business, and this trend will only increase "

SHIFTING VALUES

"What drives this change is really the consumer, because businesses will always be driven by the bottom line. After all, sustainability is important, but we need economics."

"We are going through changing times, but the future will depend a lot on consumers"

While a company like Marfrig is driven by the demands of big buyers like Sainsbury's and McDonald's, the end consumers set the agenda. That is why civil engagement is crucial. "We are going through changing times, but the future will depend a lot on consumers."

WELCOME TO A WORLD OF OPPORTUNITIES

30 OPPORTUNITIES

Opportunities from the Global Opportunity Report 2015 – and 15 new.

2015

Read about the opportunities on this page in the Global Opportunity Report 2015

EXTREME WEATHER

Extreme weather events are likely to be more frequent and more severe in the coming decades. The concentration of people in vulnerable areas exacerbates the impacts.

OPPORTUNITIES:

EARLY WARNING AND FORECASTING SERVICES

Strong forecasting services can protect millions of people from extreme weather and have numerous business applications.

INVESTMENTS IN RESILIENCE

Channeling institutional investors' assets towards resilience-building can play an instrumental role in protecting societies from extreme weather.

COST-EFFECTIVE ADAPTATION

The necessary expenditure on climate resilience can be turned into pioneering projects creating a more sustainable future.

LACK OF FRESH WATER

Though access to water is protected under international human rights law, lack of fresh water threatens health and social cohesion and also poses risks to food and energy security.

OPPORTUNITIES:

WATER-EFFICIENT AGRICULTURE

Traditional approaches and modern technology can be combined to create agriculture that withdraws less water and produces more crops.

FRESH WATER PRODUCTION

New technologies and use of renewable energy can make desalination and purification viable options to meet water demands in arid environments.

SMART WATER REGULATION

Clever regulation can dramatically reduce the withdrawal of water in many contexts and open the area up to private investment.

UNSUSTAINABLE URBANIZATION

200,000 people migrate to cities every day. If not managed properly, the cost of congestion, pollution, and the detrimental health effects of such rapidly growing cities threaten future prosperity.

OPPORTUNITIES:

COMPACT, GREEN AND CONNECTED CITIES

Developing emerging cities in a compact, green and connected manner can reduce the capital cost of infrastructure and result in more attractive cities.

RURAL GROWTH INITIATIVES

Creating job opportunities and fostering growth in rural areas can relieve migration pressure and alleviate overcrowding in cities.

SMART CITIES

Big data and real-time data analytics and responses can make better use of available resources in stressed urban areas.

NON-COMMUNICABLE DISEASES

Non-Communicable Diseases (NCDs), including cardiovascular diseases, cancers, diabetes, and chronic lung diseases, pose a siginificant threat to lives, livelihoods and economic development globally.

OPPORTUNITIES:

COMBAT NCDS WITH MOBILE TECHNOLOGIES

Mobile technologies have an almost universal reach that can be converted into better access to health services and stronger health systems.

INNOVATIVE FINANCE FOR A HEALTHY GENERATION

New financial mechanisms can accelerate social policy innovation and include private sector finance for health initiatives targeting early childhood.

EVERYDAY HEALTH ENABLERS

Environments that facilitate health in the form of nutritious food choices or sufficient amounts of daily physical activity can greatly reduce NCDs.

LOCK-IN TO FOSSIL FUELS

In the energy system, lock-in to fossil fuels inhibits not only the immediate reductions in GHG emissions but also public and private efforts to introduce alternative energy technologies.

OPPORTUNITIES:

REGULATED ENERGY TRANSITION

Regulatory initiatives can accelerate the transition to cleaner and more efficient energy generation and provide dynamic incentives for innovation.

ENERGY AUTONOMY

Autonomous energy generation through off-grid or micro-grid renewable sources is tackling energy poverty and reinventing the role of households in energy systems.

GREEN CONSUMER CHOICES

Consumers' concerns about the environment and climate change can be translated into sustainable choices and initiate larger structural changes.

2016

LOSS OF OCEAN BIODIVERSITY

Uncontrolled seas – the majority of the high seas is common territory. Nobody owns it and nobody protects it. Three billion people depend on protein from fish, but global ocean biodiversity is suffering due to pollution from land and ocean activities.

OPPORTUNITIES:

CLOSING THE LOOP

Closing the loop is an opportunity to stop overfeeding the sea nutrients that are slowly killing it, but it is also an opportunity to reuse and recycle valuable resources. It is the circular economy of the ocean.

REGENERATIVE OCEAN ECONOMY

Developing ways to use the oceans that supports biodiversity is an opportunity to create resilience and long-term value for society and business.

SMART OCEAN

The oceans of the world are the last undiscovered frontier, which is slowly opening up to become smart oceans, this will enable us to make the right choices for sustainable development in the ocean space.

RESISTANCE TO LIFE-SAVING MEDICINE

We are entering a post-antibiotic era — where common infections and minor injuries can kill because the drugs don't work anymore. Antibiotics are in the meat that we eat, it leaks to drinking water and is overused by doctors - it's everywhere.

OPPORTUNITIES:

ANTIBIOTIC-FREE FOOD

Though still a niche in the food market, increasing consumer awareness is paving the way for a growing market in antibiotic-free food.

NEW BUSINESS MODEL FOR ANTIBIOTICS

A mix of innovative approaches to R&D, new forms of financing mechanisms and regulatory tools can help bring novel antibiotics to the market. It is an entirely new business model.

PRECISION TREATMENT

New diagnostic tools can help doctors prescribe narrow spectrum antibiotics which only target the bad bacteria at play. Precise diagnose for precision treatment bring down overuse of antibiotics.

ACCELERATING TRANSPORT EMISSIONS

Seven out of eight urban citizens breathe air that fails to meet WHO safe levels. Transport is mainly to blame, however, societies need mobility of people and goods to function and develop.

OPPORTUNITIES:

FLEXIBLE MOBILITY

A flexible transport system provides flexibility in travel times, forms of transport and service provider, while today many people's daily transport choices are being dictated by previous investments in for example a car.

CROWD TRANSPORT

The transport collaborative economy is opportunity to ride together and transport stuff together, which will bring down congestion and air pollution from emissions.

LOW TRANSPORT CITIES

Imagine living in a city where all your activities are within reach on foot, by bike or by a well-connected transport system. A low transport city is such a place.

A GENERATION WASTED

Youth all over the world are joining the ranks of the unemployed. Almost a quarter of the planet's youth are neither working nor studying. Jobless growth is now a global reality for the next generation.

OPPORTUNITIES:

FUTUREPRENEURS

Conventional thinking sees entrepreneurship as an alternative to the conventional corporate world, but bringing the two worlds together through corporate incubators is an opportunity to grow jobs.

THE DIGITAL LABOUR MARKET

Opportunity and talent are not evenly distributed. Digital technology can bring jobs to marginalised youth in remote corners of the world.

CLOSING THE SKILLS GAP

Education for a changing labour market needs to be flexible, giving youth the ability to learn skills in general or learn how to learn more when needed.

GLOBAL FOOD CRISIS

Today there is enough food for everyone on the planet, but still 795 million people go to bed hungry every day. Thirty to fifty percent of all food produced never reaches a human stomach. In 2050, the world has to feed nine billion people in a warmer world with lower yields.

OPPORTUNITIES:

NEW DIETS

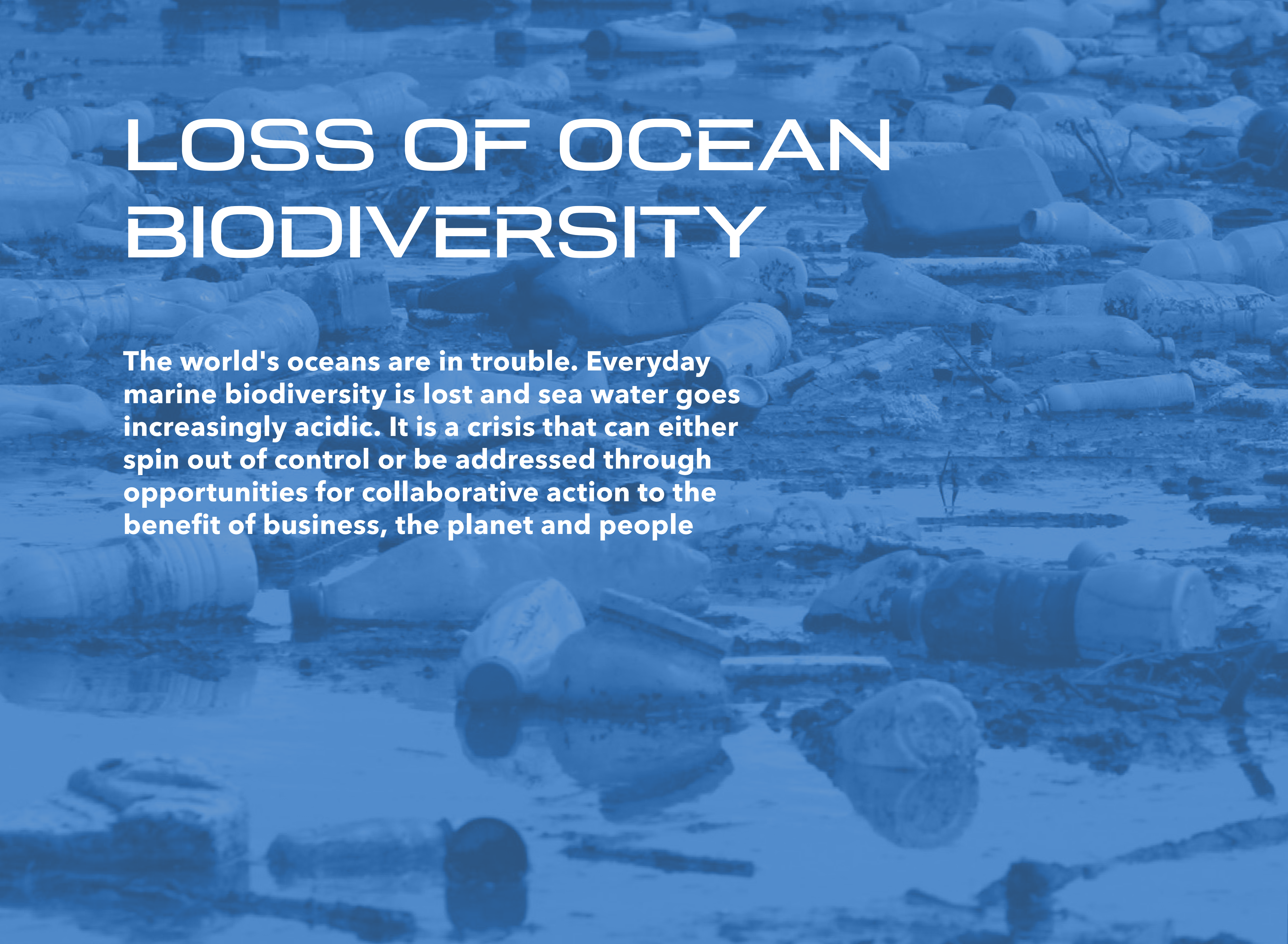
A global dietary transition that includes putting more local produce and a varied source of proteins on our plates is an opportunity to put people, planet and our common prosperity on a healthy track.

SMART FARMING

Vast dissemination of advanced technological tools at an affordable price has meant that both large and small-scale farmers have new and more precise tools to produce more with less.

REDUCE FOOD WASTE

From our farms to grocery stores to dinner tables, much of the food we grow is never eaten. Reducing food waste is an opportunity to innovate along the value chain.



LOSS OF OCEAN BIODIVERSITY

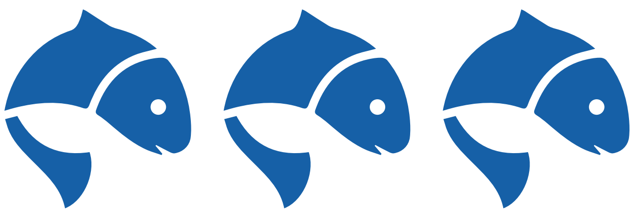
The world's oceans are in trouble. Everyday marine biodiversity is lost and sea water goes increasingly acidic. It is a crisis that can either spin out of control or be addressed through opportunities for collaborative action to the benefit of business, the planet and people

LOSS OF OCEAN BIODIVERSITY

Uncontrolled seas, the majority of the high seas, is common territory. Nobody owns it, and nobody protects it. Three billion people depend on protein from fish, but global ocean biodiversity is suffering due to pollution from land and ocean activities.

Marine and coastal biodiversity – ecosystems, species, and genetic resources – provide enormous benefits for human well-being. Roughly 40 percent of the world's population lives within 100 kilometres of the coast. Fisheries employ approximately 200 million people, provide about 16 percent of the protein consumed worldwide, and have an annual value estimated at 80 billion USD. Coastal ecosystems provide services, including tourism and protection from storms, valued at nearly 26 billion USD annually. Not only coastal ecosystems are important. Oceans create half of the world's oxygen and store 50 times more CO_2 than our atmosphere. The deep ocean floor has one of the highest rates of biodiversity on Earth.

THREE BILLION PEOPLE DEPEND ON PROTEIN FROM FISH.



Source: United Nations. 'Sustainable development goal 14 - Conserve and sustainably use the oceans, seas and marine resources'. Online: UN.org

However, global marine ecosystems and their biodiversity are under threat from habitat destruction, overfishing and bycatch, hydrocarbon and mineral exploitation, marine litter and toxic chemicals, nutrient pollution, and increased CO_2 emissions leading to warming waters and acidification – all a result of human mismanagement and lack of political will.

The marine Living Planet Index, an indicator of the state of global biological biodiversity, shows a decline of 39 percent between 1970 and 2010. Coral reefs, the world's most diverse marine ecosystem, are projected to disappear by 2050, illustrating the profound changes that are likely to materialise as we continue to warm and acidify the ocean. Habitat destruction has the biggest effect on biodiversity loss. Unsustainable use of the ocean's resources like destructive fishing techniques, activities in the oil and gas sector, and emerging industries like deep-sea mining pose large risks on habitats. For coastal habitats, residential development, tourism, aquafarming, industrial development, and dams all have huge impacts.

In 2011, around 29 percent of marine fish stocks were estimated to be fished at a biologically unsustainable level. Unless catches are reduced and fisheries better managed in the future, fish stocks will decline.

Because water is such an effective solvent, much of the toxic pollution generated by humans eventually ends up in the ocean; in fact, more than 80 percent of marine pollution comes from land-based activities. In addition, estimates show that more than one hundred million tonnes of plastic might have ended up in the oceans since 1950.

Nutrient pollution is the process where too many nutrients, mainly nitrogen and phosphorus, are added to bodies of water and can act like fertilizer. This phenomenon is known as eutrophication or dead-zones. In coastal and marine ecosystems, eutrophication changes the algal species composition. Currently over 500 dead-zones have been reported as eutrophic worldwide. Sources of nutrient pollution include surface runoff from farm fields, discharges from septic tanks and feedlots, and emissions from combustion.

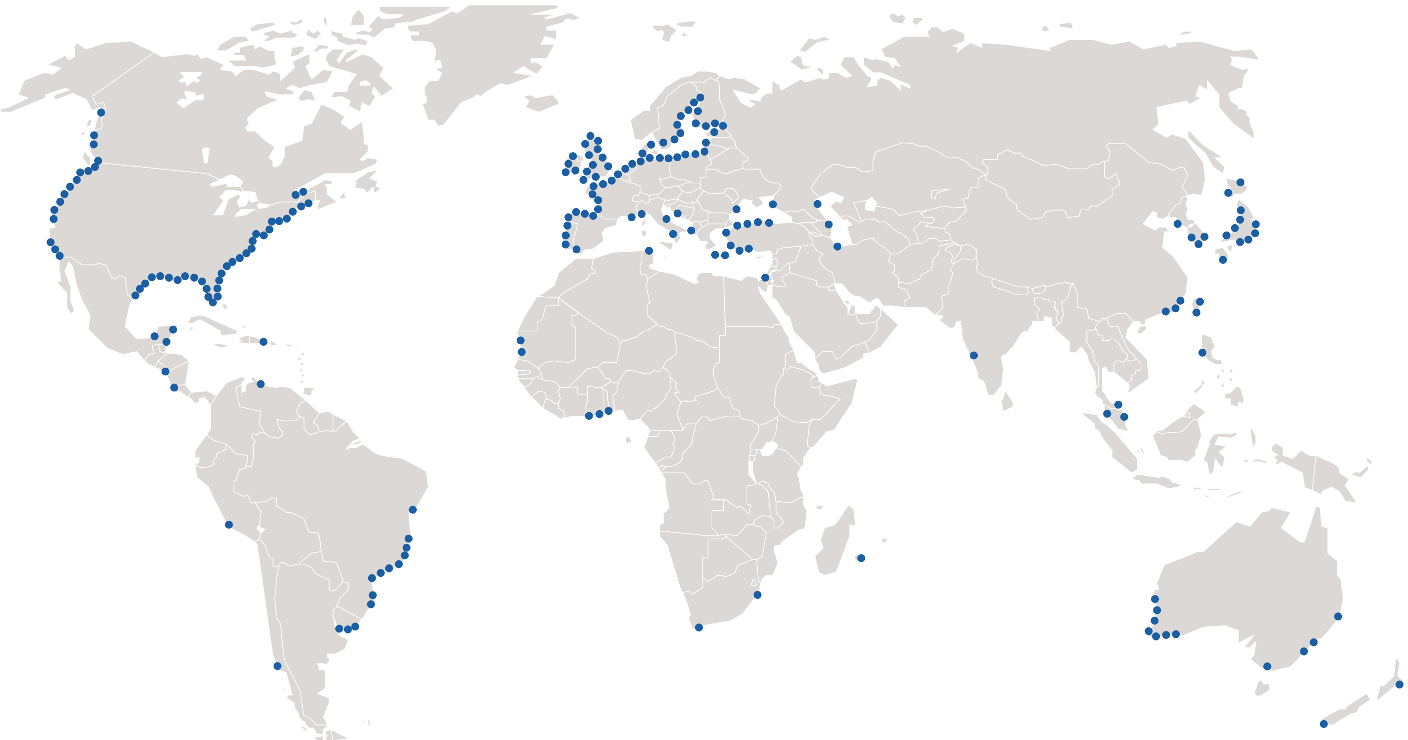
The massive amount of CO_2 we are pumping into the atmosphere isn't just warming the climate and changing the ocean temperature – a quarter of it ends up in the oceans, where it works to lower the water's pH level and increase its acidity. The oceans have become 30 percent more acidic over the past 200 years because of human activity, harming coral reefs, dissolving the shells of sea snails, an important part of the marine food chain, and threatening fisheries.

Uncontrolled seas – the majority of the high seas – is common territory, but without common governance. In ocean governance there is a fragmentation of jurisdictions and decision-making. It means silo governance, where each state only looks at its own waters. But, oceans are fluid – a problem in one place can end up in another and threaten biodiversity.

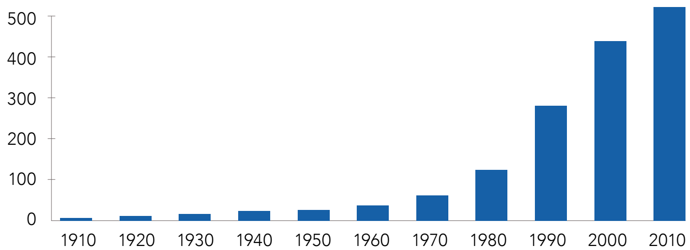
NUMBER OF DEAD ZONES HAS ROUGHLY DOUBLED EACH DECADE SINCE 1960'S

Dead zones are areas with oxygen levels too low to support most marine life.

Dead zone location



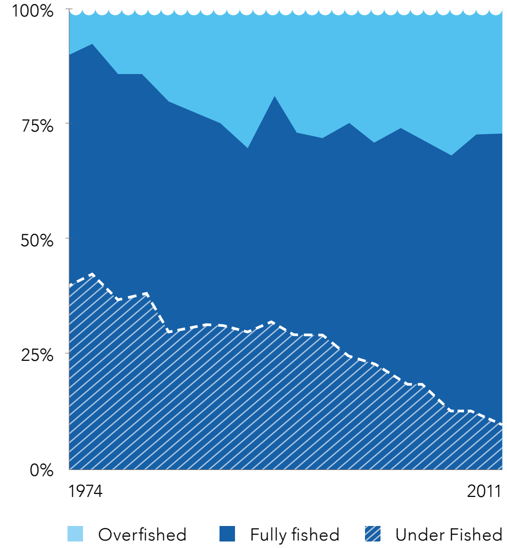
High increase in number of dead zones



Sources: World Map (above) – Secretariate of the Convention on Biological Diversity. 'Global Biodiversity Outlook 3'. Report. 2010. Chart (upper right) – FAO, 'The State of World Fisheries and Aquaculture'. Report. 2014 . Chart (lower right) – National Research Council. 'Ocean Acidification'. 2013

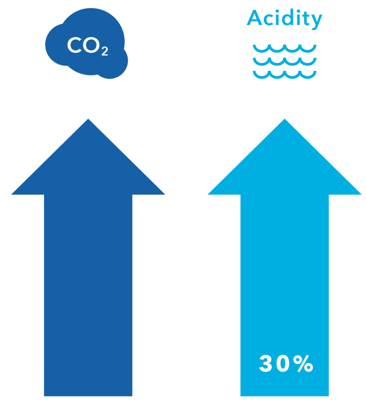
PUSHING THE RESOURCES OF THE SEA TO THE LIMIT

Global trends in the state of world marine fish stocks. Light blue indicate biologically unsustainable levels.



INCREASING CO_2 LEVELS WILL ALSO AFFECT MARINE LIFE

As carbon dioxide in the air and ocean increases over time, the acidity increases as well.



OPPORTUNITIES FOR A HEALTHY OCEAN

The marine ecosystems have been supporting human societies for millennia. Protecting this source of prosperity is vital for societies worldwide and opens for new opportunities to revolutionise medicine and to safeguard human settlements against increasing extreme weather and climate change – to mention a few. Oceans are the last undiscovered frontier and the opportunities you are about to read are inspirations of how to use this new blue economy all while protecting its biodiversity.

CIRCULATE

Closing the loop is an opportunity to stop overfeeding the sea nutrients that are slowly killing it, but it is also an opportunity to reuse and recycle valuable resources. It is the circular economy of the ocean.

NURTURE

Developing ways to use the oceans that supports biodiversity is an opportunity to create resilience and long-term value for society and business. It is the **regenerative economy of the ocean**

COMPILE

The oceans of the world are the last undiscovered frontier, which is slowly opening up to become **smart oceans**, which will enable us to make the right choices for sustainable development in the ocean space.

WIDE-RANGING FOCUS

The opportunities to address the loss of ocean biodiversity will help us deliver on a wide range of SDGs. Hence, ocean opportunity are systemic. They are so central to our lives and our planet that whatever we do on land is felt in the marine space; therefore, the opportunities to protect our oceans are avenues to acheive SDG 12. The opportunities, particular "Smart Ocean," includes elements from SDG 14, which among other focus on increasing scientific knowledge and enhancing scientific cooperation at all levels. "Closing the Loop" and "Regenerative Ocean Economy" both focus on ensuring access to food for all, sustainable food production, and strengthening capacity for adaptation to climate change – a part of SDG 2. The ocean opportunities are also connected to SDGs 8 and 9, with an emphasis on making industries more sustainable by decoupling economic growth from environmental degradation.

CLOSING THE LOOP

Closing the loop is an opportunity to stop overfeeding the sea with nutrients and other pollutants that are slowly killing it, but it is also an opportunity to reuse and recycle valuable resources. It is the circular economy of the ocean.

The ocean is downstream of everything, so most of our unmanaged waste almost inevitably ends up in the oceans. But as there is a growing understanding that much waste can be seen as resources, there is a growing impetus to capture valuables such as nutrients or plastics before they reach the oceans.

VALUABLE NUTRIENTS IN CLOSED LOOP

A large part of nutrient run-off into the oceans comes from agricultural production. Farmers spend significant sums of money on fertilising their fields while downstream the water industry often spend a lot of resources on removing them from the drinking water. Keeping nutrients where they are needed can bring benefits to both industries while keeping the oceans healthier.

Nutrients, such as nitrogen and phosphorus, can be transformed into energy and new fertilisers instead of flowing into the oceans to create dead zones. In the case of phosphorus, this double win situation is also a chance to preserve a critical resource which is approaching a shortage in supply in the near future.

New technologies are emerging that have the potential to improve nutrient management. The most promising of these technologies successfully reduce expenses or generate concentrated nutrient products that can be sold to offset costs. Closing the nutrient cycles is an opportunity to create healthier agriculture and healthier oceans, and it creates a space for innovation to develop cost efficient technology for turning runoffs into new resources.

In addition, to keep fertilisers in a closed loop with these new technologies, it is also possible to reuse the leftovers from livestock in agriculture to generate biogas that can be used as a source of energy.

STOP PLASTIC REACHING THE OCEAN

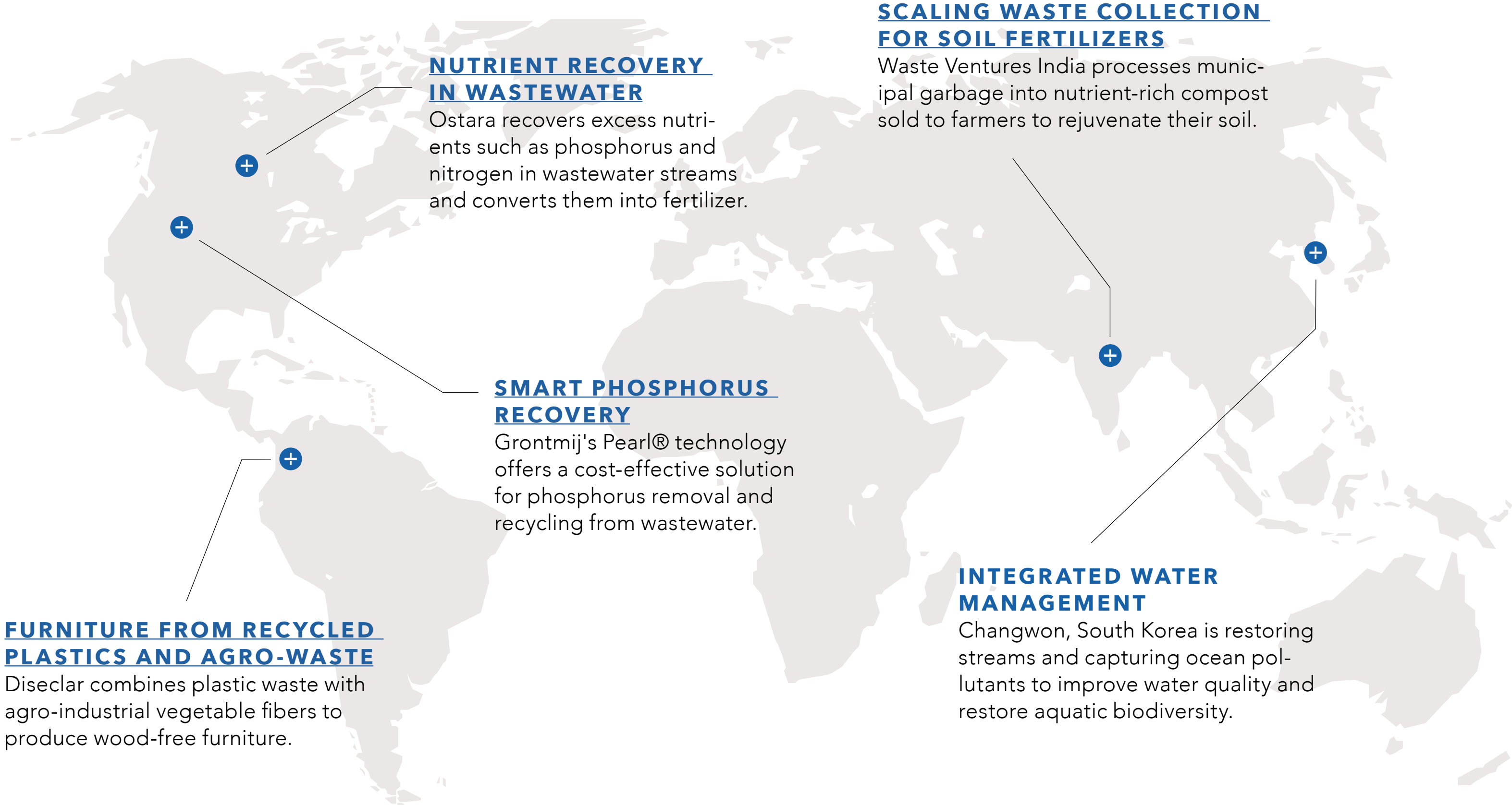
Closing the loop is also an opportunity to hinder other types of pollution from reaching the oceans, such as plastic. Most plastic does not bio-degrade but is only broken down in smaller and smaller pieces that accumulate in ocean sediments and enter the food web through ingestion by pelagic and benthic fauna, disturbing oceans ecosystems for centuries and resulting in an increasing health risk for humans. The longevity of plastics makes it ideal for reuse and recycling and by discovering the monetary value of plastic waste this can be turned into an opportunity. Planning for a more circular economy can hinder waste like plastic to reach the ocean and at the same time save money on the resources for producers.

Three-fourths of land-sourced plastic that reaches the ocean comes from uncollected waste or litter. Although there are big regional differences this implies that the potential for better handling and reuse of plastic is significant. Realising the value of plastic waste offers a space for innovative ideas to prevent and reduce the marine mess.

Seeing waste as a resource is one of the pillars in the circular economy. Closing the loop for waste and preventing it to reach the ocean can save the rich biodiversity thriving there. It will take further development of technologies, regulation and attitude to change the current flow of waste into the ocean. The return will not only be clean oceans with valuable biodiversity, but also promising business opportunities from turning waste into resources.

FROM RUN OFF TO RESOURCE

Please click on the solutions to learn more



NUTRIENT RECOVERY IN WASTEWATER
Ostara recovers excess nutrients such as phosphorus and nitrogen in wastewater streams and converts them into fertilizer.

SMART PHOSPHORUS RECOVERY
Grontmij's Pearl® technology offers a cost-effective solution for phosphorus removal and recycling from wastewater.

FURNITURE FROM RECYCLED PLASTICS AND AGRO-WASTE
Diseclar combines plastic waste with agro-industrial vegetable fibers to produce wood-free furniture.

SCALING WASTE COLLECTION FOR SOIL FERTILIZERS
Waste Ventures India processes municipal garbage into nutrient-rich compost sold to farmers to rejuvenate their soil.

INTEGRATED WATER MANAGEMENT
Changwon, South Korea is restoring streams and capturing ocean pollutants to improve water quality and restore aquatic biodiversity.

SURFBOARD MADE OF OCEAN WASTE
Five Oceans has collaborated with engineers and designers to create the ecoFin - a surfboard fin made of recycled ocean trash.

Global

LAND-BASED FISH FARMING
Krüger Kaldnes has developed a recirculating aquaculture system that allows for efficient closed-loop fish farming.

Global

EFFECTIVE PLASTIC RECYCLING
Plastic Bank prevents plastic from entering the ocean by turning discarded plastic into a currency for low-income communities.

Global

$1T

lost value every year from low recycling rates.

90%

of phosphorus and 40% of ammonia load can be removed from sludge dewatering liquid.

$560M

added value annual with nutrient cycling for Finland.

Sources: Lacy, P. & Rutqvist, J. 'From waste to wealth'. Palgrave Macmillan. 2015 - Atkinson, W. 'Recovering Ressources: Nitrogen and Phosphorus Recovery Integral to Nutrient Management Vision'. Online: www.Waterworld.com - Aho, M. et al. 'The Economic Value and Opportunities of Nutrient Cycling for Finland'. SITRA. Report. 2015

ONE OF THE FAVOURITES IN SUB SAHARAN AFRICA

Oceans are the last undiscovered frontier. However, it is not an issue where business sees great opportunities in general. However, it is not an opportunity business sees great potential in.

A DIVERSIFIED PICTURE

Ranked for its benefits to society and capacity to pursue, the opportunity of closing the loop comes in at the same place as smart oceans – in the bottom of all opportunities presented in this report. In Sub Saharan Africa, it is rated as the second best opportunity of all. While India and South America do not rank it as among the top opportunities. In the case of India, the capacity to pursue "closing the loop" is lower than on average for all the other opportunities, although the benefit for society has been assessed to be high by the respondents in the same region. For South America, both the benefits and capacity to pursue have been assessed to be lower than average of all opportunities.

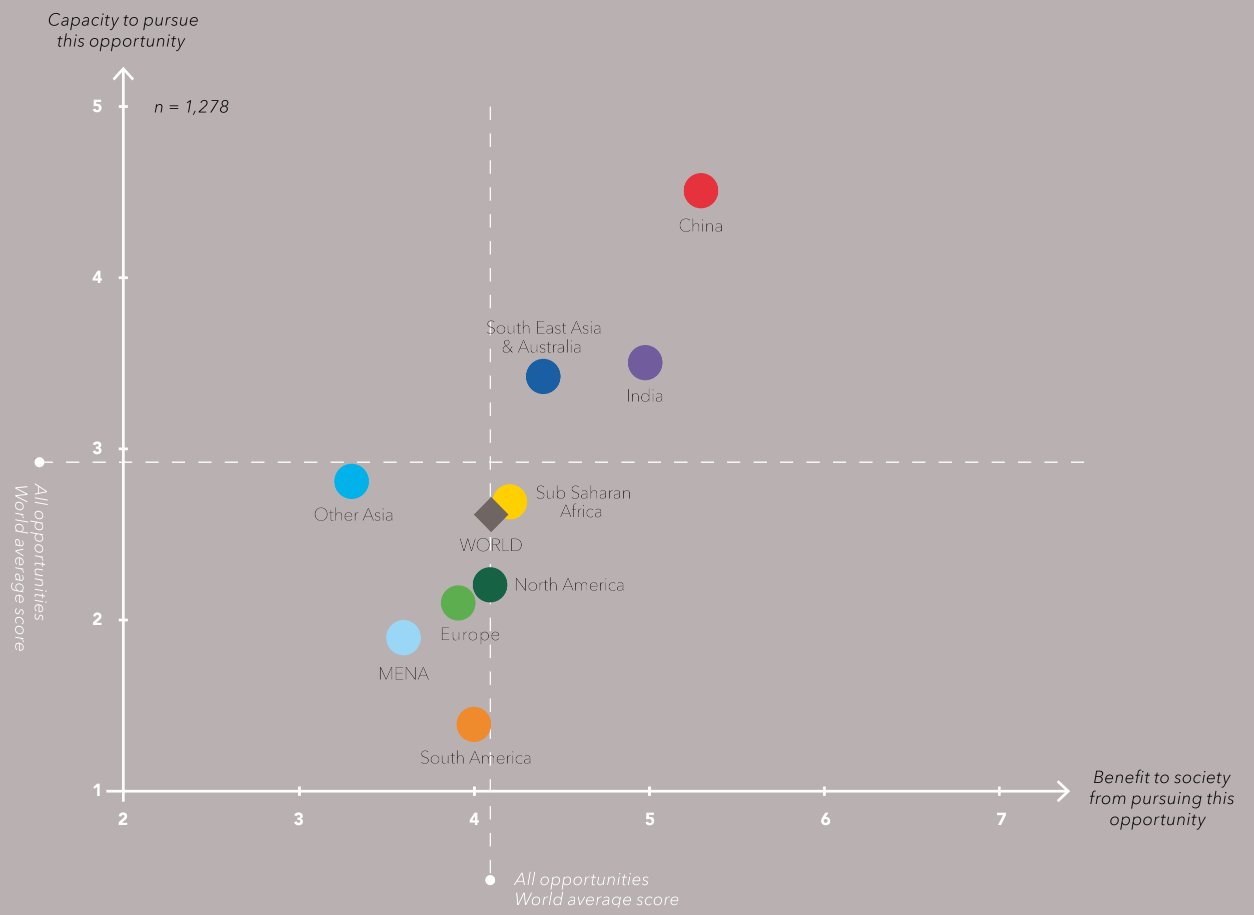
STRONG SUPPORT FROM CIVIL SOCIETY

Stakeholder backing for this opportunity is high in China compared to the other regions. Also respondents from Sub Saharan Africa believe that capacity to pursue this opportunity will be higher within their region than the global average, in particular from business sectors perceived to be affected. Civil society is expected to be the strongest advocate for this opportunity across all regions and the backing from this group of stakeholders is one of the strongest across all opportunities. This may be an indication that issues related to the oceans and marine ecosystems do seem to be gaining interest, which in turn drive mobilisation for change.

Closing the loop is among the opportunities perceived to affect the governmental sector the most, however, the sector is not perceived to be more likely to pursue this particular opportunity than the remaining opportunities. The service sector is slightly more likely to pursue this opportunity than other opportunities.

BENEFITS AND CAPACITY

Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.



NUMBER 13 ON THE OPPORTUNITY RANKING

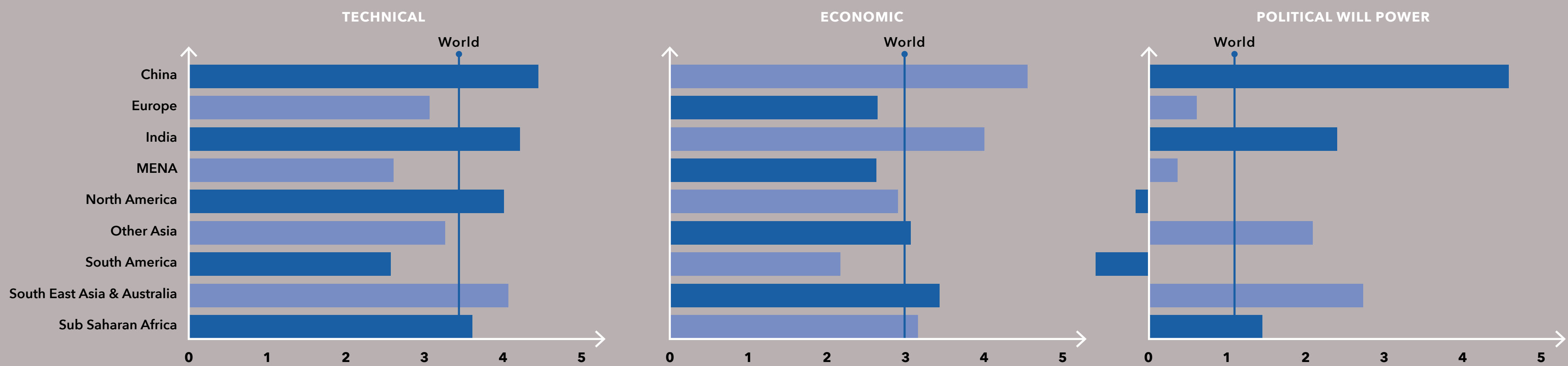
1 SMART FARMING
2 THE DIGITAL LABOUR MARKET
3 CLOSING THE SKILLS GAP
4 REDUCE FOOD WASTE
5 PRECISION TREATMENT
6 ANTIBIOTIC-FREE FOOD
7 REGENERATIVE OCEAN ECONOMY
8 NEW BUSINESS MODEL FOR ANTIBIOTICS
9 FLEXIBLE MOBILITY
10 NEW DIETS
11 FUTUREPRENEURS
12 CROWD TRANSPORT
13 CLOSING THE LOOP
14 SMART OCEAN
15 LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY

2ND

2ND most favoured in Sub Saharan Africa

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS



REGENERATIVE OCEAN ECONOMY

The ocean and marine ecosystems provide a wide range of services and resources that directly support human health, societies and economies. Generating ocean ecosystem value creates larger biomasses and more resilience in the environment.

The marine ecosystems have been supporting human societies for millennia. Whether we talk fisheries, aquaculture or simply coastal protection, marine ecosystems have provided services – and continue to – with a measurable value of trillions of dollars. Protecting this source of prosperity is vital for societies worldwide and opens for new opportunities to revolutionize medicine, support food for a world with more people and less arable land and ensures resilient coastal areas to safeguard human settlements against increasing extreme weather and climate change.

Developing ways to use the oceans that supports biodiversity is an opportunity to create resilience and long-term value for society and business. Vital to this is adoption of ambitious goals and corresponding action on a number of macro-problems from global warming to protection of vital areas especially rich in biodiversity or of special importance to the marine wildlife.

Ocean biodiversity has great value in itself and holds promising market potential for the future. Biodiversity supports ecosystem functions, which in turn provide important ecosystem services. Studies estimate that marine ecosystems today contribute with services that can be valued at more than 2.5 trillion USD annually to the global economy. If action is not taken to protect the marine ecosystems, this can be dramatically reduced. Luckily, some human activity in the marine ecosystems can actually be designed in way to constitute a bonus for wildlife. Constructing infrastructures, like offshore wind farms, and bridges, to act as natural reefs or shallows offering sanctuary from fisheries and natural predation and promoting higher biodiversity. A co-benefit here can be more resilient coastal areas to extreme weather occurrences.

NEW BLUE WORLD OF MEDICINE

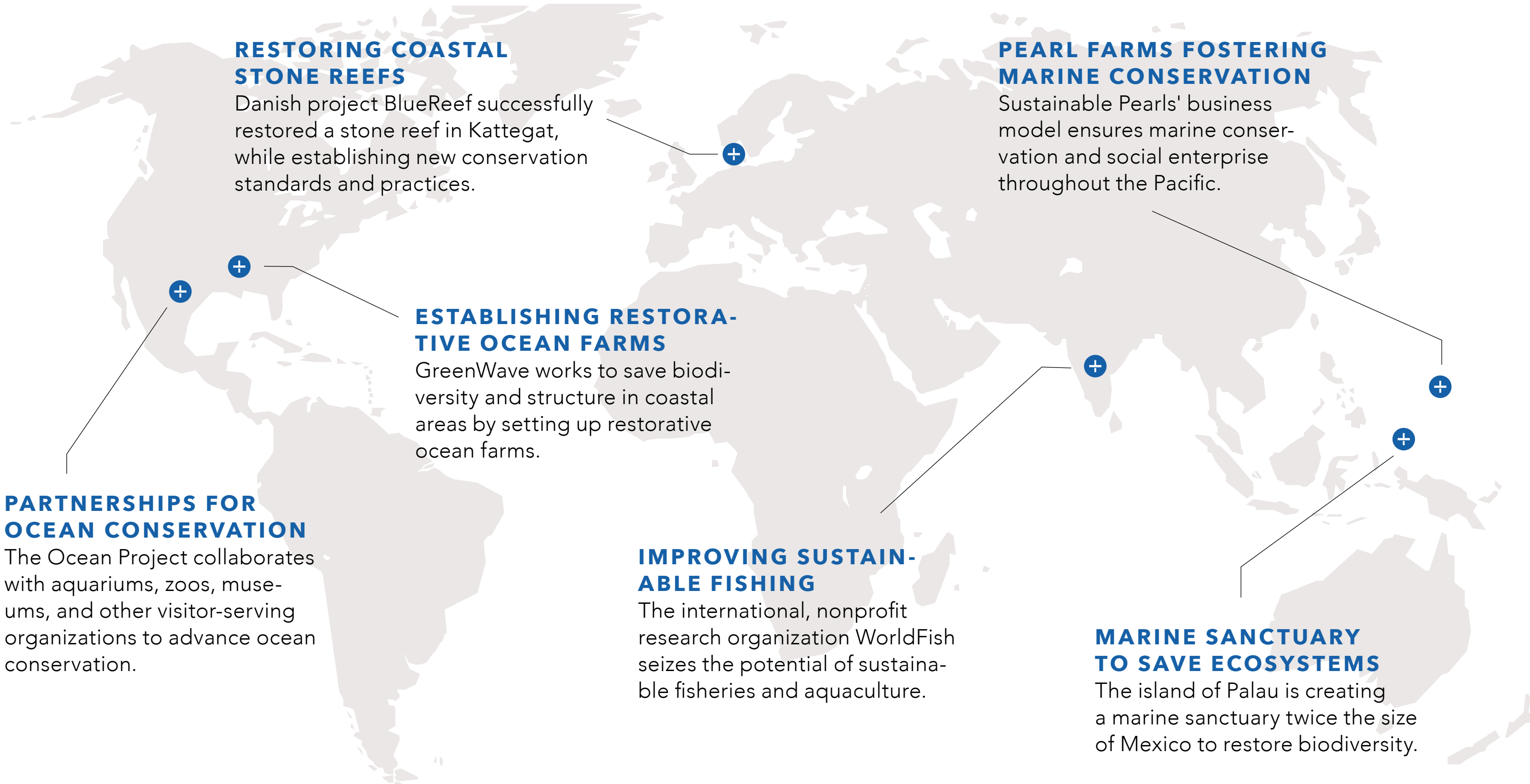
Investing in protecting the marine ecosystems also promises to open doors for new business cases that involve protecting marine areas, re-building mangroves, and the development of low-impact fishing gear. An entirely new area of opportunity is also opening up. Marine biotechnology science was kick-started only five years ago, but it already shows potential for turning the world of medicine upside down. By weight, most of all living organisms found in the ocean are microbial. They may hold the key to the innovative medicines that humanity desperately needs. One marine sponge has been found to have anti-cancer and anti-viral properties. The prospect of finding a new drug in the sea, especially among sponges and coral reef species, is higher than isolating one from a terrestrial ecosystem.

PROTECTING HABITANT AREAS

Supporting and protecting marine areas can increase the biodiversity of the ocean and maintain the enormous resource of food, which the ocean currently is. This also includes restoring already destroyed reefs and other marine areas. This will not only create more life in these areas, but also create ecosystem resilience and protect coastal areas from extreme weather.

Studies estimate that the value of the key ocean assets is more than 24 trillion USD; furthermore, that 2/3 of the base economic value of the ocean originates from assets, which depend on healthy ocean conditions. Protecting and regenerating the great biodiversity of the ocean is an investment in the future health of the oceans, of the planet and of humankind. The prosperity of coastal regions is closely related to the marine ecosystem services. Without action to protect the systems that generate this prosperity, societies worldwide will suffer. However, investing in protection of biodiversity will open the doors for new long lasting prosperity.

Please click on the solutions to learn more



RESTORING COASTAL STONE REEFS

Danish project BlueReef successfully restored a stone reef in Kattegat, while establishing new conservation standards and practices.

PEARL FARMS FOSTERING MARINE CONSERVATION

Sustainable Pearls' business model ensures marine conservation and social enterprise throughout the Pacific.

INVESTMENT IN SUSTAINABLE AQUACULTURE

Aqua-Spark is a new investment fund focusing on SMEs working towards more sustainable production of seafood.

Global

ESTABLISHING RESTORATIVE OCEAN FARMS

GreenWave works to save biodiversity and structure in coastal areas by setting up restorative ocean farms.

FINANCIAL INSTITUTION FOR THE RECOVERY OF MARINE ECOSYSTEMS

WWF's FIRME aims to realise the future economic value of recovered and sustainably managed fish stocks.

Global

PARTNERSHIPS FOR OCEAN CONSERVATION

The Ocean Project collaborates with aquariums, zoos, museums, and other visitor-serving organizations to advance ocean conservation.

IMPROVING SUSTAINABLE FISHING

The international, nonprofit research organization WorldFish seizes the potential of sustainable fisheries and aquaculture.

MARINE SANCTUARY TO SAVE ECOSYSTEMS

The island of Palau is creating a marine sanctuary twice the size of Mexico to restore biodiversity.

90%

reduction of a tsunami forces by planting mangroves.

$2.5T

is the annual "gross marine product."

20:1

Each dollar invested in Marine protected areas yields a return of around 20 dollars in benefit.

Sources: Wetlands International. 'Mangrove Forest'. Online: www.wetlands.org - WWF. 'Reviving the Ocean Economy'. Report. 2015 - Brander, L. et al. 'The benefits to people of expanding Marine Protected Areas'. Report. 2015

STRONG BACKING IN CHINA

Regenerative ocean economy is rated highest of the three opportunities to address the risk of loss of ocean biodiversity. However, the three ocean opportunities are in general not part of this year's overall most favourite.

PREFERRED OCEAN OPPORTUNITY

The opportunity is ranked best among the three ocean opportunities to address the risk. In South America this opportunity is perceived to hold great benefits to society but, however, with low capacity to pursue.

The greatest capacity to pursue this opportunity as well as the greatest benefits for society is perceived among the respondents in China and India. In China the opportunity is part of top four of all opportunities. In North and South America political will power is perceived to be to be a barrier.

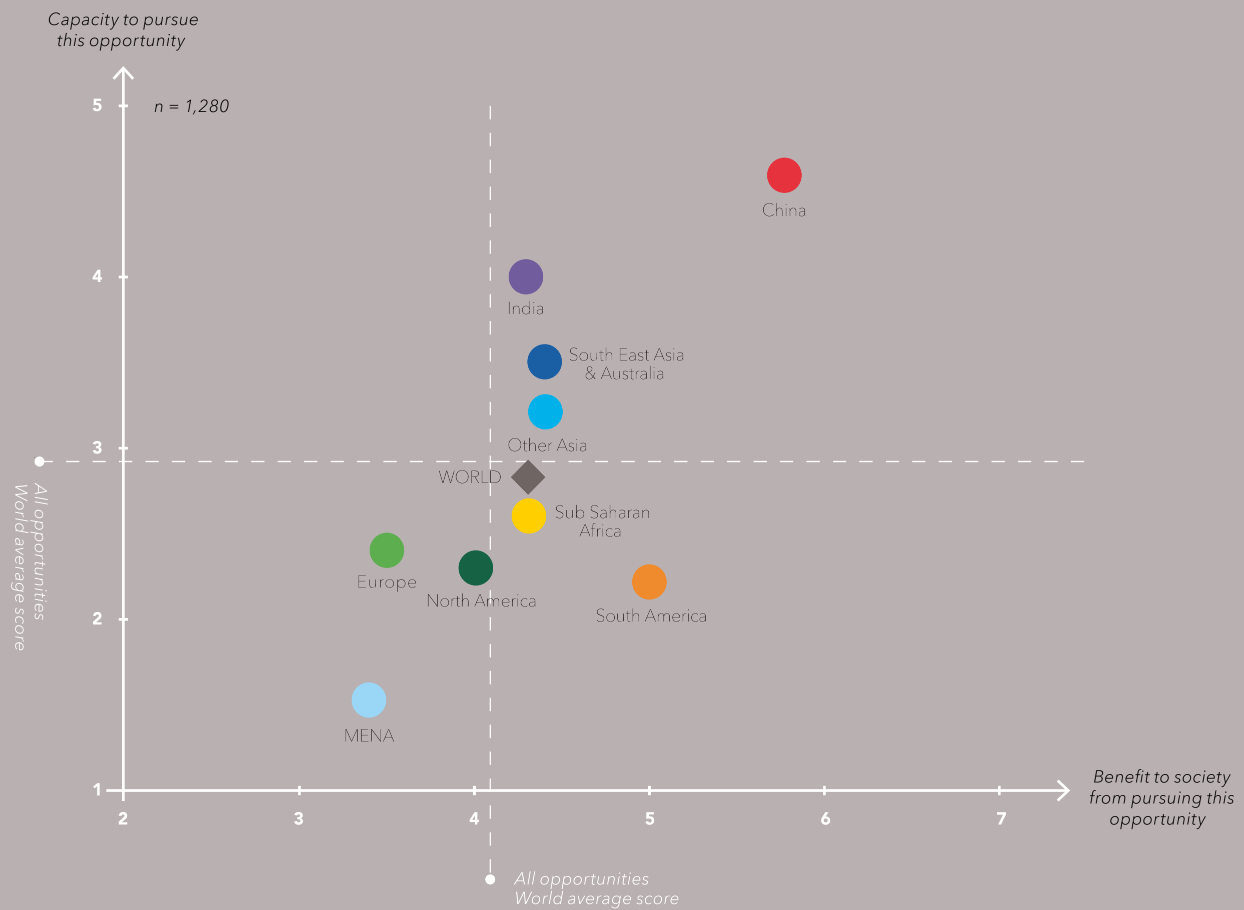
MANUFACTURING SECTOR WILL ACT

The government sector perceives that it is not likely to be affected and that it is not likely to pursue this opportunity. In the manufacturing sector we see a paradox as the sector is most likely to pursue the opportunity but it is the least likely to be affected by it. In the eyes of the finance sector it is the least favoured of all opportunities with respect to benefits for society and capacity to pursue. The government and the service sector have also assessed the opportunity to be the one that they are least likely to pursue.

Globally both civil society and business are likely to advocate for this opportunity. Especially civil society in South America can be expected to advocate for the realisation of this opportunity. Across different HDI country categories, age and gender there are no relative difference in terms of how they have assessed this opportunity with respect to benefit for society and capacity to pursue.

BENEFITS AND CAPACITY

Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.



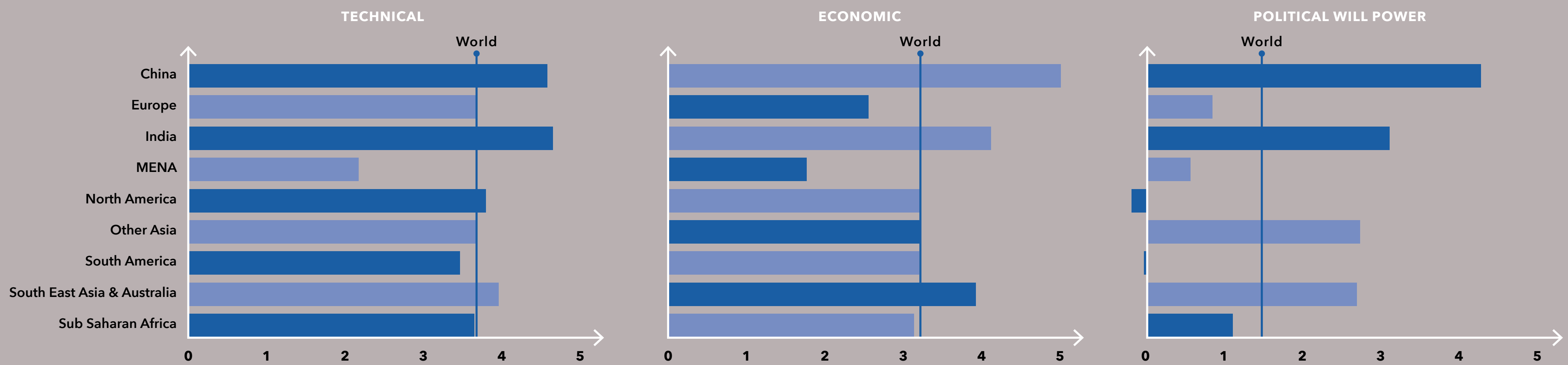
NUMBER 7 ON THE OPPORTUNITY RANKING

1 SMART FARMING
2 THE DIGITAL LABOUR MARKET
3 CLOSING THE SKILLS GAP
4 REDUCE FOOD WASTE
5 PRECISION TREATMENT
6 ANTIBIOTIC-FREE FOOD
7 REGENERATIVE OCEAN ECONOMY
8 NEW BUSINESS MODEL FOR ANTIBIOTICS
9 FLEXIBLE MOBILITY
10 NEW DIETS
11 FUTUREPRENEURS
12 CROWD TRANSPORT
13 CLOSING THE LOOP
14 SMART OCEAN
15 LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY

Stakeholders preferred opportunity in China

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS



SMART OCEAN

Smart monitoring and observations by utilizing existing activities in the ocean to collect and systematise data can close the knowledge gap we have about the ocean and the opportunities the ocean provides.

Until now, our window into the world's oceans has been very small. We have some scattered data and historical knowledge but a comprehensive picture of life in the oceans is still to come. It is the last undiscovered frontier, which is slowly opening up to become smart oceans. It is a paradigm shift in ocean monitoring; from isolated information from research projects to systemic monitoring of the vast oceans.

EVERYBODY HAS A ROLE TO PLAY

Currently there is a mismatch between the rising demand and capability to exploit marine resources and the lack of scientific knowledge and regulatory frameworks to effectively manage this vast area,. In order to choose the right and sustainable course of action for blue economic development it is crucial to understand the ocean and how it changes. Smart oceans will enable us to make the right choices for sustainable development in the ocean space.

As the oceans are getting more crowded by for instance increased aquaculture, more renewable energy production, expanding fisheries and hydrocarbon exploitations to remote regions and developing seabed mining, the need for more information on safe levels of human activity is acute.

Companies will create systems to scale up and coordinate industry collecting data. New markets are opening up for innovative ocean technology to aid the scaling up of smart oceans. This includes technologies for ordinary citizens to help collect data as 'citizen scientists'. Many people use the oceans and can crowd source information by the use of simple technology.

USE WHAT WE ALREADY HAVE

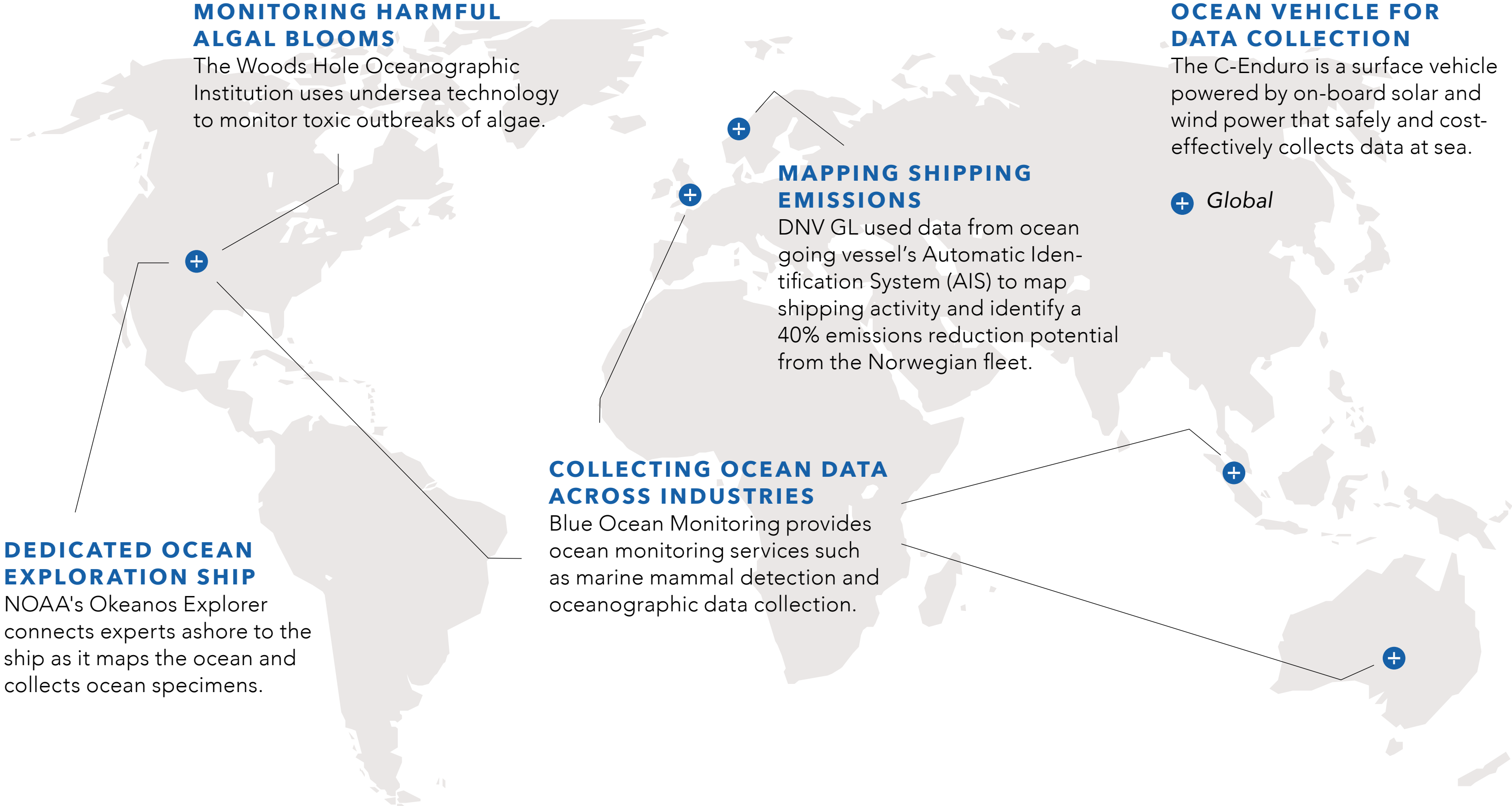
The first step to develop smarter oceans is to use existing networks of vessels and other structures in the ocean such as wind farms, oil platforms, and fish farms, for data collection. As well as developing new networks and new technologies for data collection. The amounts of data we need to collect are immense.

In the oceans today we have already placed a range of different structures to create economic development, e.g. bridges, commercial ships, fishing vessels, oil rigs, subsea installations, offshore windmills, weather buoys, and fish farms. A ship sailing from for example Rotterdam to Hong Kong can gather enormous amounts of data on its way, and likewise for fishing vessels moving between fishing grounds or ferries covering specific routes regularly. Such smart use of existing ocean actors can significantly increase our understanding of the oceans. It is a way to map the ocean. The challenge, however, is to make streamlined data and make it trustworthy. In addition, the rise of autonomous systems can make data gathering even more efficient and promote long-term monitoring and observations.

This immense gathering of data will help understand ocean functioning at large scales, which can help establish rules and regulation for exploitation of ocean resources. But, if made publicly available, large-scale and long-term data gathering can also foster new innovations and markets as data are utilized in new ways mimicking the development in for example meteorological data availability.

The opportunity to make the ocean smart is an innovation space for responsible companies, science, big data, robotics, environmental management, and governments. A collaborative effort to monitor and better understand the ocean can benefit a broad range of stakeholders and the promotion of transparency through access to open data will ensure transfer of knowledge between all involved parties. Smarter ocean is a first step on the journey to unlock the potential of the blue economy in a sustainable way.

Please click on the solutions to learn more



MONITORING HARMFUL ALGAL BLOOMS
The Woods Hole Oceanographic Institution uses undersea technology to monitor toxic outbreaks of algae.

DEDICATED OCEAN EXPLORATION SHIP
NOAA's Okeanos Explorer connects experts ashore to the ship as it maps the ocean and collects ocean specimens.

MAPPING SHIPPING EMISSIONS
DNV GL used data from ocean going vessel's Automatic Identification System (AIS) to map shipping activity and identify a 40% emissions reduction potential from the Norwegian fleet.

COLLECTING OCEAN DATA ACROSS INDUSTRIES
Blue Ocean Monitoring provides ocean monitoring services such as marine mammal detection and oceanographic data collection.

OCEAN VEHICLE FOR DATA COLLECTION
The C-Enduro is a surface vehicle powered by on-board solar and wind power that safely and cost-effectively collects data at sea.

Global

CLOUD PLATFORM FOR INDUSTRIAL SENSOR NETWORKS
Planet OS organises and shares big data from our oceans and works together with 33 organisations to make data more accessible.

Global

WATER DRONES FOR EASY MONITORING
BlueEye Explore is making underwater drones to enable citizen scientists and ocean explorers to monitor the oceans.

Global

MEASURING GLOBAL OCEAN TEMPERATURE
Project Hermes is the first global effort to measure ocean temperatures to gain a better understanding of the oceans.

Global

3.2M
marine fishing vessels - Large global potential for collecting valuable data from the ocean.

80%
faster decisions by using big data to prevent e.g. oil spil.

95%
of the ocean is undiscovered – Currently we have only discovered 5% of the ocean.

Sources: FAO. 'The State of World Fisheries and Aquaculture'. Report. 2014 - Planetos. 'Build Data-Driven Solutions for Entreprise Workflow'. Online: www.planetos.com - NOAA Ocean. 'How Much of the Ocean have we Explored?'. Online: http://oceanservice.noaa.gov/facts/exploration.html

PREFERRED OPPORTUNITY IN CHINA

The world does not seem to be eager to make the oceans smart. It is an opportunity at the lower end of this year's overall opportunity ranking.

LOW READINESS FOR ACTION

The opportunity to make the oceans smart in order to address the risk of ocean biodiversity loss is placed at the very top of all opportunities in China. While in most other regions the opportunity is ranked in the lower end of all opportunities, and for respondents in India and Other Asia at the very bottom. Globally the capacity to pursue this opportunity is perceived to be rather limited. The MENA region and Europe also sees this opportunity to be of limited benefit to society. Sub Saharan Africa is the region with the lowest perceived ability to pursue this, but the region does, however, perceive it to be beneficial to society.

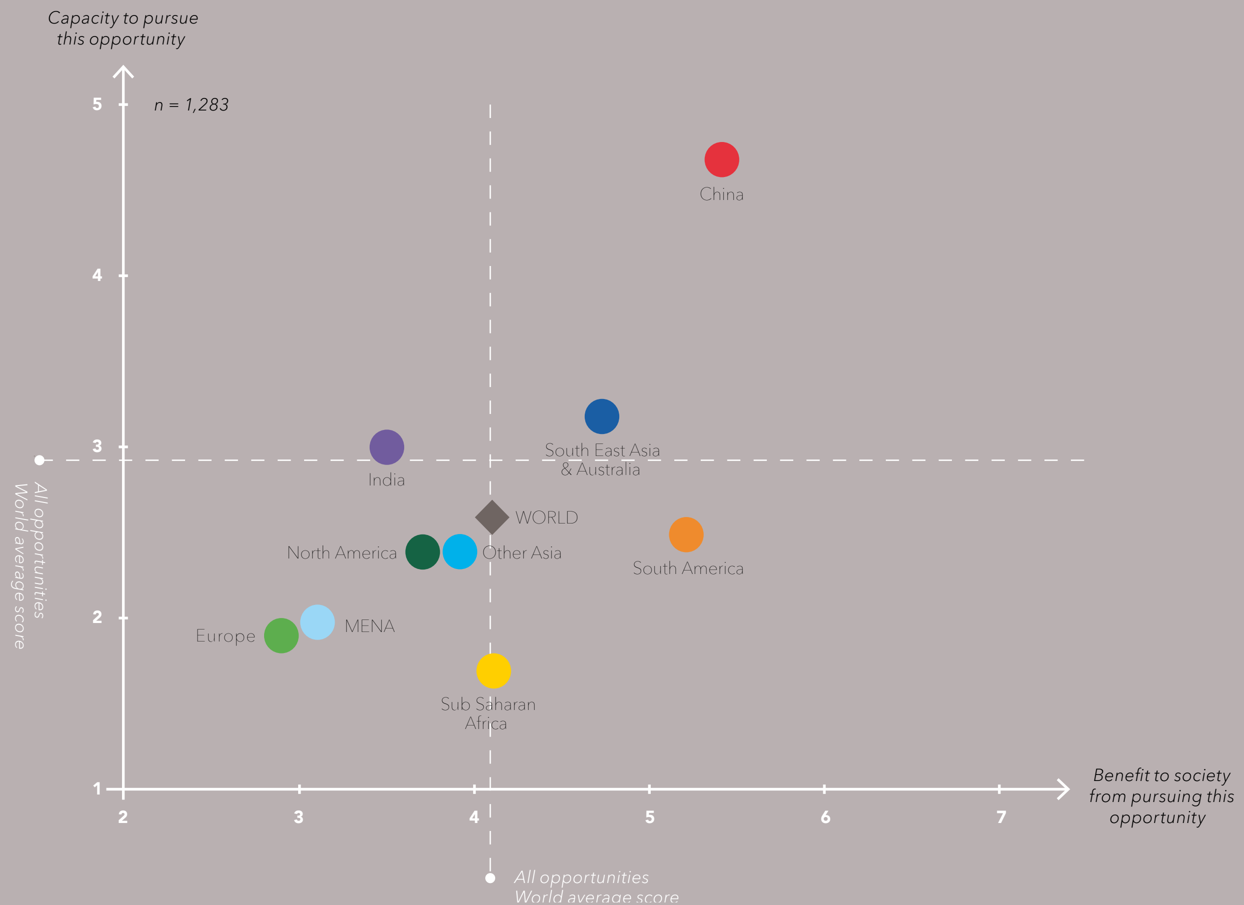
The finance sector believes that this opportunity will bring most positive impacts to society. However, the financial sector does not seem to be more likely to be either affected by this opportunity or to pursue it. The governmental sector is the least likely to pursue this opportunity. However, the governmental engagement is important because ocean planning is by nature a state and inter-state task to manage. Across the five sectors, the trend is that smart oceans are not affecting them to a great extent.

COLLABORATIVE ADVOCACY AGENDA

It is not a high advocacy priority in Europe among the four surveyed stakeholder groups of politics, civil society, business and finance. In South America, South East Asia & Australia and in China, business and civil society can be expected to advocate for this opportunity, which could point to a great potential for joint action. High HDI countries rate this opportunity higher than the other HDI countries. For both medium and very high HDI countries the opportunity is rated as one of their least favoured.

BENEFITS AND CAPACITY

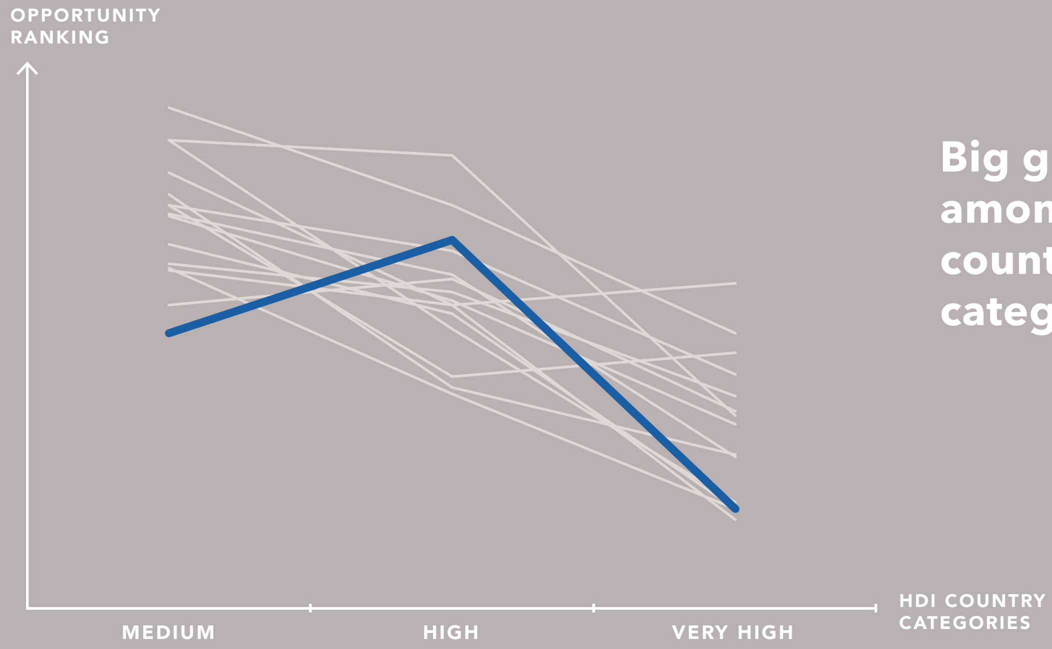
Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.



NUMBER 14 ON THE OPPORTUNITY RANKING

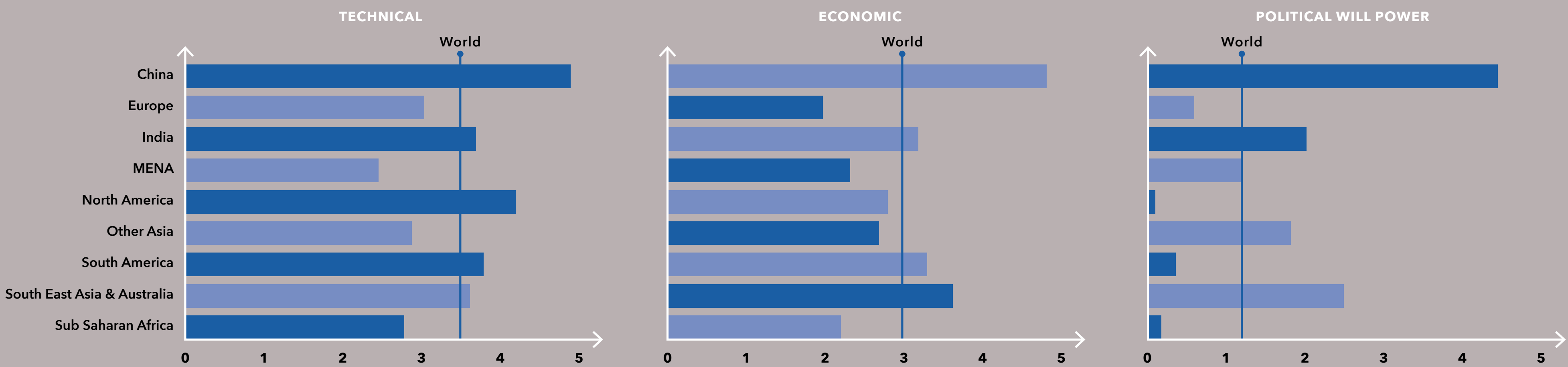
1 SMART FARMING
2 THE DIGITAL LABOUR MARKET
3 CLOSING THE SKILLS GAP
4 REDUCE FOOD WASTE
5 PRECISION TREATMENT
6 ANTIBIOTIC-FREE FOOD
7 REGENERATIVE OCEAN ECONOMY
8 NEW BUSINESS MODEL FOR ANTIBIOTICS
9 FLEXIBLE MOBILITY
10 NEW DIETS
11 FUTUREPRENEURS
12 CROWD TRANSPORT
13 CLOSING THE LOOP
14 SMART OCEAN
15 LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY



Big gap among HDI country categories

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS



RESISTANCE TO LIFE-SAVING MEDICINE

The post antibiotic era is not an apocalyptic idea but a very real possibility. It signifies the day when the miracle drug of antibiotics no longer works. To avoid a future scenario where ordinary infections can kill, there is a need for opportunities to decrease overuse and deliver novel antibiotics to market

RESISTANCE TO LIFE-SAVING MEDICINE

We are entering a post-antibiotic era – where common infections and minor injuries can kill because the drugs we rely on no longer work. Antibiotics are in the meat that we eat, leak into to drinking water, and are overused by doctors.

Communicable diseases are infectious diseases transmissible (from person to person) by direct contact with an infected individual or the individual's discharges or by indirect means. Among the most serious communicable diseases are: hepatitis, HIV/AIDS, influenza, malaria, polio, and tuberculosis. Unprecedented population growth, accompanied by rapid urbanization, has resulted in an excellent environment for communicable diseases to flourish. Communicable diseases from a cold to Ebola can circulate the globe with near telephonic speed because of constant population movement as a result of extreme weather events, conflict, migration, or travel.

Vaccines and antibiotics are the tools we have to fight communicable diseases. However, the treatment of these diseases is threatened by increasing drug resistance.

ALREADY TODAY, 60,000 PEOPLE DIE EVERY YEAR FROM CAUSES RELATED TO AMR IN THE UNITED STATES AND EUROPE.

60.000+

Source: O'Neill, J. 'The Economic Consequences of Drug Resistance'. December 2014. Online: www.project-syndicate.org

Many antibiotics belong to the same class of medicine, so resistance to one can mean resistance to the whole class. Resistance that develops in one context can spread rapidly to affect treatment of a wide range of infections and diseases. Some of these features are also true for medicines used to treat viral, parasitic, and fungal diseases, leading to the broader concept of antimicrobial resistance (AMR).

If the problem is allowed to continue to grow, it will kill more than 10 million people per year in 2050. One of the consequences is that the risk of disease spreading is heightened, and the risk of death is, in some cases, doubled. Already, 60,000 people die every year from causes related to AMR in the United States and Europe. Some estimates of the economic effects of AMR have been attempted, and the findings are disturbing. For example, the yearly cost to the US health system alone has been estimated at 21 to 34 billion USD, accompanied by more than 8 million additional days in hospital.

There are biological and societal reasons for AMR. The biological causes cover mutation; second, microbes with resistance genes survive and replicate themselves; and, third, gene transfer from drug resistance microbes.

The societal causes cover unnecessary use of antimicrobials, which accelerate AMR, inappropriate use resulting in survival of microbes, excessive usage in agricultural, and, finally, hospital use where critically ill patients are given higher doses of antimicrobials than needed. On top of that, pharmaceutical companies have been accused of fuelling the antimicrobial resistance risk with improper management of wastewater when manufacturing the antibiotics, with antibiotics finding their way to the water people drink.

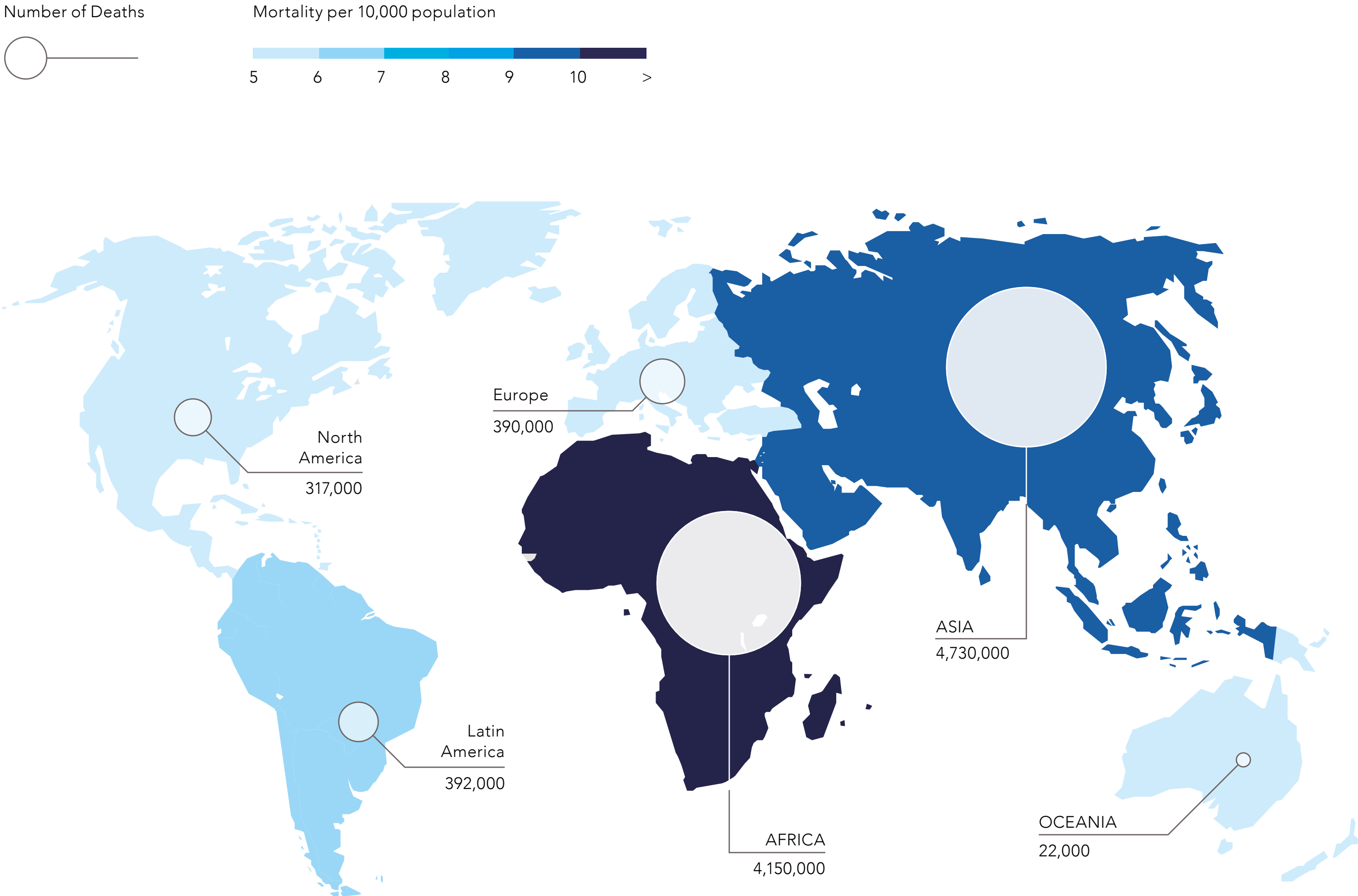
While existing antimicrobials are losing their effectiveness, there is also a decline in the development of new antimicrobials. If this trend continues, the arsenal of tools to combat resistant microorganism will soon be depleted.

Global governance is not tackling the failure of markets to incentivize companies to develop new antimicrobial medicines when existing ones no longer work. With no confidence in a return on investments, pharma companies are reluctant to commit billions of dollars on research and development that might lead to new, more effective drugs.

On the demand side, convincing patients and doctors that antibiotics cannot be overused is challenging. The political will to adopt controversial policies, including controlling the use of antimicrobial drugs in human health and animal and food production, is lacking.

THE STAKES OF INACTION ON ANTIMICROBIAL RESISTANCE ARE HIGH

Deaths attributable to AMR every year by 2050 will hit hard especially in Asia and Africa.

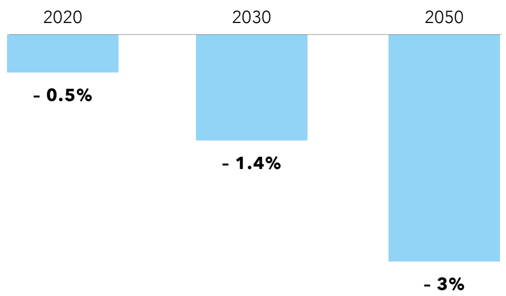


Sources: World Map (above) – Review on Antimicrobial Resistance. 'Antimicrobial Resistance: Tackling a Crisis for the Health and Wealth of Nations'. Report. 2014. Chart (upper right) – Project Syndicate, 'The Economic Consequences of Drug Resistance'. Dec 2014. Online: www.project-syndicate.org. Chart (lower right) – MEDICINEWISE. 'Antibiotic resistance and UTIs'. December 2014.

POTENTIAL SIGNIFICANT IMPACT IN GLOBAL GDP

If we would allow AMR to increase, the global economy will suffer and the accumulated loss of global output over the next 35 years will total $100 trillion – more than one and a half times annual world GDP today.

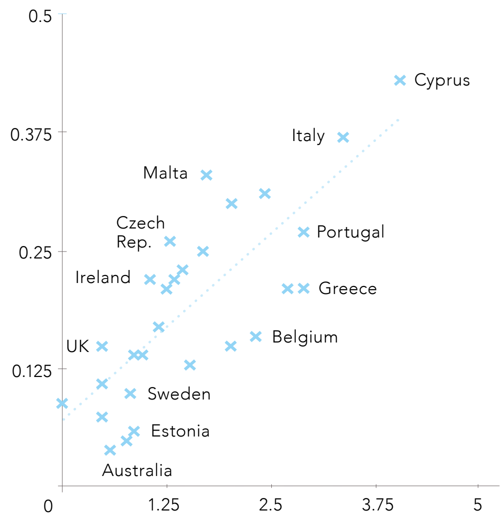
Percentage decline of global GDP



EXCESSIVE USAGE OF ANTIBIOTICS SPURS RESISTANCE

Clear correlation between the usage of antibiotics to cure urinary tract infection and rising antibiotics resistance.

Proportion of E coli isolates resistant fluoroquinolones



Usage, DDD/1000 population-days

MAKING MEDICINES LAST

Antibiotic resistance is on the rise. It is time to change the way we use and develop antibiotics if this miracle medicine is to last for many more years to come. We present you with opportunities to do exactly that. These are opportunities to significantly bring down the overuse of antibiotics through innovation in health care and in agriculture as well as an opportunity to bring novel antibiotics to market through a new collaborative business model.

PURIFY

Though still a niche in the food market, increasing consumer awareness is paving the way for a growing market in **antibiotic-free food**.

COLLABORATE

A mix of innovative approaches to R&D, new forms of financing mechanisms, and regulatory tools can help bring novel antibiotics to the market. It is an entirely **new business model for antibiotics**.

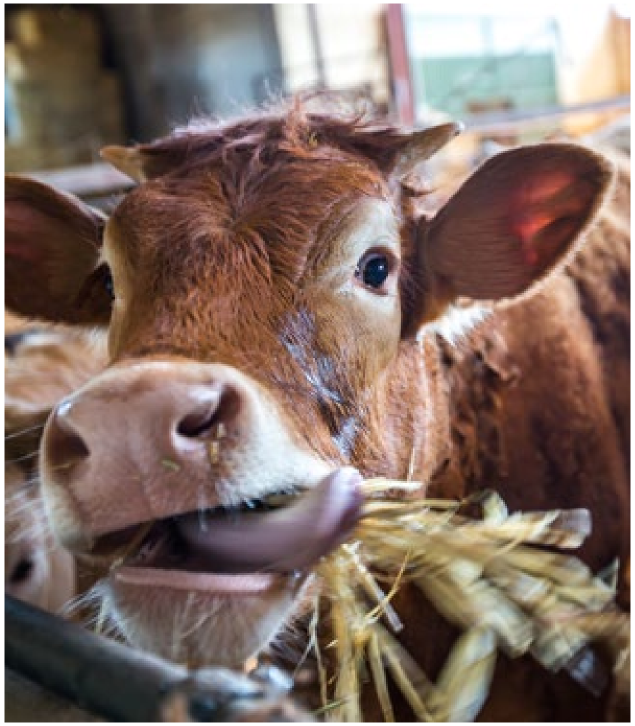
TARGET

New diagnostic tools can help doctors prescribe narrow spectrum antibiotics which only target the bad bacteria at play. Precise diagnoses for **precision treatment** bring down overuse of antibiotics.

The opportunities addressing the risk of resistance to life-saving medicine are naturally linked to SDG 3 by combating communicable diseases. Furthermore, "Precision Treatment" and "New Business Models for Antibiotics" supports the research and development of new medicines. These two opportunities are linked to SDG 8 by focusing on support for entrepreneurship and innovation. Promoting the development of new antibiotics will require new partnerships across sectors. Encouraging and promoting public-private and social partnerships will be an important element of the opportunity of "New Business Model for Antibiotics," relating it to SDG 17. Retrofitting industries to be more resource efficient and enhance the research and development is part of "New Business Model for Antibiotics" and "Antibiotic-free Food" linking them up to SDG 9. Furthermore, "Antibiotic-Free Food" will promote a more sustainable food production system, thus contributing to SDG 2.

ANTIBIOTIC-FREE FOOD

Agriculture is the greatest consumer of antibiotics in the world, but consumers are pushing for antibiotic-free meat.



Though still a niche in the food market, increasing consumer awareness especially in the US and Europe is – in some places supported by government – paving the way for a growing market in antibiotic-free food. In China and India, use of antibiotics is expected to rise, but a growing concern over environmental and health issues can create a drive for greater demand for antibiotic-free food.

Estimates suggest that up to 80 percent of the antibiotics sold in the US are used in agriculture, and globally the use of antibiotics in agriculture is estimated to increase by 67 percent between 2010 and 2030. Much of the increase is expected in China, India, and other growing economies where a booming middle class will raise demand for meat. Antibiotics are used in agriculture to not only treat illness in animals but also to make animals grow faster and to prevent illnesses that occur frequently under unhealthy growth conditions.

A NEW MARKET EMERGING

Supermarkets are starting to develop policies and positions on the use of antibiotics in the meat they source. Some are already offering several kinds of antibiotic-free meat to customers; others have made clear position statements while others are only just starting the conversation internally on this rising sustainability issue.

In the US, antibiotic free meat is still a niche of approximately just 5 percent of the sales, but it is growing fast in an otherwise shrinking market. Especially sales of antibiotic-free chicken are booming, with 34 percent growth in 2014. A number of fast food chains have committed to serving antibiotic-free chicken meals within a few years and digital tools already exist to guide consumers to restaurants offering antibiotic-free meals.

A recent World Health Organization (WHO) global action plan to combat antibiotic resistance will further raise awareness of this opportunity by requiring all countries to develop national action plans. Bringing down the overuse of antibiotics in agriculture will be an important milestone in many of these national plans, which means less antibiotics leak into the environment from farms.

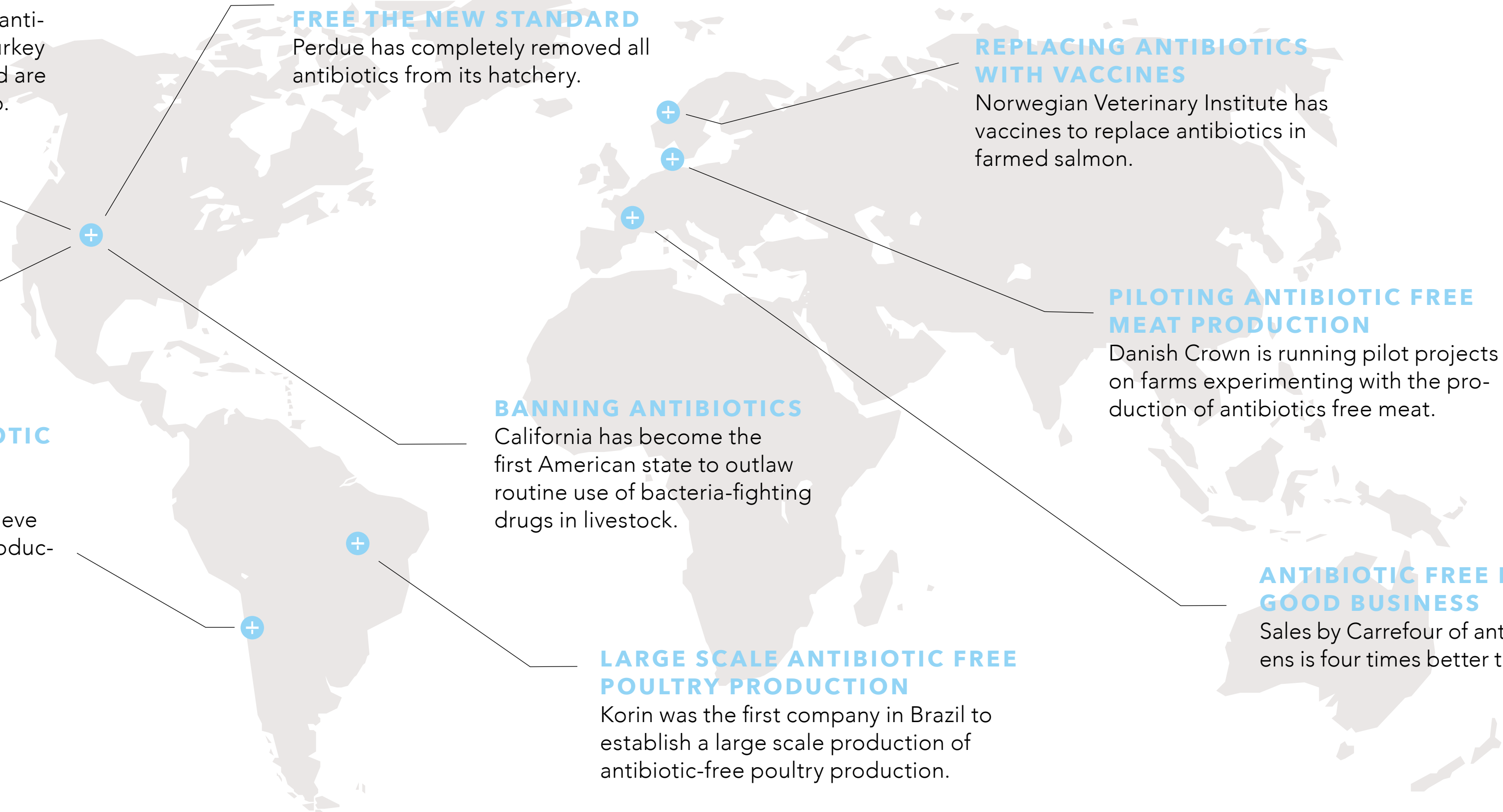
A GLOBAL GOLD STANDARD

In all, the growing consumer demand for antibiotic-free food combined with political pressure for reducing the use of antibiotics represents a unique challenge and opportunity for the entire meat value chain. Antibiotic-free chicken production is the lowest hanging fruit in the antibiotic free meat market. Short production cycles make disease control in chicken production less complicated than for other forms of livestock. For other meat products, fully eliminating the use of antibiotics is more complicated. However, pilot projects to test production methodologies and market potential are starting to appear.

The development of a new set of global standards to certify meat products produced without or with responsible use of antibiotics will further fuel this opportunity. Clear labels of 'raised without antibiotics' or meat produced with 'responsible use of antibiotics', will give consumers the tools to shop antibiotic-free meat more confidently. Less antibiotics on our farms means fewer resistant bacteria in our surroundings.

RESPONSIBLE FOOD PRODUCTION TO PROTECT FUTURE HEALTH

Please click on the solutions to learn more



ANTIBIOTIC FREE MENU
Subway will start serving antibiotic-free chicken and turkey at its U.S. restaurants, and are planning a complete stop.

MAKING THE ANTIBIOTIC FREE THE NEW STANDARD
Perdue has completely removed all antibiotics from its hatchery.

REPLACING ANTIBIOTICS WITH VACCINES
Norwegian Veterinary Institute has vaccines to replace antibiotics in farmed salmon.

PILOTING ANTIBIOTIC FREE MEAT PRODUCTION
Danish Crown is running pilot projects on farms experimenting with the production of antibiotics free meat.

AIMING AT ANTIBIOTIC FREE SALMON PRODUCTION
Nova Austral aims to achieve antibiotic-free salmon production.

BANNING ANTIBIOTICS
California has become the first American state to outlaw routine use of bacteria-fighting drugs in livestock.

ANTIBIOTIC FREE POULTRY IS GOOD BUSINESS
Sales by Carrefour of antibiotic-free chickens is four times better than budgeted.

LARGE SCALE ANTIBIOTIC FREE POULTRY PRODUCTION
Korin was the first company in Brazil to establish a large scale production of antibiotic-free poultry production.

99%

drop in antimicrobial use in aquaculture in Norway bewteen 1987-2013 - 20 folds production increase.

76%

of approved antibiotics for use in food production are categorised being medically important for human.

86%

of consumers want 'antibiotic-free' meat at their local grocery store and more than 60% are willing to pay more for it.

Sources: Review on Antimicrobial Resistance. 'Antimicrobials in Agriculture and the Environment: Reducing Unnecessary Use and Waste'. Report. 2015 - NRDC. 'Going Mainstream: Meat and Poultry Raised Without Routine Antibiotics Use'. Online: www.nrdc.org

A GENDER DIVIDER – MUCH MORE APPEALING TO WOMEN

Antibiotic-free food is a relatively new phenomenon. It currently accounts for a small segment of the overall meat market but the demand is increasing. It is expected that most countries will develop national action plans to combat antibiotic resistance that can be expected to influence the future demand for antibiotic-free food.

ASIA SEES OPPORTUNITIES

Antibiotic free food is an opportunity favoured by the Other Asia region to address the risk of losing lifesaving medicine. It is the second most favoured opportunity in the region pointing to possibilities for pursuing new business in this emerging market space. Globally, the finance sector is the most positive of all business sectors. Among all business sectors surveyed, it is the manufacturing sector which perceives to be most affected by this opportunity when compared to the other presented opportunities. However, manufacturing along with the other business sectors have not responded more positively towards pursuing this opportunity over others. This could imply that the opportunity is not mature enough for mainstream business. Growing demand from consumers and maturation of the concept could boost this opportunity's capacity to attract the interest of business sectors.

LOW CAPACITY STANDS IN THE WAY

MENA stands out as a region that neither sees societal benefit nor has the capacity to pursue the opportunity of antibiotic-free food. The low capacity is mainly explained by a very low degree of perceived political will power in the region on this issue. Likewise, for North America, political will power, as a capacity factor, scores relatively low which results in an overall capacity score lower than some of the other regions. Europe also rates the capacity to pursue antibiotic free food relatively low and mainly due to relatively low scores on economic capacity and political will power. Shifting from current production methods in Europe to antibiotic-free livestock production will mean lower productivity pushing up production costs, which may explain the perceived low levels of economic capacity to pursue this opportunity. At a general level looking at the overall ranking of the opportunities, antibiotic-free food is perceived to be good for society but there seems to be capacity gaps in pursuing it. The data points to the fact that both civil society and business are likely to advocate for this opportunity, which may count in favour of building powerful alliances in making a change happen.

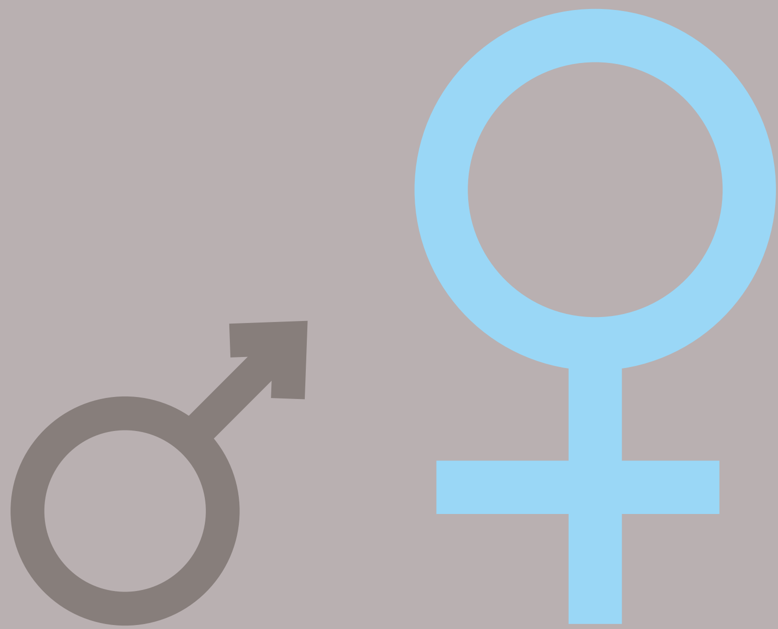
BENEFITS AND CAPACITY

Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.

NUMBER 6 ON THE OPPORTUNITY RANKING

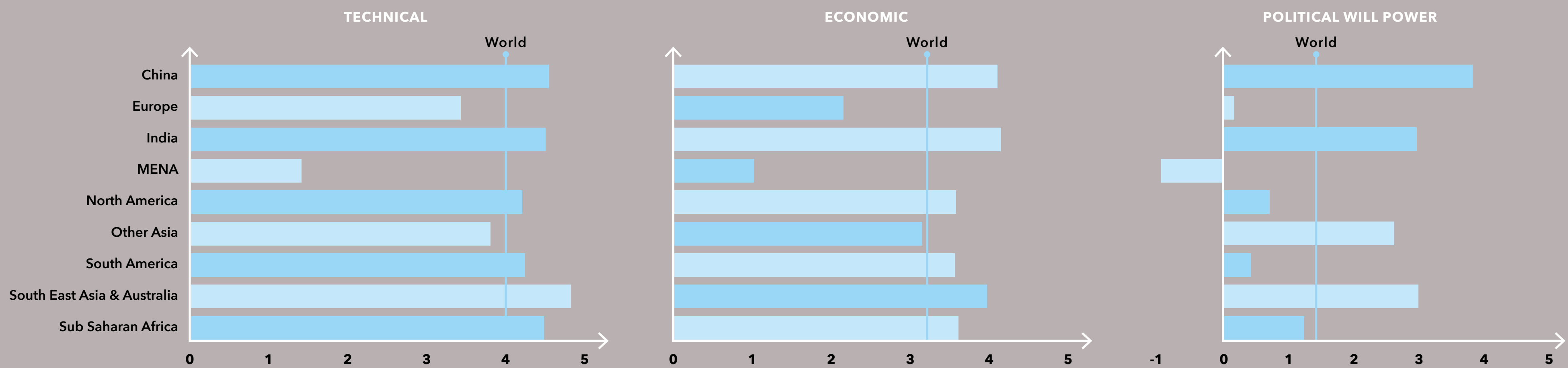
1 SMART FARMING
2 THE DIGITAL LABOUR MARKET
3 CLOSING THE SKILLS GAP
4 REDUCE FOOD WASTE
5 PRECISION TREATMENT
6 ANTIBIOTIC-FREE FOOD
7 REGENERATIVE OCEAN ECONOMY
8 NEW BUSINESS MODEL FOR ANTIBIOTICS
9 FLEXIBLE MOBILITY
10 NEW DIETS
11 FUTUREPRENEURS
12 CROWD TRANSPORT
13 CLOSING THE LOOP
14 SMART OCEAN
15 LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY



Much more appealing to women (no. 4) than men (no. 11)

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS



NEW BUSINESS MODEL FOR ANTIBIOTICS

New arrangement of collaboration including open source solutions are promising avenues for restarting the quest for new antibiotics.

Developing new drugs is costly. A billion-dollar price tag is not uncommon – and often too small – but considering the cost of antimicrobial resistance (AMR), this is actually a bargain. In the United States alone AMR costs more than 50 billion USD per year in health expenses and incurred societal cost – such as loss of productivity.

Still, development of new antibiotics has stifled, as current pharmaceutical business models do not harvest this opportunity. Development costs of new antibiotics are high, yet sales are impended as consumers only take antibiotics for a limited time period and often relatively few times during a lifetime. At the same time, microbes develop resistance relatively fast. So to be profitable, antibiotics today need to be sold in large quantities, but if sold in profitable quantities the risk of microbes developing resistance goes up dramatically. This catch-22 situation has kept the development of new antibiotics drugs down.

However, the enormous societal costs of AMR create an opportunity for new business models to step in, and a number are materializing.

PUBLIC-PRIVATE FUNDING

The term neglected disease business models covers a number of tools to incentivize investments in development of new drugs to treat diseases where traditional business models do not create favorable returns on investments. Using these similar measures can help bring novel antibiotics to the market. The incentives are a mix of innovative approaches to R&D, new forms of financing mechanisms and regulatory tools.

A key element in this opportunity is to blend public and private investment in innovative financing models that can fund the development of new drugs. Funds for research on this topic can be partly financed by the public sector, philanthropy, or one could imagine for instance a one-billion-dollar prize to the first five companies or academic centres that develop and get regulatory approval for a new class of antibiotics. Rewards could also be in the form of higher drug prices protected by patents or extended data exclusivity. Financial incentives can be targeted to the truly novel classes of antibiotics, with demonstrable efficiency against multidrug-resistant pathogens.

INNOVATIVE APPROACHES TO R&D

Another way to incentivize development of new antibiotics is to reduce the cost of development. Open source innovation plays a key role as a means to create avenues for companies to benefit from publicly funded research. Sourcing ideas on open platforms have proven effective in the development of drugs for neglected diseases such as tuberculosis, and this type of networked approach to R&D has demonstrated that while its costs and challenges may be too great for just one company to bear, platforms that draw on a multitude of collaborators may lower costs, diffuse risks, and recruit a broad array of resources.

New forms of public-private collaboration and open source solution hunting are potentially promising ways to revamp the interest in developing more of our miracle medicine – antibiotics.

A PIONEERING SOLUTION SPACE

Please click on the solutions to learn more

ANTIBIOTIC INNOVATION FUND

AMR Review has proposed a fund of $2bn with rewards to pharmaceutical companies that develop new antibiotics.

Global

BACTERIA FROM BEES AS ALTERNATIVE ANTIBIOTICS

Scientists in Living Antibiotics at Lund University in Sweden crowdfund their studies of active infection-fighting bacteria in bees.

Global

PRIVATE-PRIVATE LICENSE AGREEMENT

Roche, Meiji Seika Pharma and Fedora have made a license agreement for the development and commercialization of a new antibiotic.

Global

PUBLIC-PRIVATE PARTNERSHIP FOR NEW ANTIBIOTICS

US Department of Health and Human Services and AstraZeneca will develop drugs to treat illnesses caused by antibiotic-resistant infections.

Global

FUNDING IN EXCHANGE FOR DRUG GUARANTEES

BARDA's BSA program funds new antibiotics in exchange for guarantees that a new drug will be available in public health emergencies.

Global

COLLABORATION TO PROVIDE FLEXIBLE FUNDING

GlaxoSmithKline and BARDA are collaborating to provide flexible funding for the development of several antibiotics.

Global

ACADEMIC-INDUSTRIAL PARTNERSHIP FOR NEW ANTIBIOTICS

The University of Bonn, Northeastern University and Novobiotic Pharmaceutical are developing the new antibiotic teixobactin in collaboration.

Global

CROSS-SECTOR COMMITMENT TO DEVELOP NEW ANTIBIOTICS

The Infectious Diseases Society of America (IDSA) has called for a global commitment across sectors to develop 10 new antibiotics by 2020.

Global

$50M

public resources made available to co-create new antibiotics.

$246M

partnership between the EU, industry and academia to develop new antibiotics.

4-9%

annual increase in global market - in a 40 billion USD market.

Sources: U.S. Department of Health & Human Services. 'HHS enters into strategic alliance to accelerate new antibiotic development'. September 2015. Online: www.hhs.gov - Glaxo Smith Kline. 'Tackling the threat of antibiotic resistance'. Online. us.gsk.com - Review in Antimicrobial Resistance. 'Securing New Drugs for Future Generations: The Pipeline of Antibiotics', Report. 2015

LARGE REGIONAL DIFFERENCES

A new business model for antibiotics has been assessed very differently across the regions in terms of potential benefits for society and the capacity to pursue it. Very few business models currently exist to address this problem that may render it difficult for respondents to judge the value of the opportunity.

TOP AND BOTTOM RANK

Respondents in China have assessed this opportunity as the second most favoured which points to the fact that there is a felt need in the region for the development of new business models for antibiotics. China is among one of the largest users of antibiotics worldwide. India, the MENA region, and South America have also rated this opportunity favourably. However, the opportunity ends up at the bottom of the list in the eyes of Europe, South East Asia and Australia, and Other Asia.

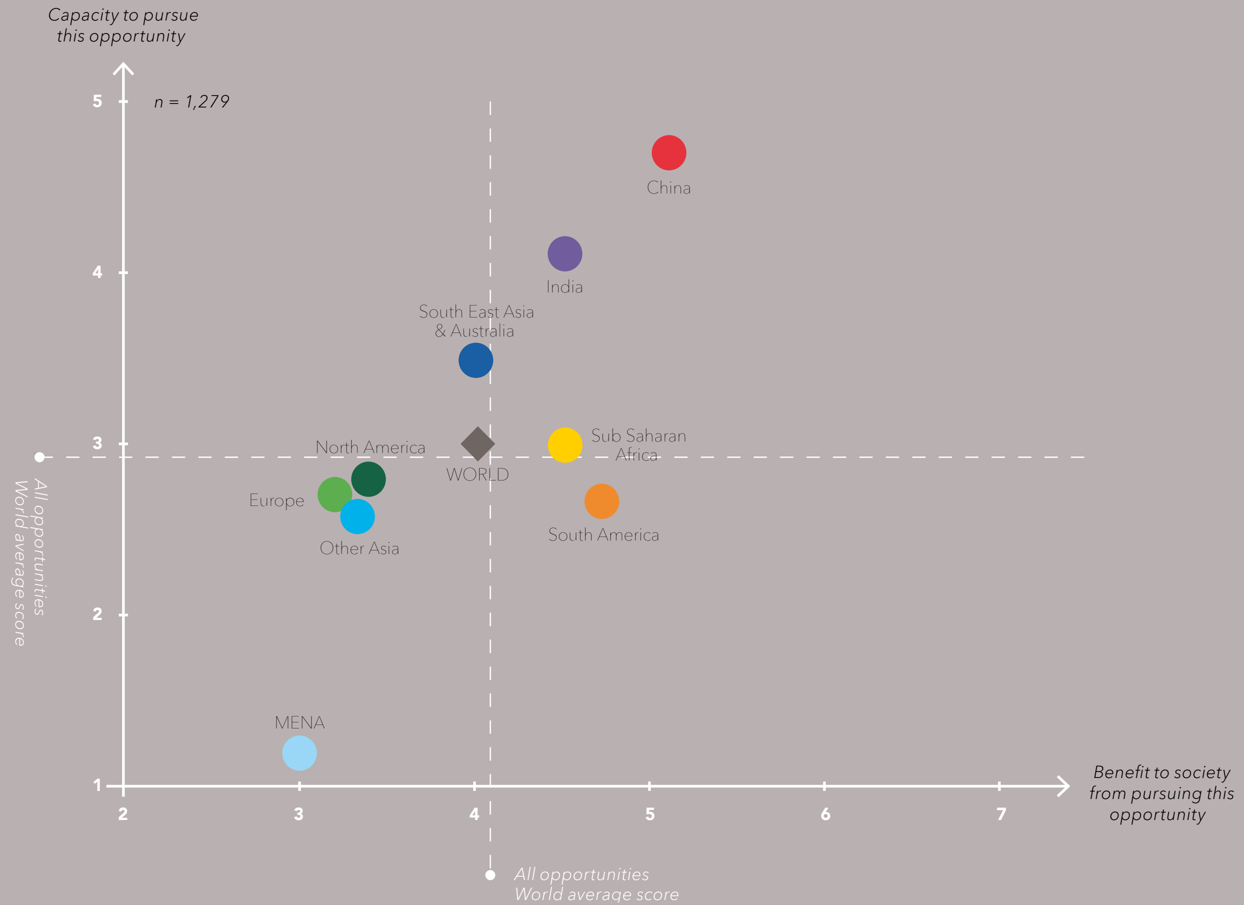
MANUFACTURING SECTOR MOST LIKELY TO ACT

It is one of the top opportunities for respondents in the manufacturing sector with respect to positive impacts on society; still, it is not an opportunity the sector sees much new business potential in. The service sector is the most likely to pursue this opportunity, however, the sector does not have high hopes in terms of the benefits this opportunity will bring society.

Besides strong support from stakeholders in China and India, a new business model for antibiotics the data shows that the opportunity will be backed up by stakeholders in Sub Saharan Africa and South East Asia and Australia and by civil society in South America.

BENEFITS AND CAPACITY

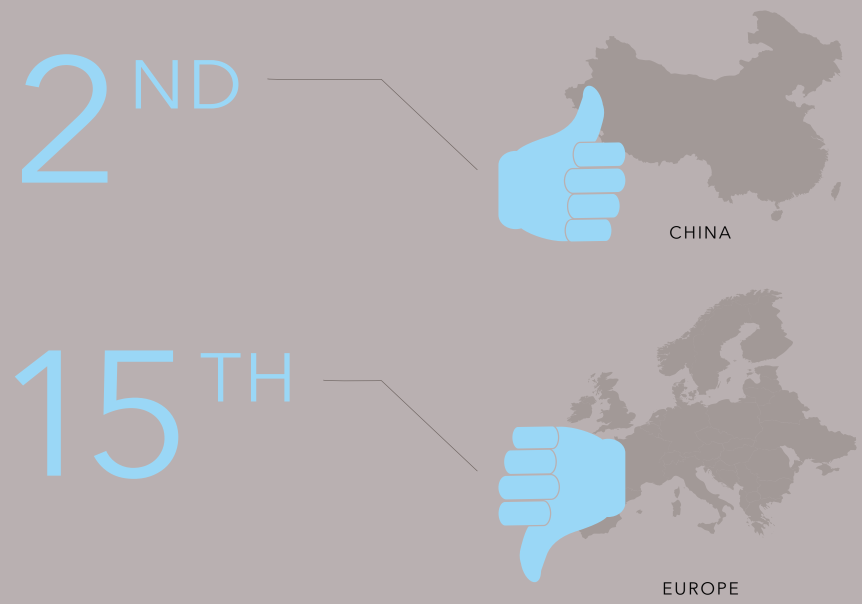
Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.



NUMBER 8 ON THE OPPORTUNITY RANKING

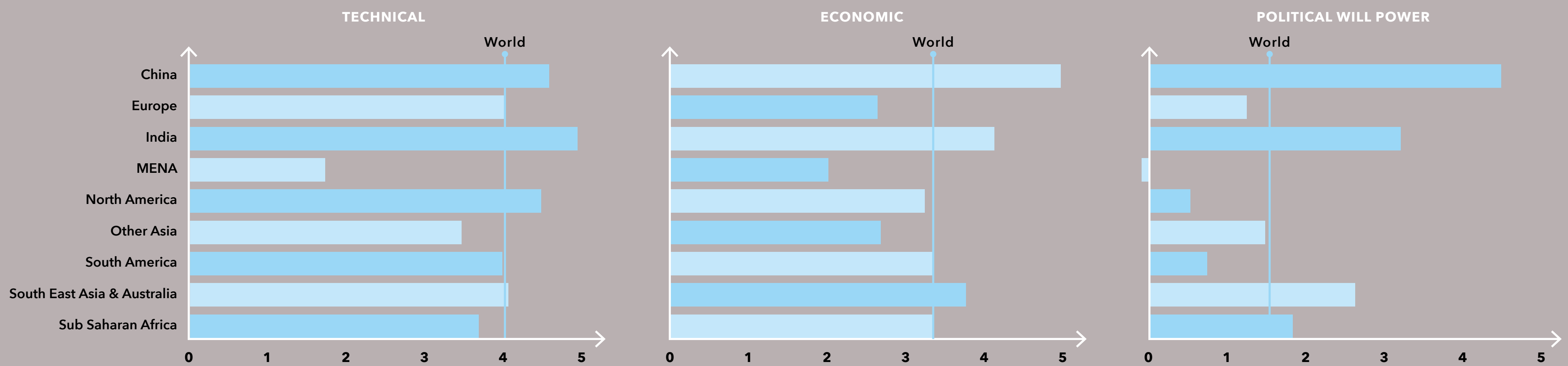
1 SMART FARMING
2 THE DIGITAL LABOUR MARKET
3 CLOSING THE SKILLS GAP
4 REDUCE FOOD WASTE
5 PRECISION TREATMENT
6 ANTIBIOTIC-FREE FOOD
7 REGENERATIVE OCEAN ECONOMY
8 NEW BUSINESS MODEL FOR ANTIBIOTICS
9 FLEXIBLE MOBILITY
10 NEW DIETS
11 FUTUREPRENEURS
12 CROWD TRANSPORT
13 CLOSING THE LOOP
14 SMART OCEAN
15 LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY



A divided world on this opportunity

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS



PRECISION TREATMENT

Precision treatment is an opportunity to curb the overuse of broad-spectrum antibiotics that is fuelling the development of drug-resistance, and at the same time offer a more efficient, and gentle treatment to many patients.

In order to prescribe precise medicine, doctors need precise diagnosis of the bad bacteria at play. That requires cultivation of a given bacteria in a lab, which today takes at least 48 hours. Today, antibiotics are often administered without a proper diagnosis. Precise diagnosis for precision medicine is an unfolding opportunity.

NEW TOOLBOX

This opportunity covers a range of tools allowing doctors to identify the exact type of bacteria during the time of consultation and therefore to prescribe narrow spectrum antibiotics. New diagnostic tools will facilitate the advance of a 'one bug, one drug' approach to antibiotic development and to the treatment of patients. Hopefully, these new tests will allow bacteria to be identified directly from clinical samples (e.g. blood), speeding up diagnosis and enabling the most appropriate antibiotic to be administered within hours. For tuberculosis, the time to diagnosis of multidrug resistance has been cut from several months to two hours by a game-changing molecular test.

New diagnostic tools will enable doctors to prescribe the relevant narrow spectrum antibiotics, whereby reducing the use of broad-spectrum antibiotics. The narrow spectrum antibiotics will not kill as many of the normal microorganisms in the body as the broad-spectrum antibiotics and thereby reduce side effects. In addition, it will lead to less resistance by putting pressure on fewer types of bacteria.

The new screening approach will enable highly specific antibiotics to be designed, accelerating the race to overcome resistance and creating a market for new treatments.
New tools will allow doctors to undertake rapid diagnosis. In developing countries, with low levels of lab capacity, such tools can mean leapfrogging into higher quality health care.

PROBIOTICS

Precise medication is not limited to narrow spectrum antibiotics, but also concerns the so-called probiotics. Probiotics are living bacteria and yeasts, delivered in food and drinks or as purified supplements, which are intended to help the body fend off bad bacteria and prevent infections or other problems. WHO defines probiotics as live microorganisms which when administered in adequate amount confer a health benefit. Exactly how probiotics work remains to be fully understood.

Probiotics are given to both treat and prevent diseases and are situated at the overlap between scientific medicine and alternative medicine. Research shows that probiotics may substitute antibiotics in a number of cases and allow for more targeted treatment.

The new technologies in development promise accurate diagnostics at a much accelerated pace compared to today. Yet, they still need to be reduced in size and they need to be affordable also in low resource settings, and that takes investment and innovation. However, developing the diagnostic tools to allow for fast and precise targeting of antibiotic therapy will not only save lives and save patients a lot of discomfort, it can also limit the development of antibiotic resistance.

Prescribing more precise dosages of drugs will result in faster treatments and fewer sick days for the patients, lowering the overall cost for the health system and slowing down the development of resistance.

Please click on the solutions to learn more

ANTIBODIES TO DELIVER ANTIBIOTICS PRECISELY

Genentech is testing a new precision drug therapy in which only the targeted bacteria are exposed to the antibiotic.

Global

ANTIBIOTICS WITH "ON-OFF SWITCH"

Scientists at the University of Groningen are testing an antibiotic that stays inactive when it is in non-infected areas of the body.

Global

RAPID DIAGNOSIS TEST

The University of Fribourg and INSERM have developed a rapid diagnostic test for multi-resistance to broad-spectrum antibiotics.

Global

TESTS ON INDIVIDUAL BACTERIAL RESPONSES

Research from the Seoul National University shows that response from individual bacterial cells to antibiotics can provide rapid diagnosis.

Global

QUICK SCREENING OF BACTERIAL RESPONSES

Scientists at the University of Lausanne have found a way to quantitatively screen bacterial responses to antibiotics.

Global

BACTERIA-ATTACKING VIRUSES

AmpliPhi and the University of Adelaide experiment with bacteriophages, viruses that infect only bacteria, to battle staphylococcus.

Global

BATTLING SUPERBUGS WITH PROTEINS

GangaGen has developed a protein (P128) to prevent and treat infections caused by the 'superbug' MRSA.

Global

DNA TESTS FOR QUICK DIAGNOSIS

A project from UCSF and California Initiative to Advance Precision Medicine use DNA sequencing tests to diagnose acute infections.

Global

2/3

of prescribed antibiotics treatments in the US will not help to treat the patients.

$533M

U.S. market for point-of-care diagnostics - growing 7% a year.

MINUTES

From 36 hours to minutes used for diagnosis - reducing resistance and costs.

Sources: Review on Antimicrobial Resistance. 'Rapid Diagnostics: Stopping Unnecessary Use of Antibiotics'. Report. 2015 - Roland, D. 'New Diagnostic Tools Emerge in War Against Superbugs'. Wall Street Journal. November 2015. Online: www.wsj.com

AN OPPORTUNITY THAT DIVIDES THE HDI COUNTRIES

Precision treatment makes it into the top five of all opportunities worldwide. It is also the highest ranked opportunity to address the risk of loss of lifesaving medicine.

NOT ON TOP OF THE LIST IN CHINA

To keep antibiotics working in order to treat infections, precision treatment has been assessed as one of the top opportunities of all among the respondents in Europe. By contrast, respondents in China do not see much potential in this opportunity, as they rate it among the lowest of all opportunities. Respondents in South America have expressed confidence in this opportunity to have great benefits for society, but political will power to pursue it is perceived to be missing in the region.

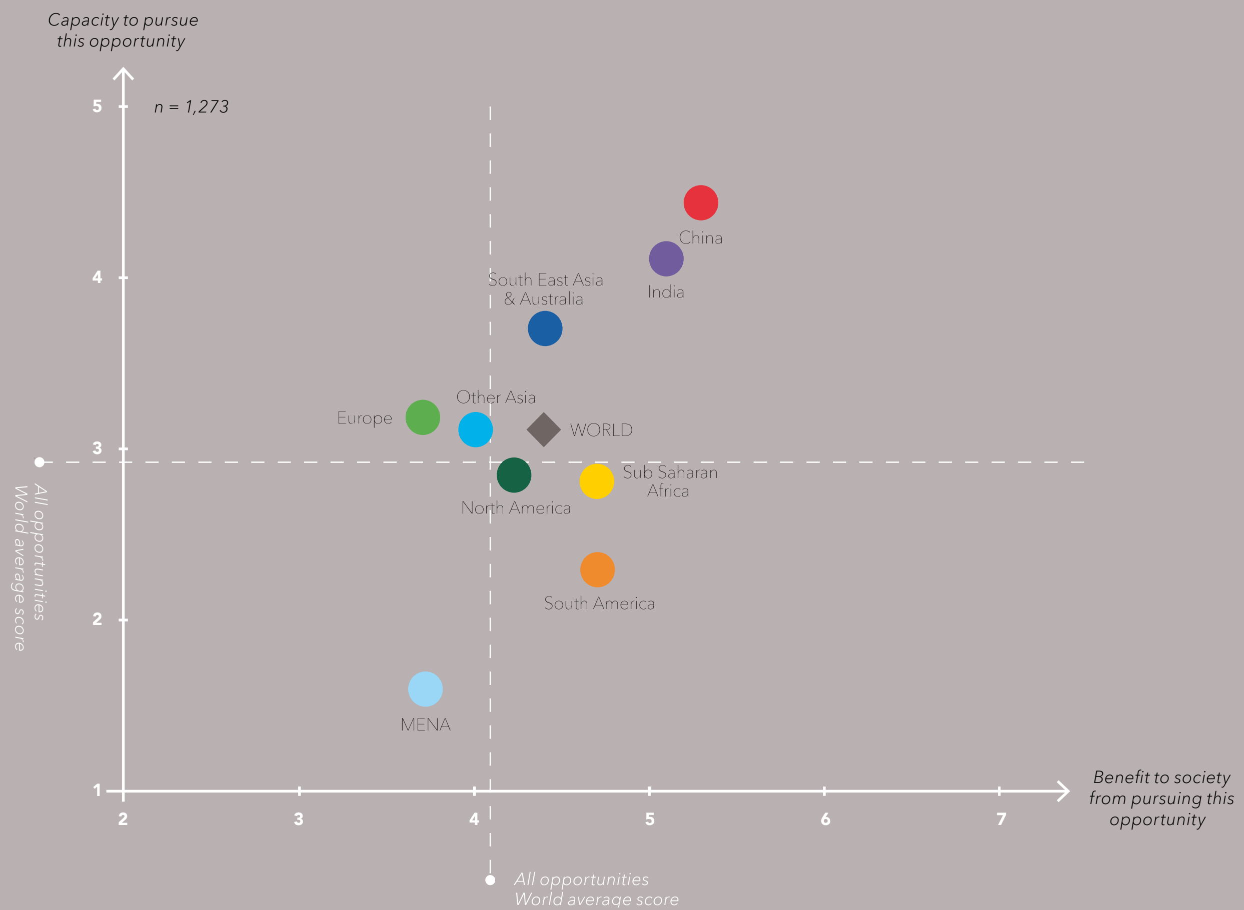
MIXED PERCEPTIONS

It is the one of the favourite opportunities among the very high HDI countries whereas for high HDI countries it is ranked as one of the lowest on the opportunity list. Across age groups it is one of the least preferred by respondents below the age of 30 and it is the second most favoured opportunity for respondents at the age of 50 and above.

Among business respondents, the finance sector sees itself as the most affected, but surprisingly, results show that the same sector is not very likely to pursue new business opportunities within precision treatment. The only other business sector that perceives itself to be affected by this opportunity is the 'other business sector', which may be explained by the fact that the pharmaceutical industry is part of this sector category.

BENEFITS AND CAPACITY

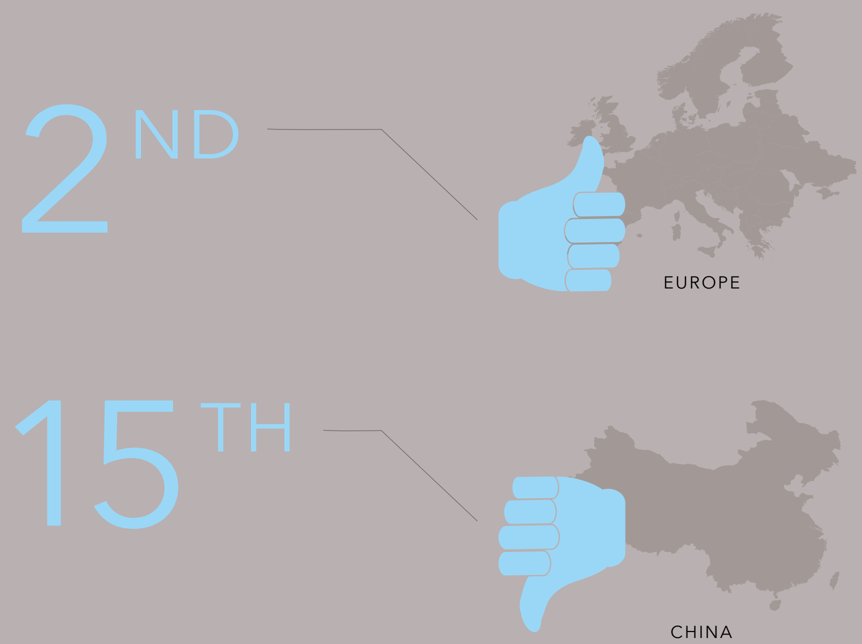
Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.



NUMBER 5 ON THE OPPORTUNITY RANKING

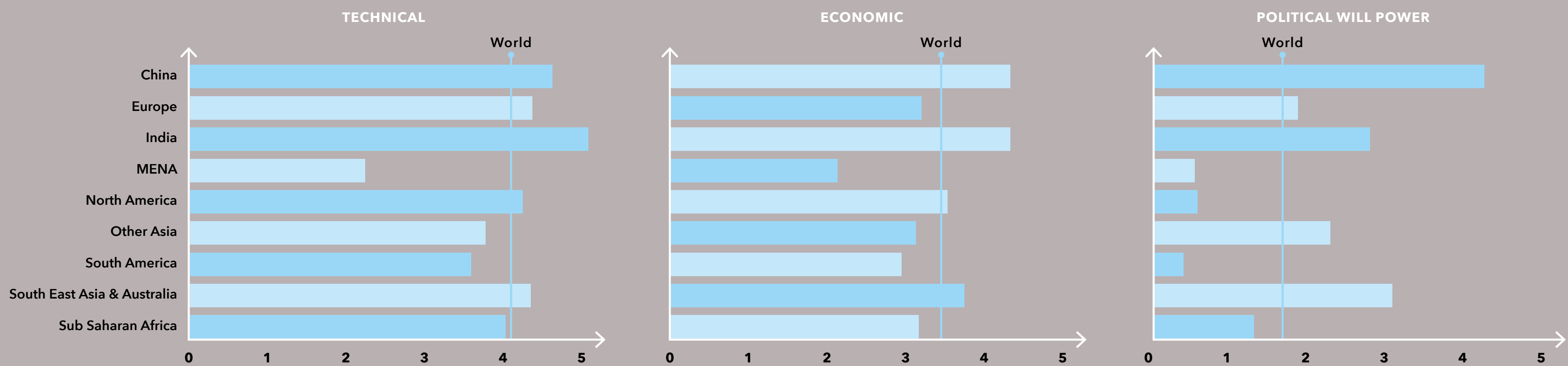
1	SMART FARMING
2	THE DIGITAL LABOUR MARKET
3	CLOSING THE SKILLS GAP
4	REDUCE FOOD WASTE
5	PRECISION TREATMENT
6	ANTIBIOTIC-FREE FOOD
7	REGENERATIVE OCEAN ECONOMY
8	NEW BUSINESS MODEL FOR ANTIBIOTICS
9	FLEXIBLE MOBILITY
10	NEW DIETS
11	FUTUREPRENEURS
12	CROWD TRANSPORT
13	CLOSING THE LOOP
14	SMART OCEAN
15	LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY



Europe - a strong believer

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS



ACCELERATING TRANSPORT EMISSIONS

Every year large numbers of people die a premature death due to emissions from cars, trucks, ships, and planes. The number of cars in the world is rapidly increasing and the urgency of the situation is increasingly alarming. It should be taken as an invitation to re-think transport to keep the air clean around the globe

ACCELERATING TRANSPORT EMISSIONS

Seven of eight urban citizens breathe air that fails to meet WHO safe levels. Although transport is mainly to blame, societies need mobility of people and goods to function and develop.

The mobility of people, goods, and information is critical in a global economy. The economic market today is global; goods produced in one part of the world are often consumed or used elsewhere. Transportation of goods across air, sea, and land presents economic opportunities, but also creates significant environmental and health challenges, including localized air pollution and greenhouse gas emissions.

Urban areas are particularly exposed to transport-related air pollution because large numbers of vehicles emit at ground level in highly populated areas. In addition to the physical impacts, mental aspects of a busy transport system include stress and disorientation.

SEVEN OUT OF EIGHT URBAN CITIZENS BREATHE AIR THAT FAILS TO MEET WHO SAFE LEVELS.

Source: WHO. 'Air quality deteriorating in many of the world's cities'. May 2014. Online: www.who.int

Rapid global urbanization often comes with an increase in vehicle miles travelled and emissions. Even though private cars account for less than one-third of trips in cities worldwide, they are responsible up to 70 percent of urban air pollution. One cause of the high number of private cars is increasing urban spatial expansion – resulting in people driving longer. By 2050, it has been estimated that the global vehicle fleet could triple to 2 billion cars, with the number of trucks doubling. Eighty percent of this growth is expected to occur in developing economies that will experience a sharp rise in cars on the road as their economic development continues. However, very high HDI countries such as France and the UK have also recently experienced such high levels of air pollution that local authorities had to intervene.

The main air quality issues are associated with the following pollutants: sulphur dioxide (SO_2), nitrogen dioxide (NO_2), airborne particulate matter (PM_{10}, $PM_{2.5}$), lead (Pb), carbon monoxide (CO), benzene (C_6H_6), and ozone (O_3). In addition, CO_2 emissions from transport are a global challenge, as the transport sector is struggling to reduce these emissions. Emissions from the global shipping industry amount to around 1 billion tonnes a year, accounting for 3 percent of the world's total greenhouse gas emissions. Without action, these emissions are expected to more than double by 2050.

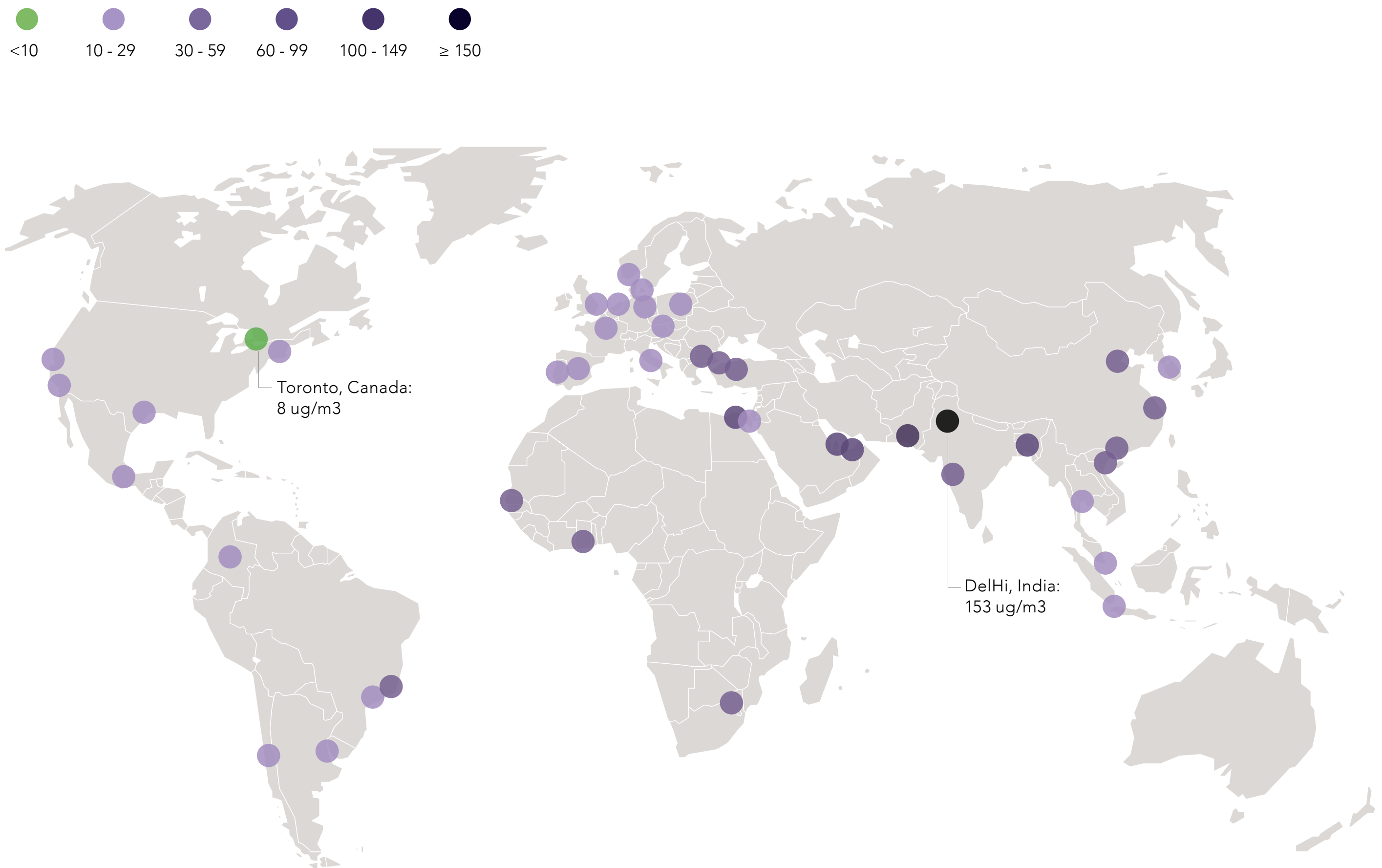
Outdoor air pollution kills more than three million people globally each year, and causes health problems ranging from asthma to heart diseases. This results in a cost of 3.5 trillion USD each year for OECD societies plus China and India. Late in 2015 the chinese authorities issued for the first time a red alert because of alarming high air pollution. In China, deaths due to outdoor air pollution from transport rose by 5 percent from 2005 to 2010, and, in India, this number increased by 12 percent. Even though the number of deaths in India is just over half the number in China, the trend in India is increasing faster. Other studies show that pollution-related health costs reach as much as 5 percent of GDP in some cities in medium and low HDI countries, over 90 percent of which can be attributed to vehicle emissions.

Thus far, inclusion of international transport emissions in a global climate policy framework has proven difficult. The international transport sector is a truly global industry. Regulating emissions from international transport will not only have economic impacts, but must be measured against the norms of established legal frameworks such as World Trade Organization (WTO) law.

AIR POLLUTION IN URBAN AREAS EXCEEDS WHO STANDARDS

Annual mean concentration of PM2.5 in urban areas. The green dot indicates PM2.5 levels below 10 ug/m3 – the WHO guideline level.

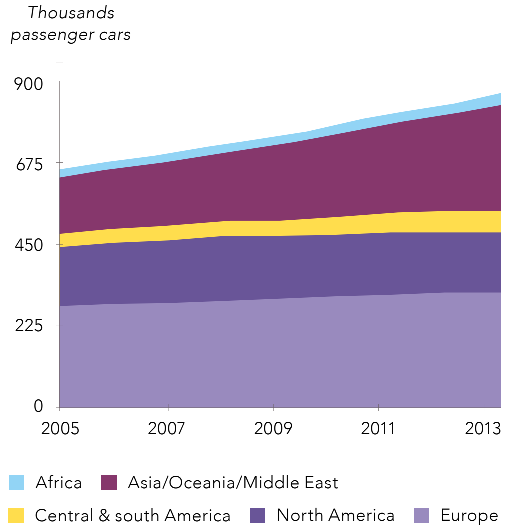
PM2.5 (ug/m3) levels in selected major cities around the world.



Sources: World Map (above) – WHO.'Ambient (outdoor) air pollution in cities database'. 2014. Chart (upper right) – International Organization of Motor Vehicle Manufacturers. Chart (lower right) – Greenair. 'Carbon emissions from global airfreight to rise faster than other transport modes, predicts ITF'. February 2015. Online: www.greenaironline.com

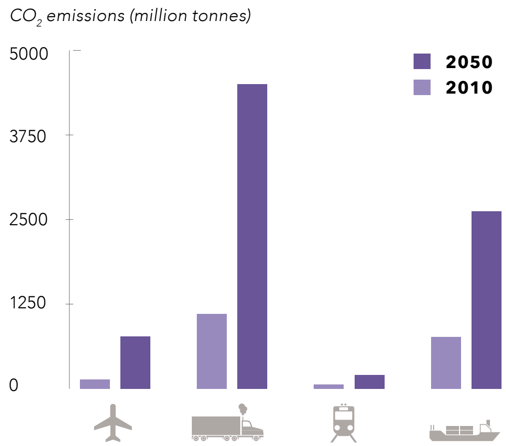
HIGH GROWTH IN NUMBER OF PASSENGER CARS IN ASIA - ESPECIALLY CHINA

The number of passenger cars is rising at a steady rate in all regions of the world. China is growing more rapidly – in 2013 approximately 12 percent of all of the worlds passenger cars were in China.



ROAD AND SEA FREIGHT ARE EXPECTED TO STAY AS TOP FREIGHT CO_2 EMITTERS

Although air freight is expected to increase CO_2 emissions by more than 400% from 2010 to 2050 – road and sea freight will still stay way ahead.



CLEANING UP TRANSPORT

Norms are starting to shift from owning to sharing of assets in a resource strained world. Vehicles are the symbol of the old ideal of ownership, but people are now increasingly demanding the most efficient and least polluting mobility option. Cars running on renewables are starting to take off and the opportunities for more effective and less polluting transport are readily available. You will read three opportunities, all of which are mature and existing in some form or the other in the world today.

SHIFT

A interconnected transport system provides **flexible mobility** in travel times, forms of transport, and service providers, while today many people's daily transport choices are being dictated by previous investments in, for example, a car.

SHARE

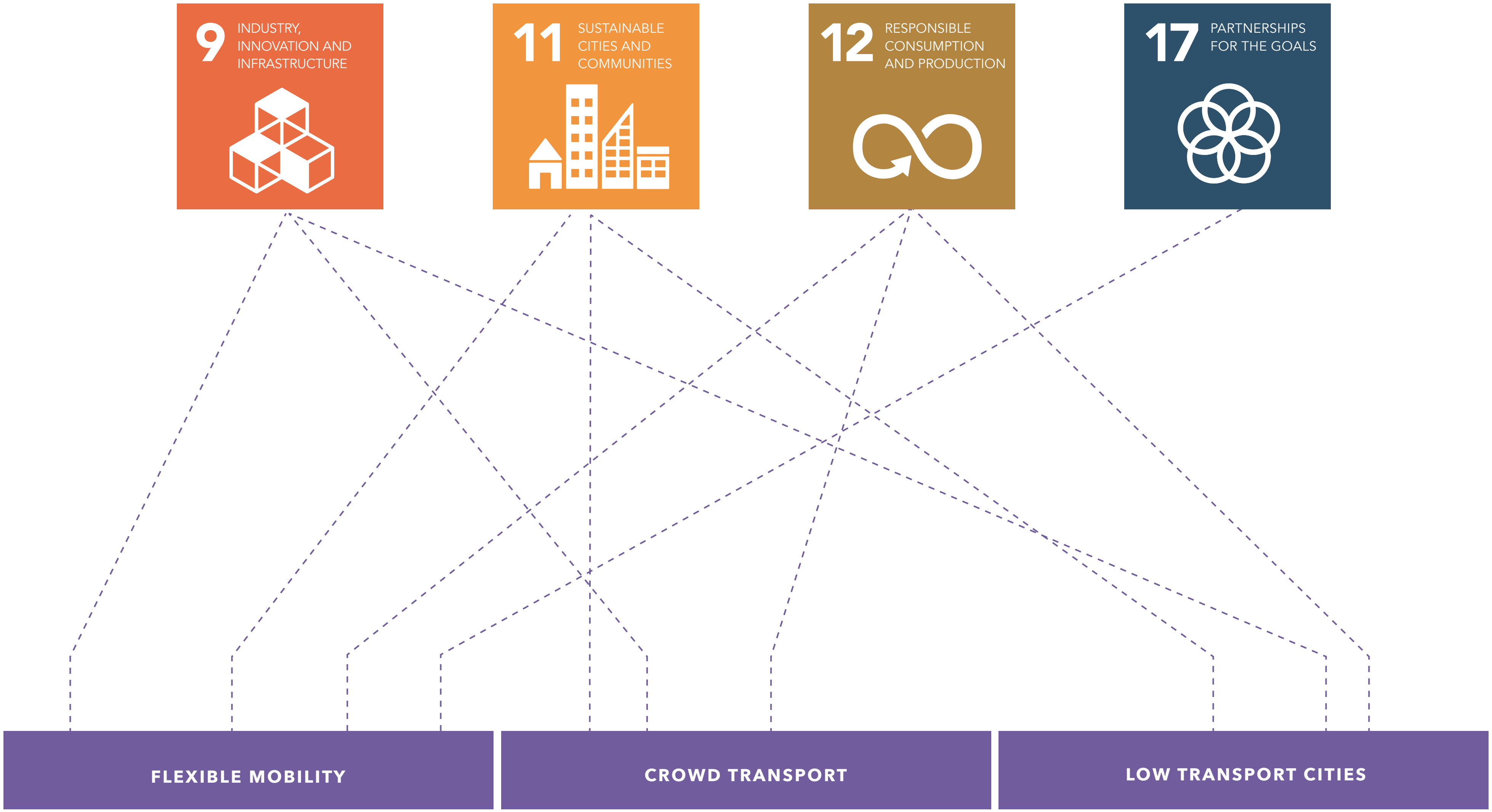
The transport sharing economy is an opportunity to ride together and transport things collectively, which will bring down congestion and air pollution from emissions. It is **crowd transport.**

AVOID

Imagine living in a city where all your activities are within reach on foot, by bike or through a well-connected transport system. A **low-transport city** is such a place.

TARGET CONTRIBUTION TO THE GLOBAL GOALS

All opportunities support actions to reach SDGs 9, 11, and 12. Building reliable, sustainable, and resilient transportation systems is part of all three opportunities. In addition, they also contribute to making cities sustainable and providing access to sustainable transport systems for all. All three opportunities will reduce the use of natural resources – in particular oil – by reducing, avoiding and shifting to more sustainable transportation systems. The "Flexible Mobility" opportunity also encourages public-private partnerships to provide sustainable transport, thereby contributing to SDG 17.



FLEXIBLE MOBILITY

A value shift is emerging, changing preferences from owning to sharing of assets in a resource strained world. Vehicles are the symbol of the old ideal of ownership, but people are now increasingly demanding the most efficient and least polluting mobility option.

Getting from A to B should be easy and efficient. It should give us time to prepare for work, to unwind after a day at the office or simply to enjoy the ride.

Most rides are not that way today. Rapid urbanisation is hampering the free movement of people and goods. Congested roads are reducing mobility, and when cars are queuing, air pollution rises, but a flexible system integrating all transport modes can alleviate this pressure. Advances in sensor and communication technology along with innovative business models create the opportunity for a paradigm shift in transportation. We do not need to own a car, a bike, or even a frequent traveller pass. We can purchase mobility as a flexible service adjusted to our preferences, the weather, and our agenda for the day. If the weather is nice in the morning, you might want to ride a bike to the office, but when you go home, you need to pick up the groceries, so you choose a car. It may sound futuristic, but the technology and the business models are sprouting.

REPLACE PRODUCTS WITH A FLEXIBLE SERVICE

A flexible transport system aims to provide flexibility in choosing routes, travel times, forms of transport, and service providers, while today many people's daily transport choices are in reality being governed by previous investments in, for example, a car. The opportunity is a new way of looking at transport, by replacing a product with a service. This eliminates the need for owning a car by providing citizens with the means of transport where and when needed. A flexible transport system aims to provide flexibility in choosing routes, travel times, forms of transport and service provider. It is mobility as a service. By subscribing to a flexible service, the users can have access to public transportation, car-sharing, car rentals, bike sharing, and taxi services. The exact mixture of services offered will depend on the actual setting with respect to e.g. geography, climate, population density, and financial capacity of the user.

Coordination and integration of all available forms of transport means less waiting time. Utilizing open data to develop new transport applications to coordinate transport across different types of transport holds great economic benefits. London estimates show that real time mobile transport applications can save society 22 to 88 million USD every year.

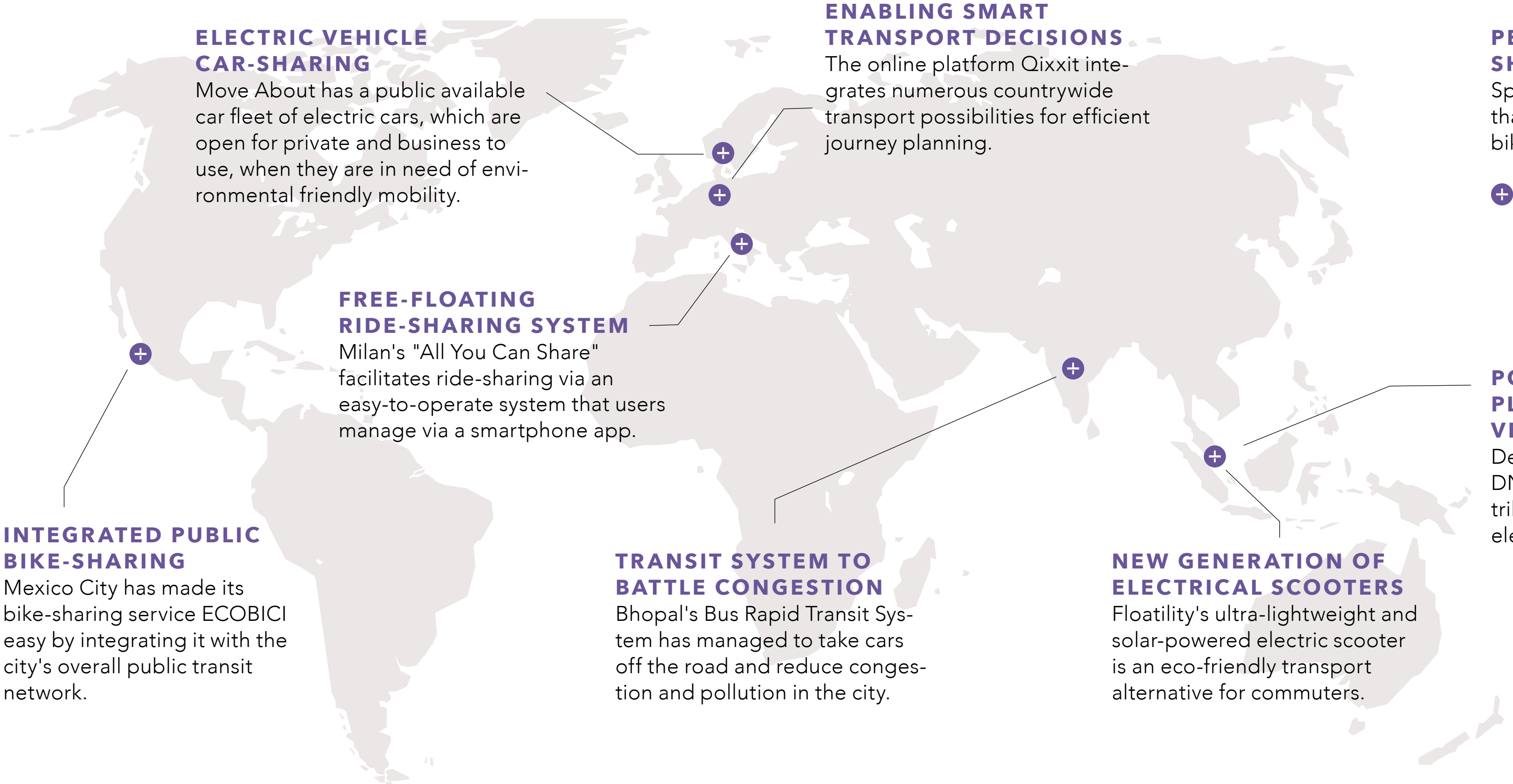
By greatly reducing the need for upfront investments in, for example, a car, a flexible service-centred system can potentially increase the mobility of people with low incomes by allowing them access to a greater commuting range, which can translate into upward social mobility.

NEW FORMS OF PUBLIC-PRIVATE COLLABORATION

To develop this opportunity, private-public partnerships are essential. Public transport is the most efficient means of transport when the demand is particularly high between fixed destinations and, although services can be privately run, public planning is often essential when laying out routes, infrastructure, billing zones etc. However, when demand is low, it is not resource-efficient to drive large, half-empty busses rendering car-sharing, taxi or bicycles options more appropriate. Therefore, developing a truly flexible mobility system will inspire new forms of collaboration between public and public operators to provide mobility for all at all times. It may seem as a daunting task but the benefits for people, the public, and the private companies that manage this feat will be substantial. Mobility for all by integrating and connecting the entire transport system can reduce the need for car ownership in urban areas and thereby reduce emissions.

SOLUTIONS TO INTEGRATE A FRAGMENTED TRANSPORT SYSTEM

Please click on the solutions to learn more



ELECTRIC VEHICLE CAR-SHARING
Move About has a public available car fleet of electric cars, which are open for private and business to use, when they are in need of environmental friendly mobility.

ENABLING SMART TRANSPORT DECISIONS
The online platform Qixxit integrates numerous countrywide transport possibilities for efficient journey planning.

PEER-2-PEER BICYCLE-SHARING PLATFORM
Spinlister is a peer-2-peer platform that enables users to list and rent bikes in over 65 countries.

Global

FREE-FLOATING RIDE-SHARING SYSTEM
Milan's "All You Can Share" facilitates ride-sharing via an easy-to-operate system that users manage via a smartphone app.

POWER SYSTEM PLANNING FOR ELECTRIC VEHICLES (PSP-EV)
Design and planning advisory from DNV GL to upgrade electricity distribution systems for rapid growth in electric vehicles.

INTEGRATED PUBLIC BIKE-SHARING
Mexico City has made its bike-sharing service ECOBICI easy by integrating it with the city's overall public transit network.

TRANSIT SYSTEM TO BATTLE CONGESTION
Bhopal's Bus Rapid Transit System has managed to take cars off the road and reduce congestion and pollution in the city.

NEW GENERATION OF ELECTRICAL SCOOTERS
Floatility's ultra-lightweight and solar-powered electric scooter is an eco-friendly transport alternative for commuters.

$88M

annual savings for society in London by using real time mobile transport applications.

$144M

global market value in smart urban mobility infrastructure and services from 2015 to 2024.

5%

of current car fleet only neccesary to cover demand if shared in a comprehensive system.

Sources: Buscher, V. et al. 'Urban Mobility in the Smart City Age'. Report. 2014 – ITS International. 'Increased connectivity helping cities shift to flexible mobility, report finds'. November 2015. Online: www.itsinternational.com - International Transport Forum. 'A New paradigm for Urban Mobility'. Report. 2015

A FAVOURITE AMONG YOUNG RESPONDENTS

Flexible mobility is the best opportunity to address transport emissions according to the answers from our global survey. It is in top three of all opportunities in the eyes of young people below the age of 30. This may be an indication of the emerging value shift among younger generations from owning to sharing.

GOVERNMENTS ARE READY TO ACT

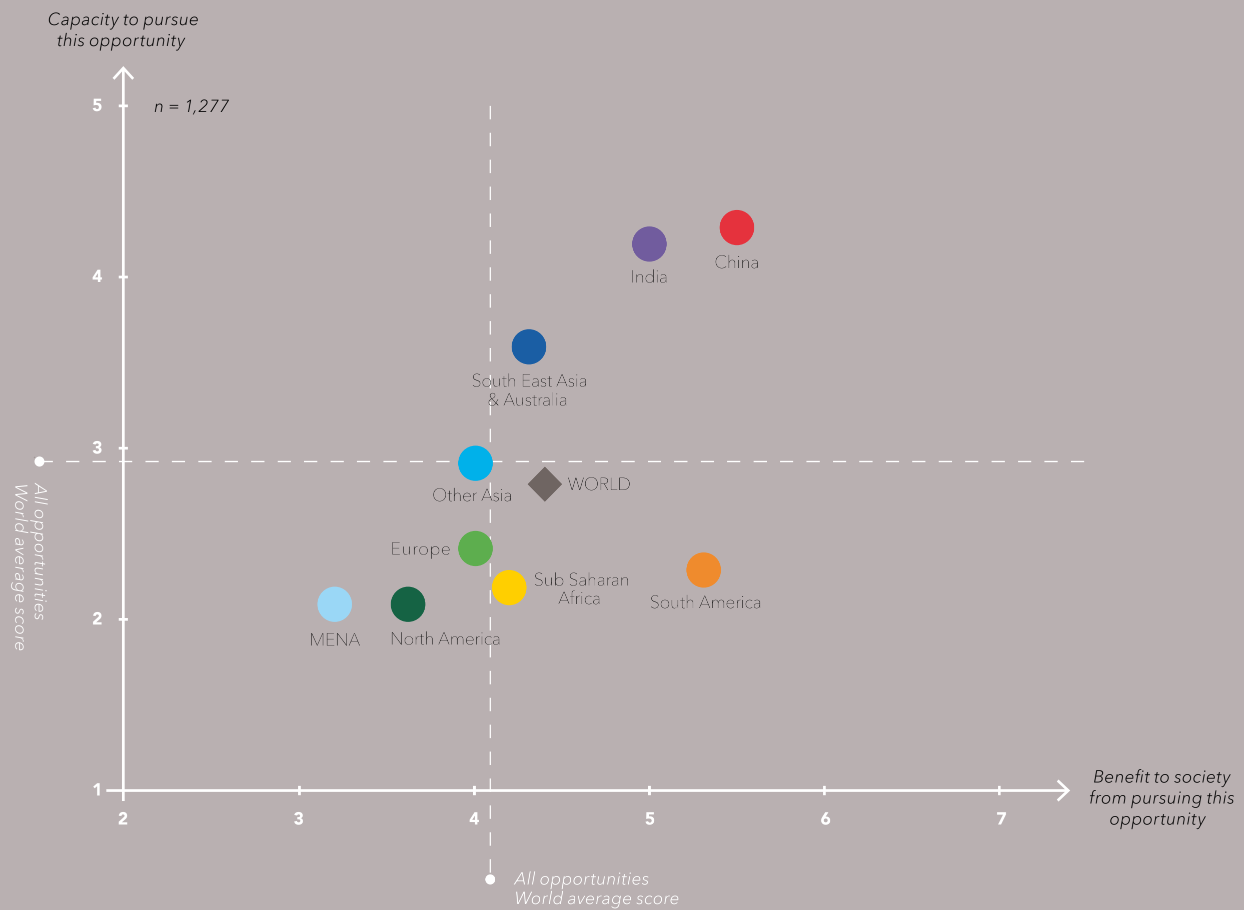
It is the governmental and the financial sector that perceive themselves to be most affected by this opportunity. For the finance sector this opportunity has made it into the top three. With respect to pursuing the opportunity, the finance sector is also the most likely of the five sectors surveyed to act on it. The survey findings point to the fact that the governmental sector is ready to pursue transport-related opportunities as two of their top three opportunities relate to transport.

A DIVERSE GEOGRAPHIC PATTERN

There is great variation across regions in terms of the perceived benefits to society from making transport flexible. For Other Asia and South America, flexible transport is perceived to offer great benefits to society whereas in Sub Saharan Africa, leaders see limited capacity to pursue this opportunity. In general, this opportunity is perceived to have a higher potential for society in the high HDI countries than in the medium HDI countries surveyed.

BENEFITS AND CAPACITY

Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.

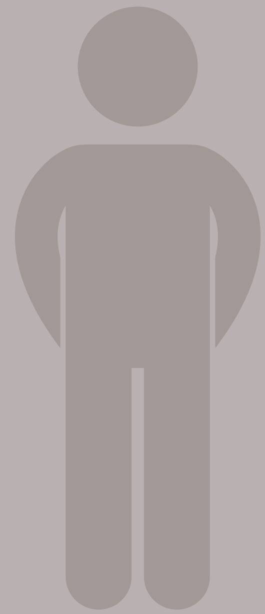


NUMBER 9 ON THE OPPORTUNITY RANKING

1 SMART FARMING
2 THE DIGITAL LABOUR MARKET
3 CLOSING THE SKILLS GAP
4 REDUCE FOOD WASTE
5 PRECISION TREATMENT
6 ANTIBIOTIC-FREE FOOD
7 REGENERATIVE OCEAN ECONOMY
8 NEW BUSINESS MODEL FOR ANTIBIOTICS
9 FLEXIBLE MOBILITY
10 NEW DIETS
11 FUTUREPRENEURS
12 CROWD TRANSPORT
13 CLOSING THE LOOP
14 SMART OCEAN
15 LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY

BELOW 30



A mind shift among young from owning to sharing

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS

CROWD TRANSPORT

Having the same possibilities for transport - only smarter and less resource demanding. This opportunity is about sharing our rides, both for personal and goods transport in a peer-2-peer system. It is the transport collaborative economy opportunity.

Would a factory owner invest in an expensive piece of machinery and then only use it for about an hour a day? Probably not, and with good reason. It just doesn't pay off. If he really needs the job done, some subcontractor with the required machinery can do it and serve 6 or 7 other customers simultaneously.

It is a basic mechanism in the daily operation of businesses. Not every business that needs a brochure printed has their own offset-press. But in our private lives, we often invest in one of the most expensive pieces of machinery we can get – a car – and leave it in the garage for most of the day. When we do drive it, we often get stuck in traffic because everyone else in their underutilized cars also need to get to work at the same time. The crowd transport opportunity offers a way to make better use of cars to save time, money and resources.

MAKING UNDERUSED ASSETS PROFITABLE

Today, many cars are driving with only one passenger and many lorries are driving half-empty. Furthermore, cars are one of the most underused assets, with many only circulating one hour a day. This opportunity lies in sharing our rides in a peer-2-peer system – both for personal and goods transport. It contributes to having more persons per car and more fully loaded freight transport which thereby reduces the emissions emitted per person.

Peer-to-peer transport implies low transaction costs because riders and passengers are connected using various GPS-based tools. These tools can allow citizens to share their identity, convey their position, and manage payments, thus facilitating a real-time connection between people looking for a ride with those who have a spare seat. Having an open platform where all have the possibility to join or provide a service will warrant a widely used system and thereby lower the number of cars driving around more than half empty. In fact, one car-sharing car can replace up to 13 privately owned vehicles. This will lower emissions and significantly reduce congestion.

SHARING TRANSPORT ECONOMY

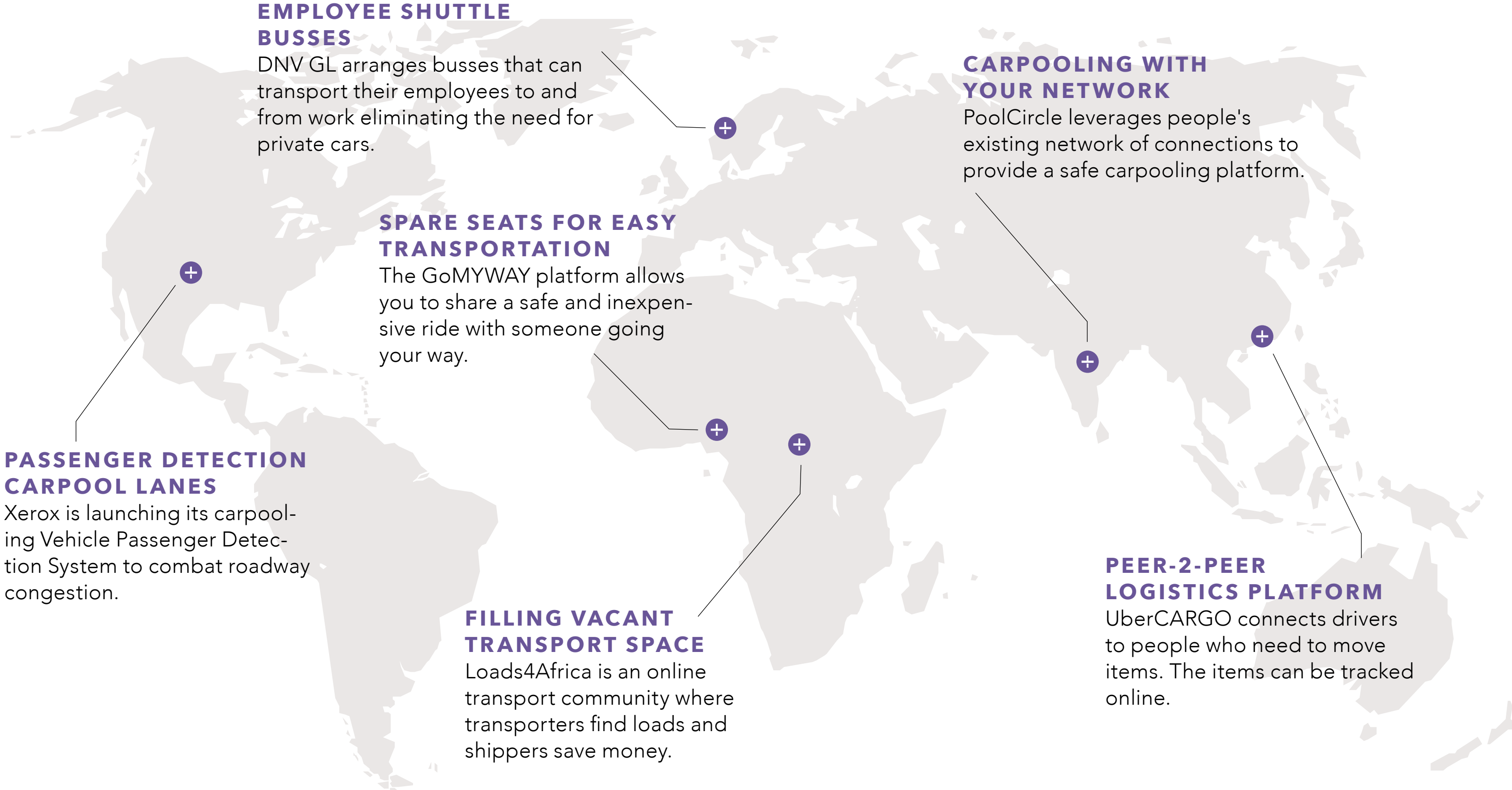
In recent years, we have seen the rise of sharing economy platforms, where people increasingly share products with others through online marketplaces. Sharing of services has emerged in several different sectors, including space rental, and transportation. Transportation has received significant investments in the recent years, but the potential is much greater. Approximately 8 percent of adults have participated in some form of automotive sharing, but just 1 percent have made their cars available so far.

Another initiative that has developed is businesses offering crowd transport to their employees with busses picking up of employees on their way to and from work. Equipped with Wi-Fi, coffee and meeting facilities, these busses make efficient use of working hours and sitting beside a colleague can strengthen cross-organisation collaboration.

As one car-sharing car can replace up to 13 privately owned ones, pursuing a strategy to expand car-sharing promises significant gains in resource efficiency and reduced congestion. This opportunity will improve mobility for all people, since they can access activities without having to own a vehicle, while increasing the efficiency of transport.

SOLUTIONS IN THE SHARING ECONOMY OF TRANSPORT

Please click on the solutions to learn more



EMPLOYEE SHUTTLE BUSSES
DNV GL arranges busses that can transport their employees to and from work eliminating the need for private cars.

SPARE SEATS FOR EASY TRANSPORTATION
The GoMYWAY platform allows you to share a safe and inexpensive ride with someone going your way.

PASSENGER DETECTION CARPOOL LANES
Xerox is launching its carpooling Vehicle Passenger Detection System to combat roadway congestion.

FILLING VACANT TRANSPORT SPACE
Loads4Africa is an online transport community where transporters find loads and shippers save money.

CARPOOLING WITH YOUR NETWORK
PoolCircle leverages people's existing network of connections to provide a safe carpooling platform.

PEER-2-PEER LOGISTICS PLATFORM
UberCARGO connects drivers to people who need to move items. The items can be tracked online.

CROWDSHIPPING PLATFORM
Piggybee offers a crowdshipping service that connects people who want to get or ship something.

Global

RIDESHARING FOR PEOPLE-POWERED TRANSPORTATION
BlaBlaCar is a ridesharing platform that connects drivers with travelers and lets them share the journey and cost.

Global

9-13	40%	36%
privately owned vehicles can be replaced by one carsharing vehicle.	shorter trip length for taxis in New York if they are shared.	expected annually increase for char-sharing up to 2020.

Sources: Buscher, V. et al. 'Urban Mobility in the Smart City Age'. Report. 2014 - Paolo S. et al. 'Quantifying the benefits of vehicle pooling with shareability networks'. Proceedings of the National Academy of Sciences 111, no. 37. 2014 – UiO Energy Car-sharing greens the city'. May 2015. Online: www.uioenergi.uio.no

GOVERNMENTAL SECTOR LIKELY TO PURSUE

Taking journeys together is an opportunity to reduce emissions in a world where mobility is a fact of life. We have asked leaders around the world about their belief in this opportunity as well as about their willingness and capability to pursue it. Here is a summary of our main findings from the data collected.

GOVERNMENTAL SECTOR IS A DRIVER

Crowd transport is the opportunity which respondents from the governmental sector are most likely to pursue (see figure on opposite page). Need for more efficient transportation of people and goods is also the opportunity which the public sector perceives to be most affected by of all opportunities.

On a global scale, the survey shows that crowd transport is the opportunity to reduce transport emissions with the highest levels of economic capacity to actually make it happen. For the countries classified as medium HDI, crowd transport is part of the top five on the opportunity ranking. It tells us that there is greater appetite for pursuing crowd transport in lower HDI countries than in higher.

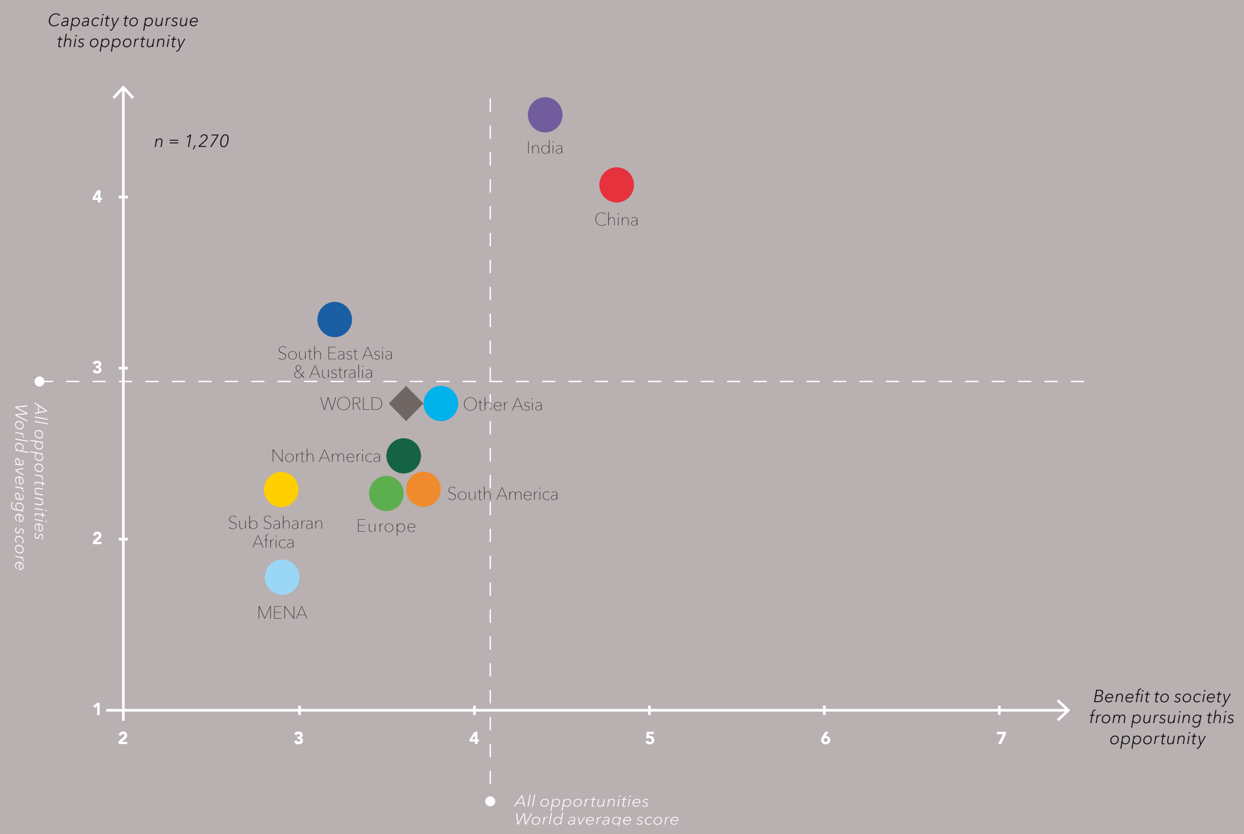
A DIVIDED WORLD

The world seems divided when it comes to this opportunity. Compared to the other opportunities it received the highest ranking in North America, South East Asia & Australia and India, which place it in the top five of all opportunities assessed for impact both on society and the capacity to pursue. At the other end are China, the MENA region, and Europe, which place crowd transport at the very bottom ranking of all opportunities.

The South East Asian and Australian region stand out as they seem to see emissions from transport as an urgent issue to tackle, and the region perceives crowd transport as a viable avenue for addressing this risk. The regions rate crowd transport as the top opportunity to tackle the transport emissions challenges. They also place it in top five in terms of the impact on society and the capacity to pursue. Business leaders in both China and India find that the countries have the capacities to pursue this opportunity with respect to the three dimensions of capacity measured: economic, technological, and political will power. This is clear from viewing the figure illustrating the capacities of the different regions for this opportunity. China and India are placed above all other regions. In short, there is no persistent global trend when it comes to the opportunity of crowd transport; some parts of the world are ready to pursue it, whereas other regions are less excited about it. It can be expected that the public sector will be a driver of this opportunity.

BENEFITS AND CAPACITY

Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.



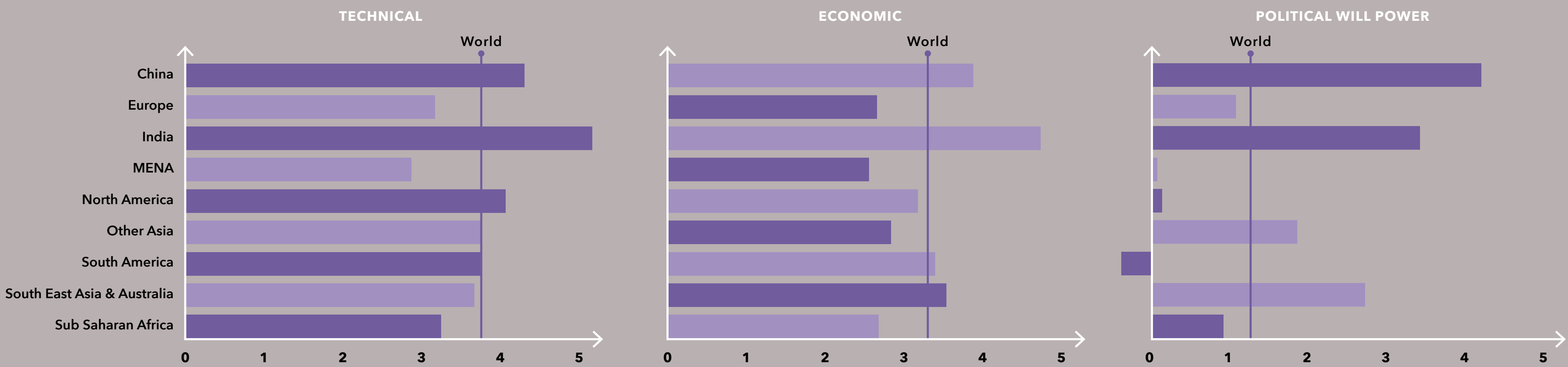
NUMBER 12 ON THE OPPORTUNITY RANKING

1 SMART FARMING
2 THE DIGITAL LABOUR MARKET
3 CLOSING THE SKILLS GAP
4 REDUCE FOOD WASTE
5 PRECISION TREATMENT
6 ANTIBIOTIC-FREE FOOD
7 REGENERATIVE OCEAN ECONOMY
8 NEW BUSINESS MODEL FOR ANTIBIOTICS
9 FLEXIBLE MOBILITY
10 NEW DIETS
11 FUTUREPRENEURS
12 CROWD TRANSPORT
13 CLOSING THE LOOP
14 SMART OCEAN
15 LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY

Governmental sector sees opportunities for change

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS



LOW TRANSPORT CITIES

Creating low transport cities mix the best parts of life in the small village and the big metropolis by placing everything within reach whether it is your home, your office, shops or recreational spaces. It can make cities car-free with fresh and clean air.

Imagine living in a city where all your activities are within reach on foot, by bike or by a well-connected transport system. Low transport cities are a new way of organising life in urban areas, and together with technological trends, it can create cities with lower demands for transport of goods and people. Reducing the need for transport is the long-lasting approach to reducing emissions, but it is also a driver of productivity and quality of life in the city. Smarter zoning and planning can create great opportunities for cities to flourish – with clean air.

CITIES WITH MORE THAN ONE CITY CENTRE
Many urban areas have been evolving rapidly without an overall plan for mobility – resulting in many cities having a mono-centric structure with one city centre. The city centre is, in many urban areas, where most of the central functions of the city are placed, including the services offered to residents as well as many workplaces. Urban residents often live in one area, work in another, and have other activities in a third. While this might have been practical at an age when workplaces were polluting a lot, the effect today is to spread out our activities geographically across much larger urban areas. This creates a high demand for transport due to most people having more than one activity per day.

Planning new cities and reorganising existing cities to a structure with more than one city centre, will reduce the demand for transportation of people and goods creating cleaner and more vibrant cities to the benefit of both the people living there and the businesses placed there. Spatial planning with a focus on location-efficient development for having more mixed use areas with business, schools and other public institutions in the same buildings will systematically reduce the need for transport. It will reduce commuting distances and improve work-life balance.

Changing how cities evolve can have a positive impact on reducing air pollution and carbon emissions. In emerging economies, major portions of land use patterns are still open to be influenced making the potential impact of transport reduction particularly significant. How new developments in existing cities are planned plays a big role in how high the demand for transport will be in the future. Car-free housing and prioritization of human-scale modes of transport such as walking and biking can reduce the emissions from transport.

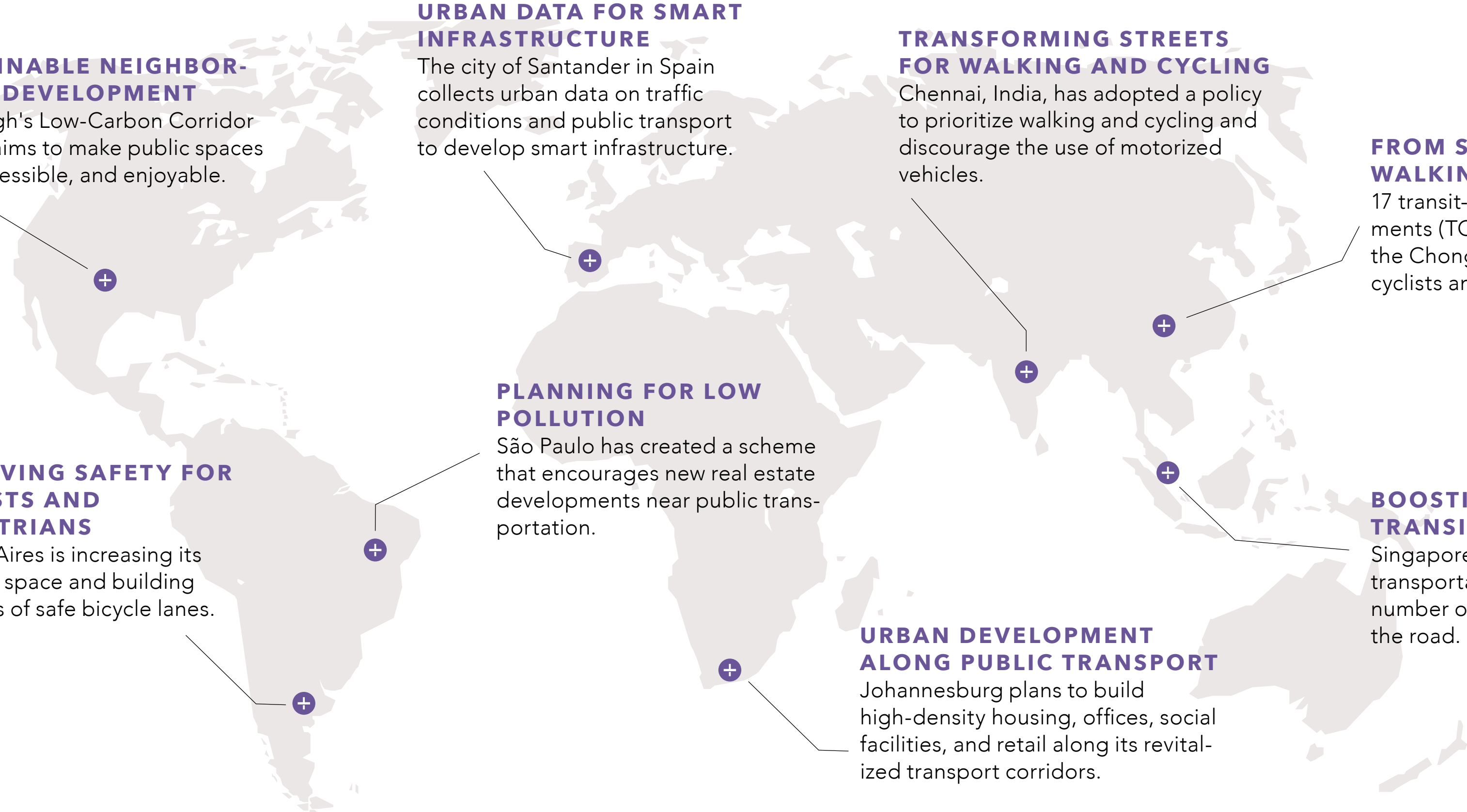
NEW TECHNOLOGIES REDUCE TRANSPORT DEMAND
Utilization of new technologies such as 3D printing to produce products close to the consumers instead of transporting prefabricated products around the world, and using video conferencing for meetings and consultations, can significantly reduce the need for transport.

An added benefit of shifting from personal cars to public transport, biking or even walking in cities is the enormous space that would be made available for purposes other than parking and roads. A car takes up approximately 180 square meters for roads and parking area, which is around 18 times more in comparison to busses or bikes.

All in all, planning for low transport cities with activities located closer to the users, providing non-motorised alternatives for transportation and utilising already existing and emerging technologies to reduce the need for travel can lower transport emissions. Additional benefits to low-transport cities include greater productivity, less noise, better road safety, lower welfare costs (hospital etc.), reduced congestion, and more local jobs strengthening the local economy.

SOLUTIONS TO RE-MAKE CITIES AND LIFESTYLES

Please click on the solutions to learn more



SUSTAINABLE NEIGHBOR-HOOD DEVELOPMENT
Pittsburgh's Low-Carbon Corridor project aims to make public spaces safe, accessible, and enjoyable.

URBAN DATA FOR SMART INFRASTRUCTURE
The city of Santander in Spain collects urban data on traffic conditions and public transport to develop smart infrastructure.

TRANSFORMING STREETS FOR WALKING AND CYCLING
Chennai, India, has adopted a policy to prioritize walking and cycling and discourage the use of motorized vehicles.

FROM SUPERBLOCK TO WALKING DISTANCE
17 transit-oriented develop-ments (TODs) will be built in the Chongqing area favoring cyclists and pedestrians.

PLANNING FOR LOW POLLUTION
São Paulo has created a scheme that encourages new real estate developments near public trans-portation.

IMPROVING SAFETY FOR CYCLISTS AND PEDESTRIANS
Buenos Aires is increasing its sidewalk space and building networks of safe bicycle lanes.

BOOSTING PUBLIC TRANSIT
Singapore plans to boost public transportation while limiting the number of private vehicles on the road.

URBAN DEVELOPMENT ALONG PUBLIC TRANSPORT
Johannesburg plans to build high-density housing, offices, social facilities, and retail along its revital-ized transport corridors.

20-50%

green house gas reduction because of compact urban areas.

2,000KM

average car use reduction per person annually by building compact cities.

36%

3D printing can replace +36% of air cargo and ocean container business.

Sources: Rode, Philipp et al. 'Accessibility in Cities: Transport and Urban Form'. NCE Cities Paper 03. LSE Cities. London School of Economics and Political Science. 2014 – Shell. 'A New Lens Scenario Supplement'. Report. 2014

THE LEAST PREFERRED OPPORTUNITY

Even though the opportunity also includes planning cities to be low transport cities from the start, retrofitting cities to minimize the demand for transportation of people and goods is also a way of reducing emissions. It can, however, be a costly endeavour that may go some way to explain the low scores this opportunity attracted in our survey.

ROUNDING OUT THE LIST

The opportunity of low transport cities is this year's least favoured opportunity on the overall ranking. The opportunity concerns the retrofitting of existing cities to discourage transport, which may seem as an overwhelming task. Hence, re-organising cities is not seen as a worthwhile tool for addressing the risk of accelerating transport emissions. Of all sectors surveyed, the manufacturing sector is the most positive.

GREATER BENEFITS IN MEDIUM HDI COUNTRIES

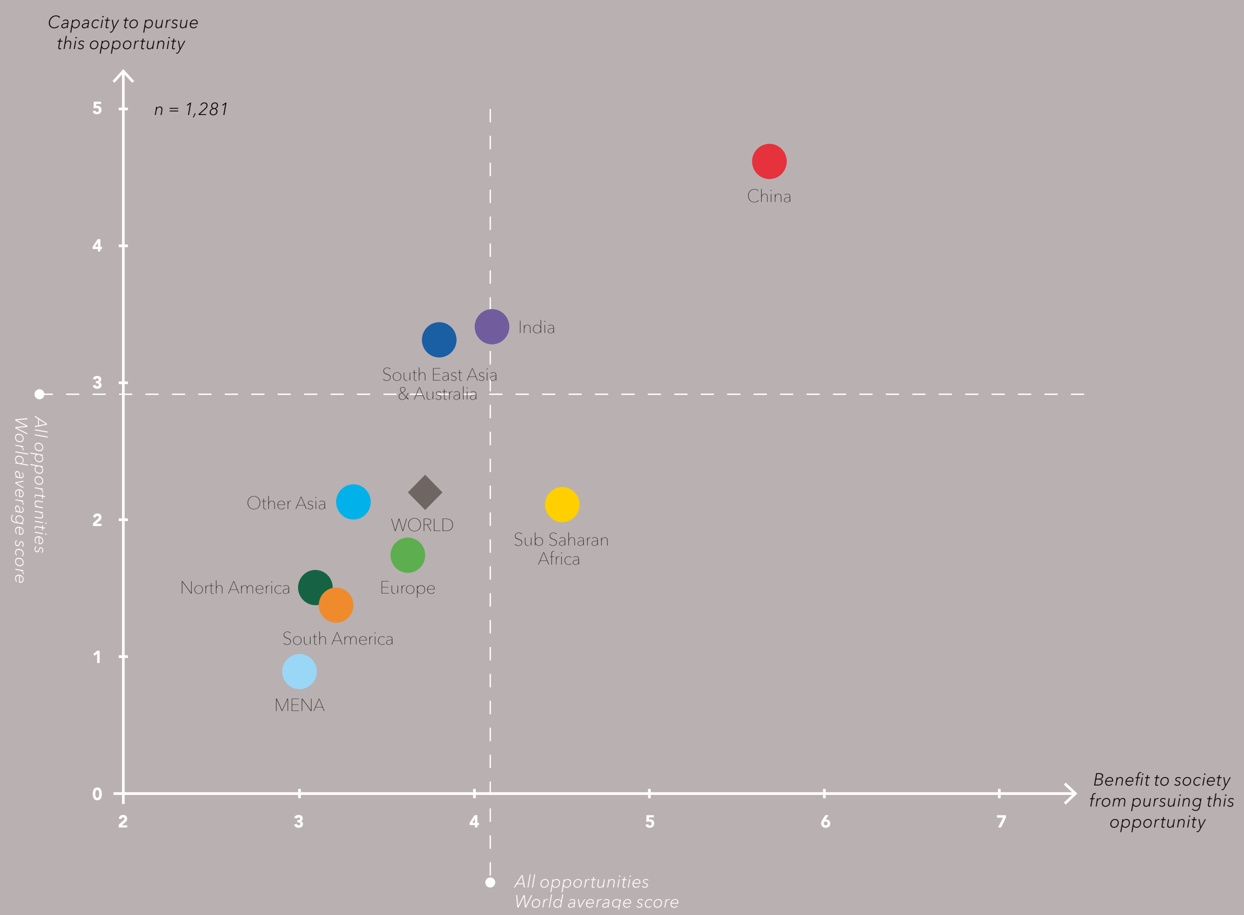
There is a slight variation in how this opportunity is perceived between medium and high HDI countries. Medium HDI countries see greater potential in this opportunity than higher HDI countries. It may be a signal that many of these countries are currently going through rapid urbanisation processes with all the problems that go along with it in terms of congestion, insufficient capacity of the road network, and so forth. Respondents in Sub Saharan Africa see potential societal benefits in this opportunity, but the region is perceived to lack the capacity to pursue it. This especially applies to the economic capacity which is seen to be limited.

LOW POLITICAL WILL

The survey findings reveal that lack of political will power is the main factor holding back the capacity to pursue this opportunity in South and North America and in the MENA region. China is the exception, as Chinese respondents perceive low transport cities to be one of the opportunities to be most supported by civil society. The latter might reflect the challenges China is facing regarding air pollution throughout the country. Respondents in China have also rated this opportunity in top five of all opportunities, also emphasising the societal benefits of addressing air pollution in China.

BENEFITS AND CAPACITY

Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.



NUMBER 15 ON THE OPPORTUNITY RANKING

1 SMART FARMING
2 THE DIGITAL LABOUR MARKET
3 CLOSING THE SKILLS GAP
4 REDUCE FOOD WASTE
5 PRECISION TREATMENT
6 ANTIBIOTIC-FREE FOOD
7 REGENERATIVE OCEAN ECONOMY
8 NEW BUSINESS MODEL FOR ANTIBIOTICS
9 FLEXIBLE MOBILITY
10 NEW DIETS
11 FUTUREPRENEURS
12 CROWD TRANSPORT
13 CLOSING THE LOOP
14 SMART OCEAN
15 LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS

A GENERATION WASTED

The world faces a tsunami of youth unemployment as economies fail to produce jobs for youth. We risk loosing an entire generation of taxpayers, consumers and confident citizens. Opportunities for job creation are urgently needed

A GENERATION WASTED

Youth all over the world are joining the ranks of the unemployed. Almost a quarter of the planet's youth are neither working nor studying. Jobless growth is now a global reality for the next generation.

The worst career choice is to enter the labour market during a recession. It locks youth into lifelong low earnings. Many young people lost their first job in the financial recession due to first-in, first-out policies, and others never landed their first job before the economy collapsed. Each day without work is a day without income; it's a loss of self-confidence and social networks.

Youths between 15 and 24 are three times more likely to be unemployed than adults. Globally, around 75 million youth are looking for work; some have already given up hope they will ever find a job. In the next decade, a further billion people will come of working age. High youth unemployment means slower economic growth and lower tax receipts. Furthermore, countries with prolonged high levels of youth unemployment are more prone to social instability.

ALMOST A QUARTER OF THE PLANET'S YOUTH ARE NEITHER WORKING NOR STUDYING.

Source: The Economist. 'Generation jobless'. April 2013. Online: www.economist.com

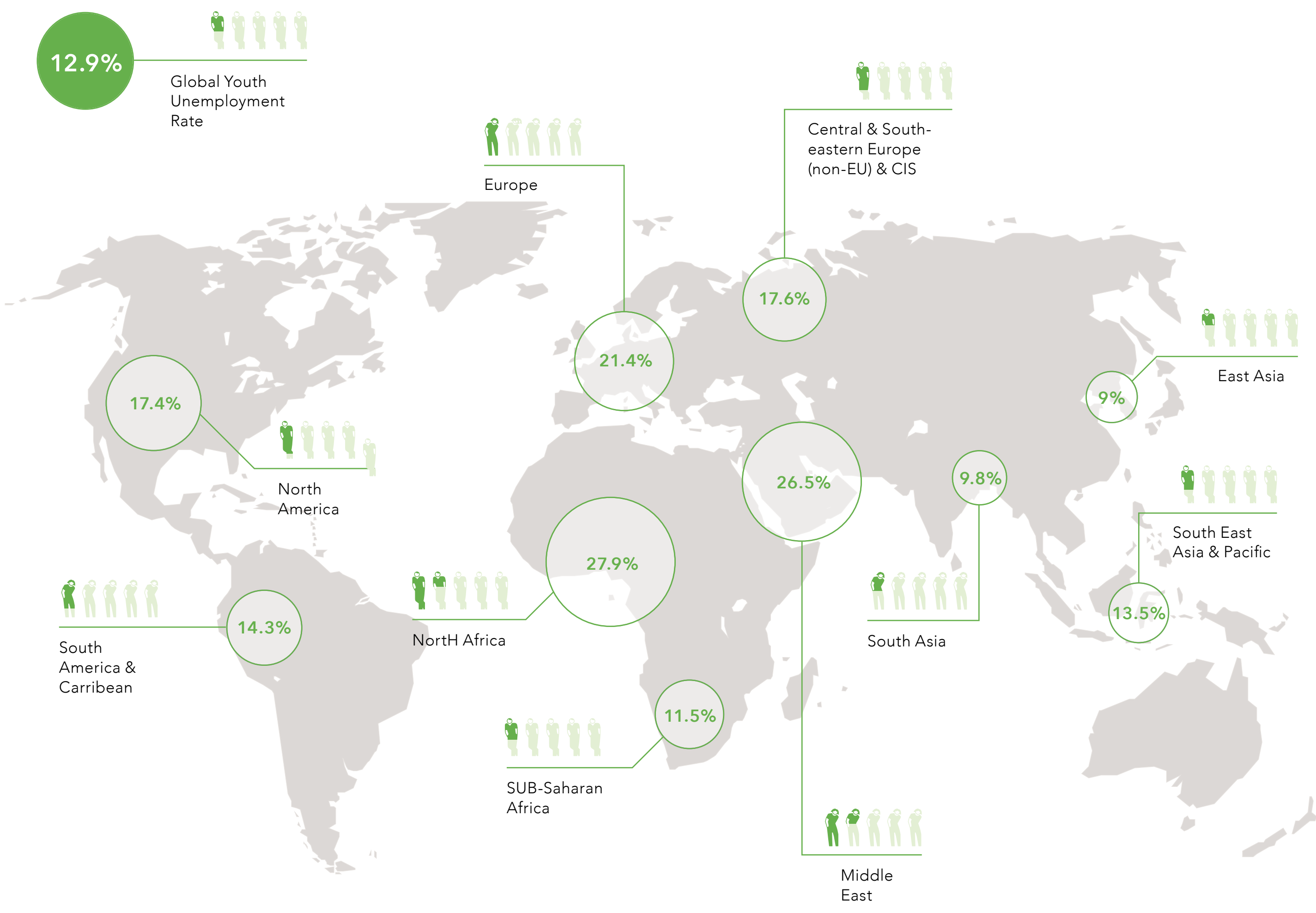
The causes of youth unemployment are much more profound than the recent global economic recession. It's about a new world of work. Constant uncertainty, the rise of robots, rapid job switching, self-employment, mobile work, and the individual as a brand are all characteristics of the world today. The rise of robots means factories are running but not hiring. The middle layer of the labour market is diminishing, while low-end jobs and high-end jobs are still in demand.

Self-employment is a part of this new workforce reality. The Internet is making competition over assignments globally, with outsourcing of work online instead of hiring in-house. In 2014, more people in the UK were self-employed than at any point over the past four decades. Being your own boss requires an entrepreneurial spirit to stay in the work game and comes with much more uncertainty than a salaried job. The new world of work is open to the educated, adaptable, and technologically well-connected. If the trend continues, the future will hold fewer jobs but much work. Here "job" is defined as a set of clear responsibilities towards an employer, whereas work is any kind of activity.

The new world of work is also marked by jobless growth, with unemployment remaining stubbornly high even as economies grow. Technological innovation explains part of this trend, but not all. Researchers point to a mismatch between supply and demand of skills, where the types of skills demanded change rapidly and educational institutions find it difficult to adapt. In addition, in some low HDI countries, growth is based on resource extraction, creating few jobs. On the African continent, 60 percent of the unemployed are aged 15 to 24.

IN THE MENA REGION, ONE IN FOUR YOUTHS ARE UNEMPLOYED

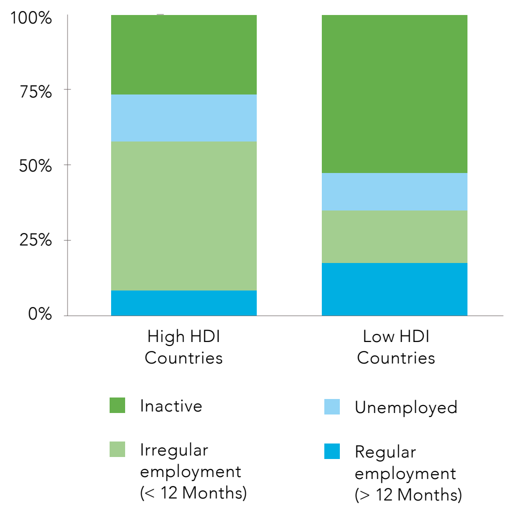
Youth unemployment (15–24 yrs) is a global challenge with 75 million youths worldwide unemployed.



Sources: World Map (above) – ILO. 'Global Employment Trends for Youth'. 2012. Chart (upper right) – ILO. 'The dichtomy of youth labour markets in developed and in developing economies'. 2013. Chart (lower right) – World Bank. World Development Indicators Data. 2013 & ILO. Key Indicators of Labour Market Database. 2013.

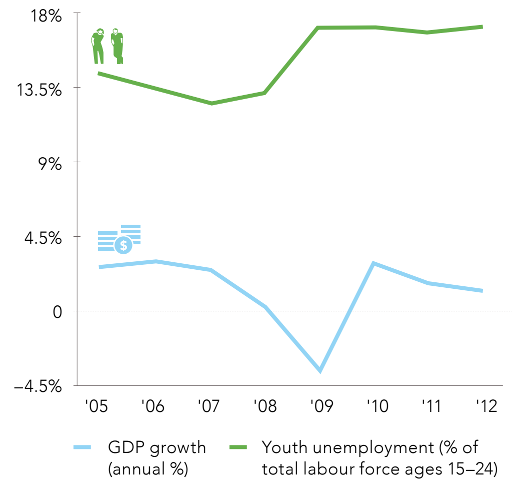
IRREGULAR EMPLOYMENT AND INACTIVE YOUTH

Distribution of youth population (15–29 yrs) on labour markets in 4 high HDI (Human Development Index) countries and 4 low HDI countries in 2013.



JOBLESS RECOVERY

While growth in the OECD is picking up, youth unemployment (15–24 yrs) remains high and has not regained the employment rate as before the economic crisis.



OPPORTUNITIES FOR YOUTH EMPLOYMENT

There is no silver bullet to getting youth into to work, but many opportunities. We present three opportunities for policymakers, business, and youths to explore together to reduce youth unemployment. One opportunity shows that digital technology can be a tool to help create jobs for some youths in some places, although, it also robs jobs in other places. All of the opportunities call for a shift in mind-set from education to lifelong learning, from job to work, and from a physical to a remote workplace.

ACT

Conventional thinking sees entrepreneurship as an alternative to the conventional corporate world, but bringing the two worlds together through corporate incubators is an opportunity to generate jobs and **futurepreneurs**.

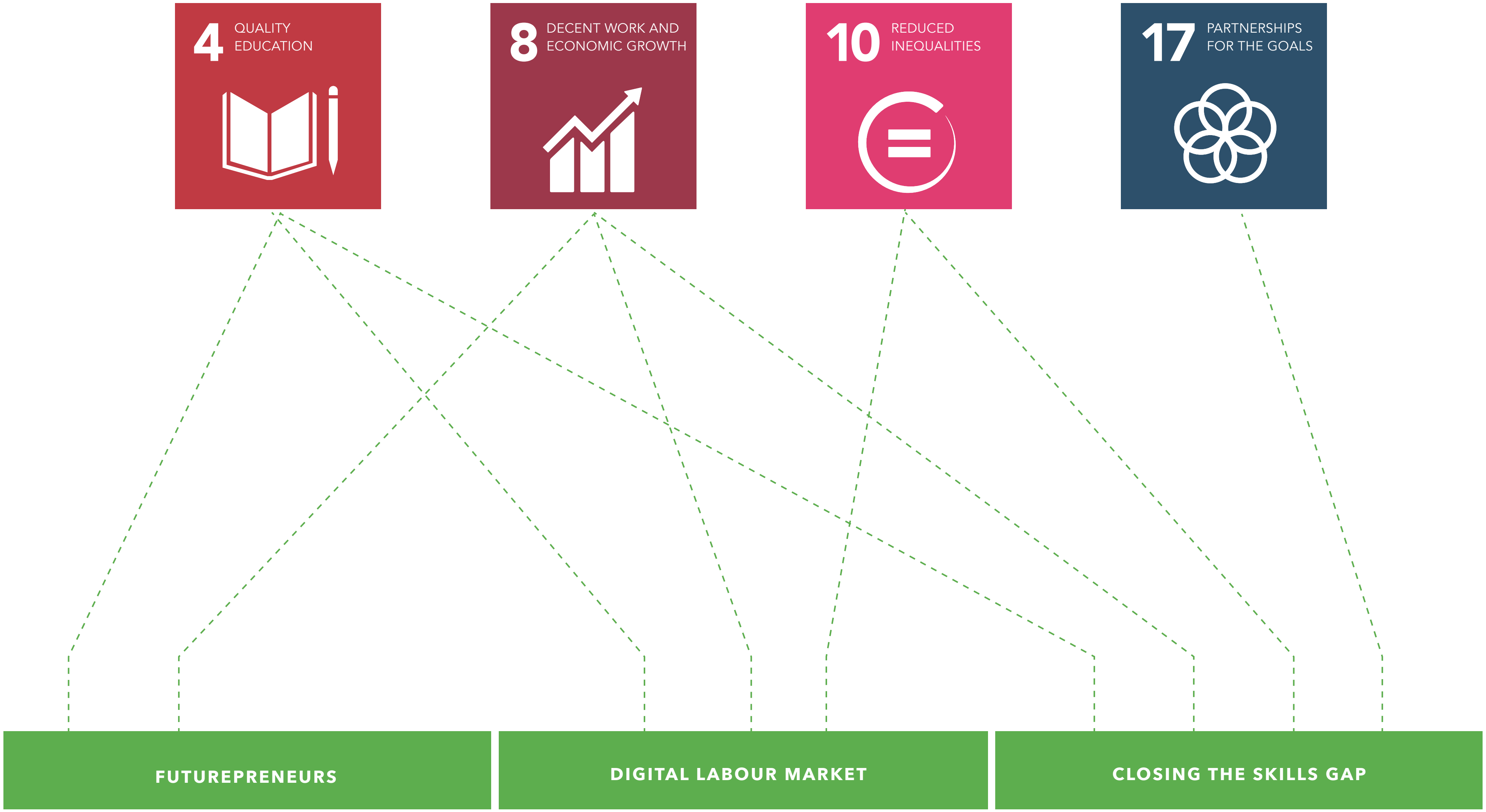
CONNECT

Opportunity and talent are not evenly distributed. **Digital labour market** can bring jobs to marginalised youths in remote corners of the world.

EDUCATE

The fast-changing market has resulted in a gap between the demand and supply of skills. Education for this changing labour market needs to be flexible, giving youth the ability to learn skills in general or learn how to learn more when needed. It is **closing the skills gap.**

The opportunities for getting youth into work all contribute to SDGs 4 and 8. Ensuring education and promoting lifelong learning for all is a core part of all the opportunities, as is getting full and productive employment and decent work for all. Furthermore, the opportunity of the "Digital Labour Market" and "Closing the Skills Gap" also contribute to SDG 10 by reducing inequality within and among countries, by ensuring a more open labour market, and by providing youth the right skills to be job-ready. "Closing the Skills Gap" requires collaboration between the business and governmental sectors to ensure that the demand for skills is met through up- and reskilling.



FUTUREPRENEURS

Jobs need to grow from bottom-up with the youths themselves in the driver's seat. Making it possible for young people to be futurepreneurs will enable them to create their own jobs.

Youths everywhere are queuing up in unemployment lines. Jobs-for-life are part of history and big companies increasingly use freelance workers and include robots on the staff list. It is time to tackle the youth unemployment crisis in the spirit of opportunities for youth to design their own work. Avenues for fostering young entrepreneurs are potentially through incubators in established companies as well as through support from innovative funding mechanisms.

INCUBATORS INSIDE BUSINESSES

Entrepreneurs are leading job-creation globally. Conventional thinking sees entrepreneurship as an alternative path to incorporate into the conventional corporate world. Bringing the two worlds together is an opportunity to create jobs, new organisations and new ideas.

Companies are uniquely positioned to support young entrepreneurs. For businesses that must devote most energy to day-to-day operations and quarterly earnings, internal incubators offer insights into new emerging ideas.

The current pace of change constantly threatens established businesses; incubators are becoming more and more important to create growth opportunities. Having an internal incubator is like an insurance policy - if the market moves, the companies are ready to change directions or grow new business quickly. Incubators inside large companies for youth to sow and grow ideas in a structured environment offer an alternative tool for fostering entrepreneurship from publically funded incubator initiatives.

Participation in a corporate incubator enables young entrepreneurs to leverage the parent company's resources to scale their business. In rural areas, agribusiness incubators are showing promising potential for job creation for youth.

OPPORTUNITY FOR INVESTORS

Without an established credit history, assets, and business experience required by traditional investment models, young entrepreneurs face challenges securing the necessary funding to accomplish their goals. Particular investment funds are offering triple-bottom-line investment opportunities that generate financial, social, and environmental returns for young entrepreneurs.

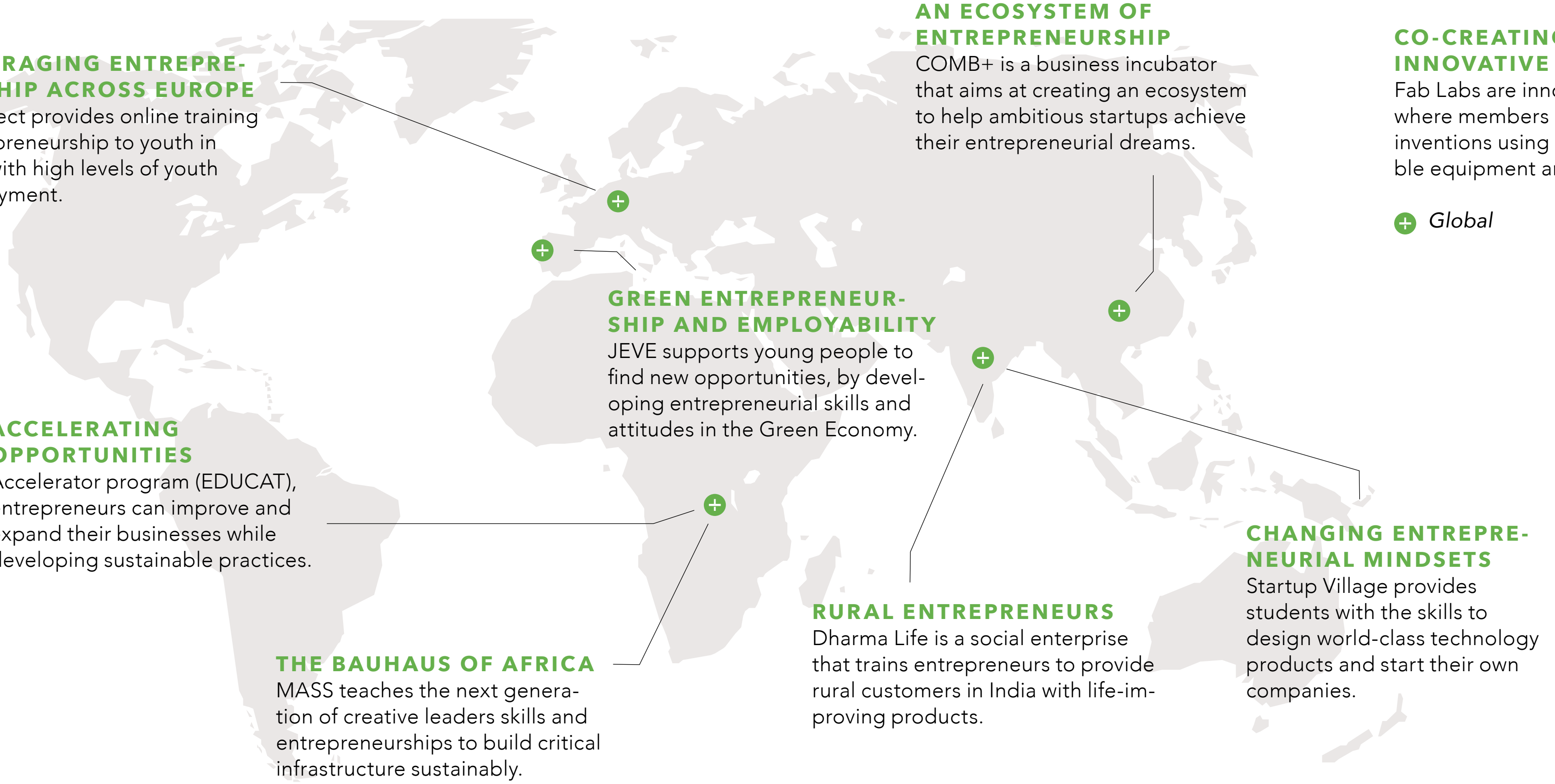
Investing in young entrepreneurs is also an opportunity for investors who are becoming increasingly unsatisfied with their current investment portfolio. Innovative finance mechanisms, such as inter-generational social futurepreneurial funds, are also an avenue for fostering more young entrepreneurs. These may be community-based with local competitions for the best start-up ideas winning access to finance.

Community projects like construction of roads and bridges, industrial parks, commercial buildings, and sewer and water projects can create jobs, but studies show that incubators have been more successful in terms of the number of jobs created. Whether these jobs are of a higher quality is, however, more difficult to say. Incubators allow companies to follow new ideas at close hand while planting the seeds for the next generation of futurepreneurs to grow.

Futurepreneurship empowers youth to take charge of their employment situation, and with the support of more experienced entrepreneurs youths are not on a lonely ride. This opportunity addresses the rising trend of jobless growth by supporting youth in bringing their creative ideas and dreams to life.

AN EMERGING SOLUTION SPACE TO MAKE MORE YOUTH THEIR OWN BOSSES

Please click on the solutions to learn more



ENCOURAGING ENTREPRENEURSHIP ACROSS EUROPE
YEU project provides online training on entrepreneurship to youth in Europe with high levels of youth unemployment.

AN ECOSYSTEM OF ENTREPRENEURSHIP
COMB+ is a business incubator that aims at creating an ecosystem to help ambitious startups achieve their entrepreneurial dreams.

CO-CREATING INNOVATIVE SOLUTIONS
Fab Labs are innovation hubs where members create and test inventions using openly available equipment and software.

Global

GREEN ENTREPRENEURSHIP AND EMPLOYABILITY
JEVE supports young people to find new opportunities, by developing entrepreneurial skills and attitudes in the Green Economy.

ACCELERATING OPPORTUNITIES
Accelerator program (EDUCAT), entrepreneurs can improve and expand their businesses while developing sustainable practices.

CHANGING ENTREPRENEURIAL MINDSETS
Startup Village provides students with the skills to design world-class technology products and start their own companies.

RURAL ENTREPRENEURS
Dharma Life is a social enterprise that trains entrepreneurs to provide rural customers in India with life-improving products.

THE BAUHAUS OF AFRICA
MASS teaches the next generation of creative leaders skills and entrepreneurships to build critical infrastructure sustainably.

300%

for every USD spend on youth entrepreneurship programme, 3 USD is generated in tax take alone.

1:10

Every dollar made available for young entrepreneurs is multiplied 10 times in the turnover of the business they support.

47%

of entrepreneurs expect increase workforce next year.

Sources: YBI. 'Youth entrepreneurship - beyond collateral'. Report. 2010 – EY. 'EY Global Job Creation and Youth Entrepreneurship Survey 2015'. Report. 2015.

ONE OF THE TOP OPPORTUNITIES FOR BUSINESS TO PURSUE

The public sector is enthusiastic about the prospect of young people accessing jobs by means of entrepreneurship. Governments and the finance sectors are particularly supportive of this opportunity indicating potentials for collaborative action.

GEOGRAPHICAL DIFFERENCES

It is the most favoured opportunity in South East Asia and Australia, whereas in the other regions this opportunity receives a more moderate rating in terms of its benefits to society. While being one of the most favoured opportunities for the medium HDI countries, it is the least favoured opportunity for the Very High HDI countries.

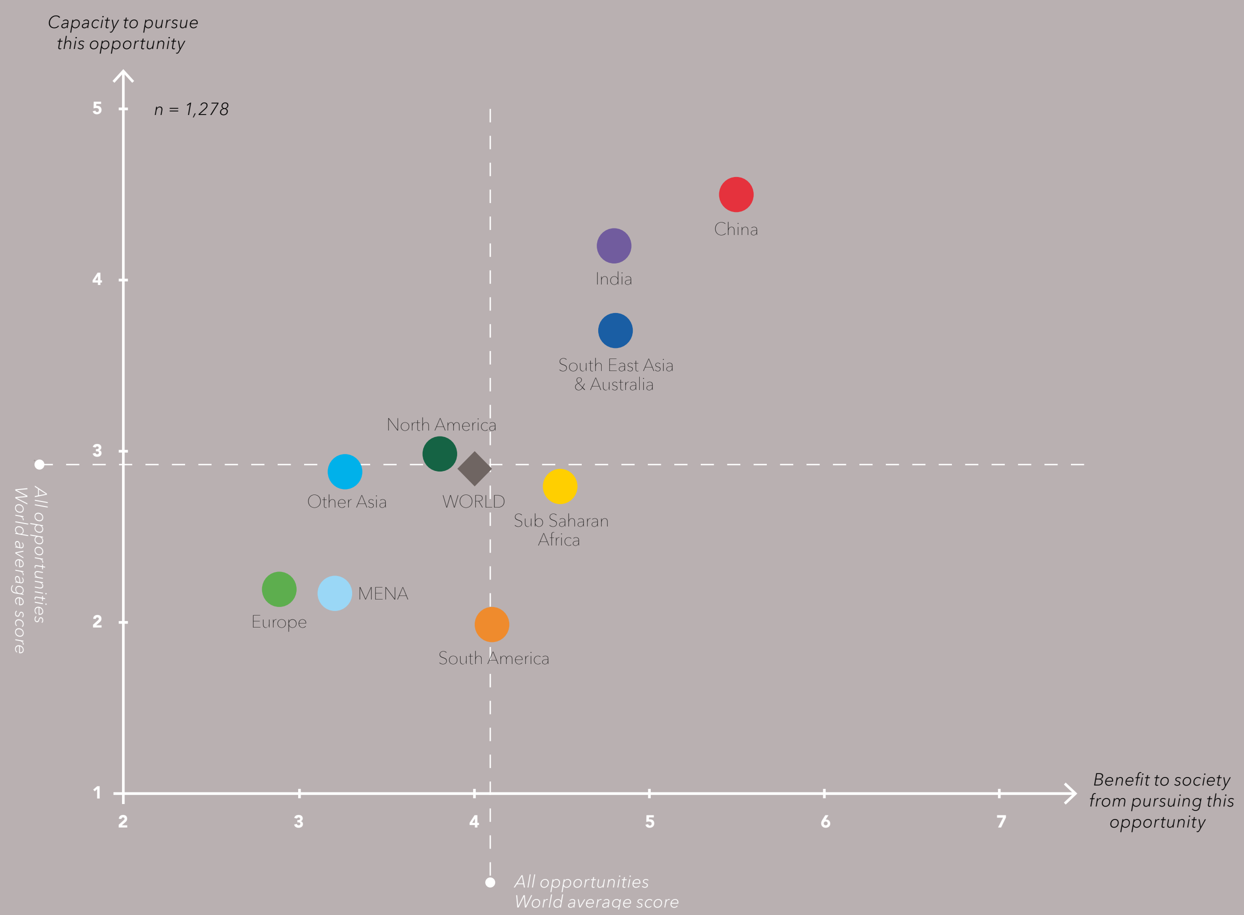
A BUSINESS FAVOURITE

All business sectors are, on average, more likely to pursue this opportunity than all the others. For most of the business sectors, futurepreneurship is seen to have significant effect. The financial and governmental sectors support this opportunity more relative to all other opportunities. It points to a good foundation upon which to build partnership between these two sectors to get young people into work though the road of entrepreneurship.

Except for the South American region, this opportunity is perceived to have the support of politicians – and relatively stronger support than all the other opportunities tend to have. However, "Futurepreneurs" have been assessed as the least favourable of the three opportunities to address this risk.

BENEFITS AND CAPACITY

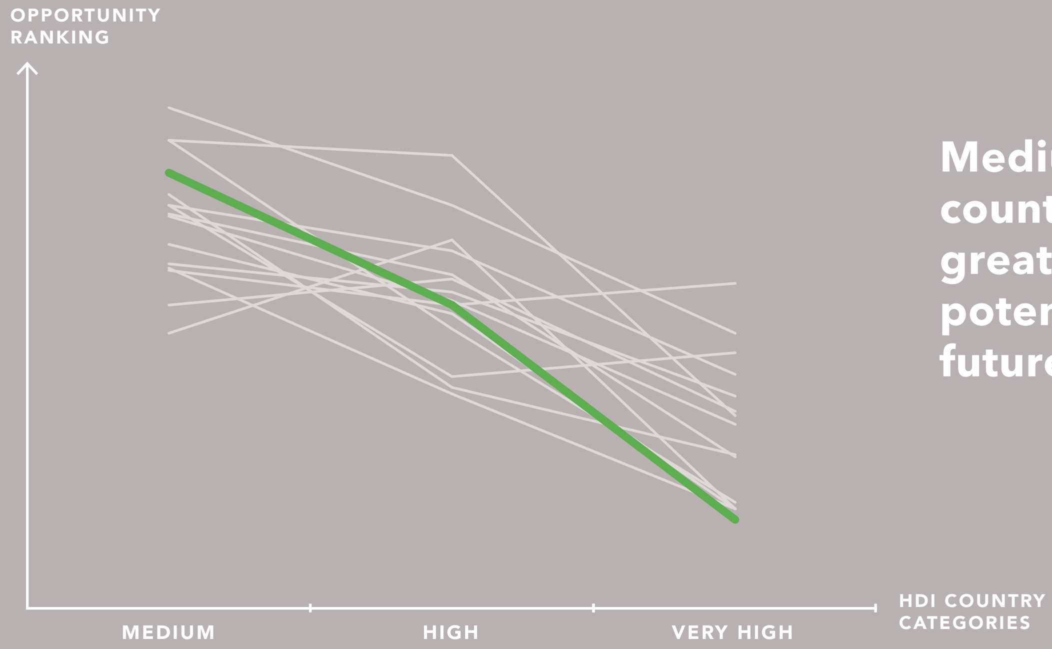
Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.



NUMBER 11 ON THE OPPORTUNITY RANKING

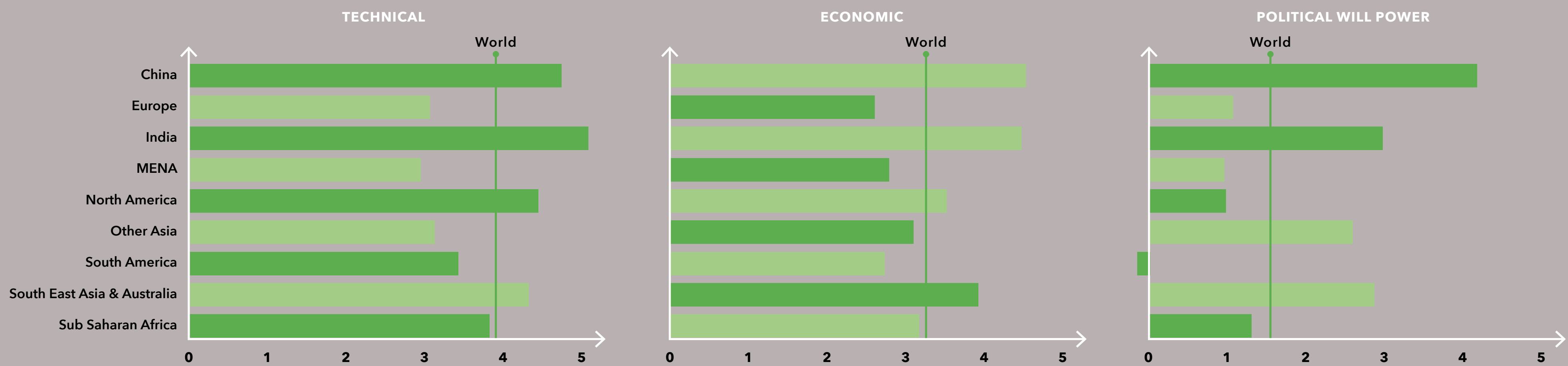
1	SMART FARMING
2	THE DIGITAL LABOUR MARKET
3	CLOSING THE SKILLS GAP
4	REDUCE FOOD WASTE
5	PRECISION TREATMENT
6	ANTIBIOTIC-FREE FOOD
7	REGENERATIVE OCEAN ECONOMY
8	NEW BUSINESS MODEL FOR ANTIBIOTICS
9	FLEXIBLE MOBILITY
10	NEW DIETS
11	FUTUREPRENEURS
12	CROWD TRANSPORT
13	CLOSING THE LOOP
14	SMART OCEAN
15	LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY



Medium HDI countries see greatest potential in futurepreneurs

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS



THE DIGITAL LABOUR MARKET

Opportunities for employment are not evenly distributed, but digital platforms can connect talent with jobs. They open a whole new perspective to be able to create work for unemployed youth through access to the internet.

Connecting talent with jobs can be one of the most profitable undertakings for both the employer, the employee and society. Unfortunately, neither talent nor opportunities for employment are distributed evenly or even in a predictable manner. It can be difficult to find the right match between an open position and a jobseeker.

Digital platforms can aid in connecting talent with jobs across geographic and sectorial borders. For the millions of unemployed youths globally, it opens a whole new perspective for seeking and landing jobs. By creating better matches or simply making matches possible, digital platforms can actually cause more positions to get filled. Estimates say that digital talent platforms can increase employment by 72 million full-time-equivalent positions today, and up to 540 million individuals could benefit from online talent platforms by 2025.

IMPACT SOURCING

Matchmaking of business and talent through online talent platforms is just one aspect of a digital labour market. Another avenue is the rising business practice of impact sourcing - bringing jobs to otherwise disadvantaged youth. Offshoring is not a new phenomenon, neither is global talent hunting, but a new way of doing it is emerging where companies hire and train unemployed youth in, for example, Africa to become highly skilled potential remote employees. Companies are starting to seek to create jobs with social impact through intentionally employing people with limited opportunities, often in low-income areas.

Part of impact sourcing is up-skilling. It is a triple-win opportunity where the human capital of a country is strengthened, where business gets a job done and where youth is offered a way out of poverty. A new form of impact sourcing is emerging where recruitment companies engage in significant upskilling of disadvantaged youth whom they then connect with potential employers on the outlook for those particular skills. This approach turns the risk of a wasted generation in Africa into an opportunity to upskill unemployed youth while helping to develop a global talent pipeline for businesses.

IT FARM JOBS

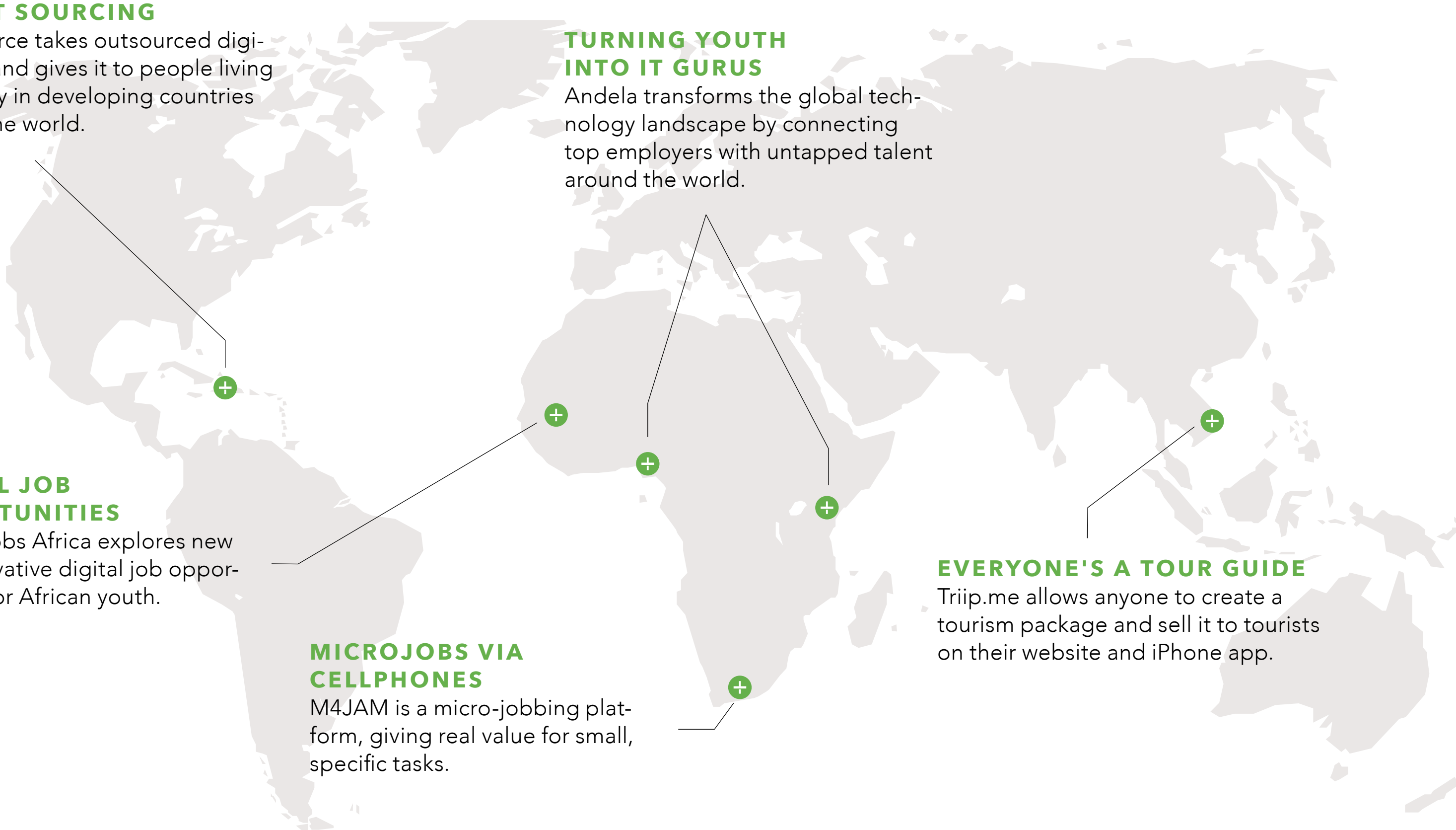
Micro work is yet another avenue for youth to enter the labour market aided by digital tools. Platforms are emerging which break down projects into small tasks to be solved by youths on a smart phone or a computer in exchange for money. Micro work can supplement income for youth in informal employment or agriculture and can lead to new skills and new job opportunities.

Most job opportunities generated by impact sourcing are targeted to urban youth. However, the right infrastructure and training can unleash a huge opportunity for job creation and growth by digitising the rural youth. IT-trained rural populations (even a modest 10 percent) would be a resource, as this skilled labour along with other qualifications can be integrated quickly into newer types of job opportunities, which are opening up, including call centres, backend accounting and legal services. Bringing digital jobs to rural areas can help diversify the economy of agricultural communities and offer youth opportunities close to the family rather than having to migrate to urban areas or aboard in search for employment.

Finally, youth are creating their own digital jobs by building personal brands on digital social platforms. Here a large number of followers or likes can translate into a paycheck and a stronger position from which to negotiate contracts with companies. It is a path to a digital job.

DIFFERENT DIGITAL AVENUES TO A JOB

Please click on the solutions to learn more



IMPACT SOURCING
Samasource takes outsourced digital work and gives it to people living in poverty in developing countries around the world.

DIGITAL JOB OPPORTUNITIES
Digital Jobs Africa explores new and innovative digital job opportunities for African youth.

MICROJOBS VIA CELLPHONES
M4JAM is a micro-jobbing platform, giving real value for small, specific tasks.

TURNING YOUTH INTO IT GURUS
Andela transforms the global technology landscape by connecting top employers with untapped talent around the world.

EVERYONE'S A TOUR GUIDE
Triip.me allows anyone to create a tourism package and sell it to tourists on their website and iPhone app.

CONNECTING THE WORLD
BlueTown's Technology provides low-cost access to the internet in rural areas, enabling youth to access the digital labour market.

+ *Developing countries*

TURNING ANYONE INTO A WEB DEVELOPER
In 3-6 months, General Assembly's Bootcamps promise to make participants highly employable in a lucrative and fast-growing tech industry.

+ *Global*

PHOTO SHOP
500px is a photo community and marketplace for discovering, sharing, buying, and selling inspiring photography.

+ *Global*

83%

of employers in US & Canada says there is a shortage of software developers.

$2.7T

value added by online talent platforms by 2025.

$200B

revenue for the outsourcing industry is expected by 2016.

Sources: Mustafa, E. 'Shortage of Software Developers: How to Protect Yourself'. July 2015. Online: www.procurementleaders.com/ - McKinsey. 'Connecting talent with opportunity in the digital age'. June 2015. Online: www.mckinsey.com - Kennedy, R. et al. 'Impact Sourcing – Assessing the Opportunity for Building a Thriving Industry'. Report. 2013.

TOP OPPORTUNITY IN OTHER ASIA AND SOUTH AMERICA

This year's second on the opportunity ranking is to use digital technology as a road to job creation for youth. The digital labour market has been assessed by respondents of the global survey to be the best opportunity to address the risk of a wasted generation to unemployment.

A FAVOURITE

The high rating of this opportunity and the opportunity to close the skills gap sends a strong message that opportunities to address the risk of a wasted generation will have great societal benefits.

In the South America and Other Asia regions, this is the most favoured opportunity of them all. In South America, the opportunity could be even greater if the perceived capacity to pursue it was higher. The opportunity is the second runner up in South East Asia & Australia.

BUSINESS WILL ACT

Affected businesses are the most likely to support this opportunity, which can be explained by the fact that it can secure global access to talents. It is the highest rated opportunity among young respondents whereas the older segments of the population are not so enthusiastic. It is the highest ranked opportunity for men below the age of 30 and it is also one of the most favoured opportunities for women.

Across all business sectors represented in the survey, this is the opportunity they are most likely to pursue of all the opportunities in this year's report. It is also the opportunity that the service and manufacturing sectors are most likely to pursue. All business sectors have also assessed it to be affecting their business area.

For countries in the high HDI category it is the most preferred opportunity with respect to societal benefits and it is among the favorites for the medium HDI countries as well.

BENEFITS AND CAPACITY

Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.

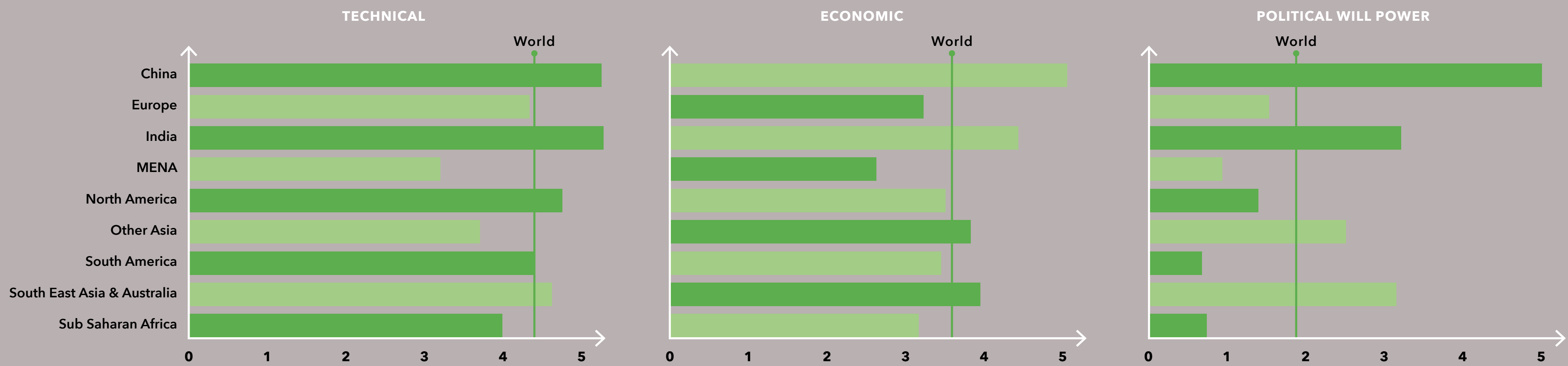
NUMBER 2 ON THE OPPORTUNITY RANKING

1 SMART FARMING
2 THE DIGITAL LABOUR MARKET
3 CLOSING THE SKILLS GAP
4 REDUCE FOOD WASTE
5 PRECISION TREATMENT
6 ANTIBIOTIC-FREE FOOD
7 REGENERATIVE OCEAN ECONOMY
8 NEW BUSINESS MODEL FOR ANTIBIOTICS
9 FLEXIBLE MOBILITY
10 NEW DIETS
11 FUTUREPRENEURS
12 CROWD TRANSPORT
13 CLOSING THE LOOP
14 SMART OCEAN
15 LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY

A favourite in South America and Other Asia

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS



CLOSING THE SKILLS GAP

The mismatch of the supply and demand of skills is like a puzzle that won't fit. Repairing this puzzle is an opportunity to tap into a resource for the future: youth.

The mismatch between supply and demand of skills will increase according to projections. At a global level, projections show that by 2020 the global economy will run short of 40 million workers with a tertiary education and 45 million workers with a secondary education in developing economies, while there will be 95 million more low-skilled workers than needed. If just a fraction of the demand could be met by updating the skills of a fraction of the low skilled workers, it would have a tremendous effect on the economy and on the lives of the people concerned for the rest of their lives.

A FLEXIBLE MINDSET

Globally we are locked into a mindset of perceiving tertiary education as better than hands-on professions. However, taking a more flexible attitude towards education can help bridge the skills gap. Education for a changing labour market needs to be flexible, giving youth the ability to learn skills in general or learn how to learn more when needed. Practical tools and challenges can update skills with great benefits for business, society, and youth. To create a more adjustable education system, we need to foster closer relations between employers, education providers, and youth to close the skills gap. This will both help youths to make educational choices informed by labour market demands and support efforts to upskill and adjust competencies to meet the ever-changing demands of the labour market.

BUSINESS - A KEY PLAYER

Businesses are uniquely positioned to provide youth with the employable skills needed to enter the labour market. Governments can incentivise business to offer apprenticeships and on-the-job training by re-thinking unemployment benefits, so businesses are compensated when they offer 'job training' to unemployed youth. It is a way for business to test potential future employees and develop a skills pipeline. Vocational training options in the informal sector are, in some parts of the world, an avenue to learn practical skills, which in turn will increase employability.

The development of e-learning programs by business is also a true game changer. The right content using easily accessible e-learning technology can be a driver to upskill and reskill youth worldwide. Business can tap into an e-learning market growing rapidly within an increasingly connected world. It requires a collaborative approach to education, vocational training, on the job competence building, and skills development in formal institutions (universities and schools) and jobs.

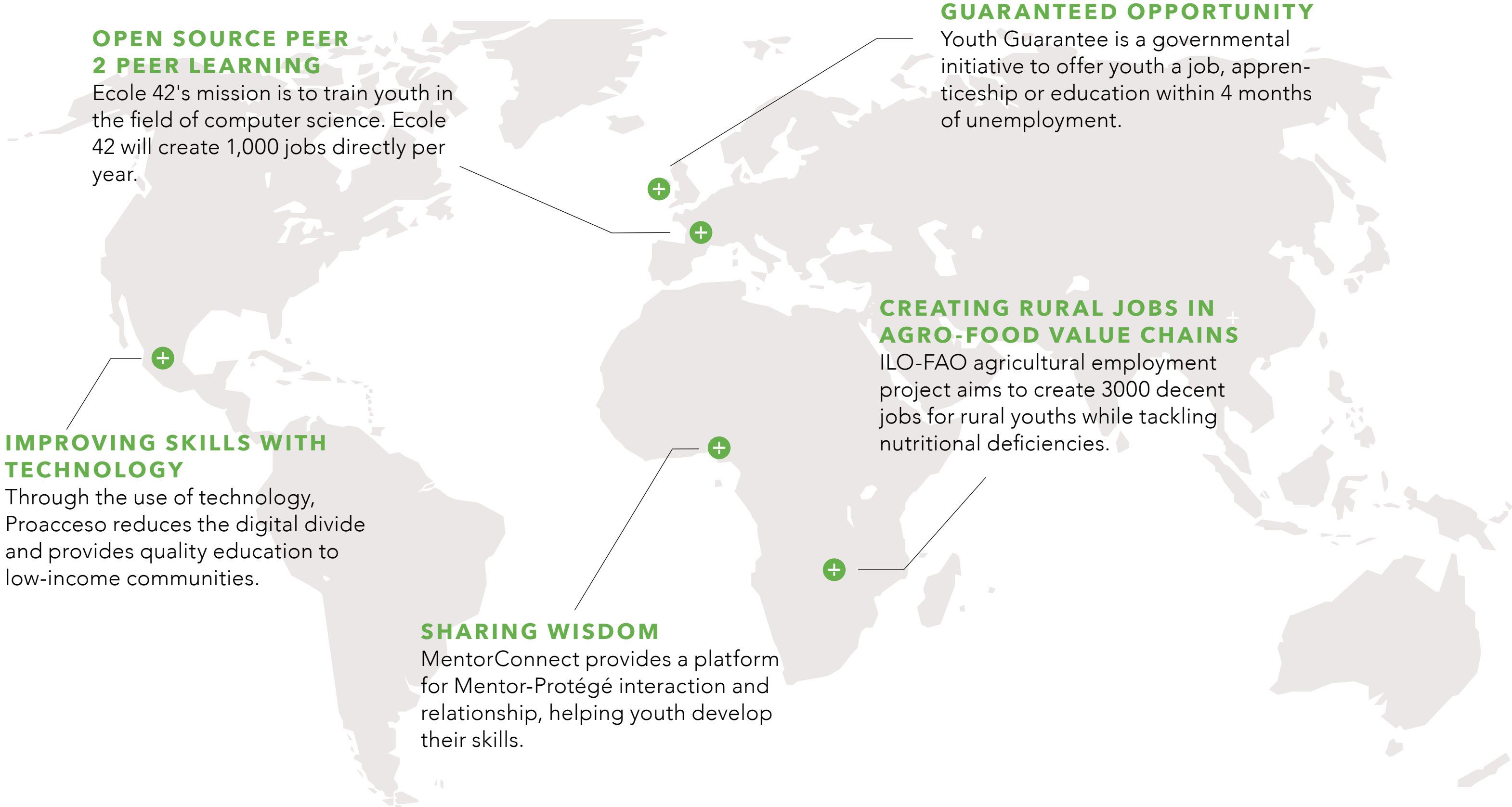
MATCHING SKILLS DEMAND AND SUPPLY

Enhancing the links between business and formal education can enrich the business ecosystem and help more ideas blossom, launch more job-creating start-ups, and help more companies find skilled labour and innovations. Businesses are redesigning work at such high speed that educational institutions are finding it difficult to adapt accordingly. This opens an opportunity for those who can facilitate closer collaboration between business and educational institutions on how to manage on-going adaptation of curricula in response to the shifting competences demanded by businesses. Developing five-year skills forecasts at the level of businesses will help guide both educational institutions and youth in the shifting skills demands on the labour market.

An avenue for many youths to the labour market goes via upskilling, reskilling or adjustment of competencies through apprenticeships, e-learning or vocational training to the benefit of business and youth. The opportunity addresses the broken school-to-work pipeline by business helping to cultivate the next generation of workers through more collaboration between education and business. Bringing business closer into discussions about education has the potential to ensure a more precise match between skills supply and demand.

MARKET BASED EDUCATION TOOLS TO MAKE SKILLS MATCH DEMAND

Please click on the solutions to learn more



OPEN SOURCE PEER 2 PEER LEARNING

Ecole 42's mission is to train youth in the field of computer science. Ecole 42 will create 1,000 jobs directly per year.

GUARANTEED OPPORTUNITY

Youth Guarantee is a governmental initiative to offer youth a job, apprenticeship or education within 4 months of unemployment.

IMPROVING YOUTH EMPLOYABILITY

Via IMPACT, youth become community leaders by solving community problems while learning life and professional skills in the process.

Global

CREATING RURAL JOBS IN AGRO-FOOD VALUE CHAINS

ILO-FAO agricultural employment project aims to create 3000 decent jobs for rural youths while tackling nutritional deficiencies.

DIGITAL TUTORING

By helping youths complete education, the Red Cross's digital tutoring increases employability.

Global

IMPROVING SKILLS WITH TECHNOLOGY

Through the use of technology, Proacceso reduces the digital divide and provides quality education to low-income communities.

SHARING WISDOM

MentorConnect provides a platform for Mentor-Protégé interaction and relationship, helping youth develop their skills.

TRAINING FOR JOB OPPORTUNITIES

Through paid, course-related traineeships in over 80 countries, IAESTE helps students get a competitive edge in the global market.

Global

61%

undereducated in Sub Saharan Africa.

21%

overeducated in Latin America and Caribbean.

1.6TIMES

higher unemployment among poorly educated.

Sources: ILO. 'Global Employment Trends for Youth 2015'. Report. 2015 - Vogel, P. 'Generation Jobless?'. Palgrave Macmillan. 2015.

PREFERRED OPPORTUNITY IN EUROPE

Among all opportunities, "Closing the Skills Gap" comes in third on the overall opportunity ranking. It is one of this year's absolute favourites and, together with the digital labour market, it sends a strong signal that opportunities to address the risk of a wasted generation to unemployment are seen to hold great benefits for society.

SKILLS - KEY TO YOUTH EMPLOYMENT

In Europe "Closing the Skills Gap" it is the top opportunity and in North America it is the runner up of all opportunities. The regions of South America and MENA have the lowest levels of belief in this opportunity (see figure on benefits and capacity). For the MENA region capacity to pursue this opportunity is rated strikingly low, even though, respondents in the region see societal benefits stemming from the opportunity. There is agreement across all regions that we do have the technology at hand to make this opportunity real – except for the MENA region.

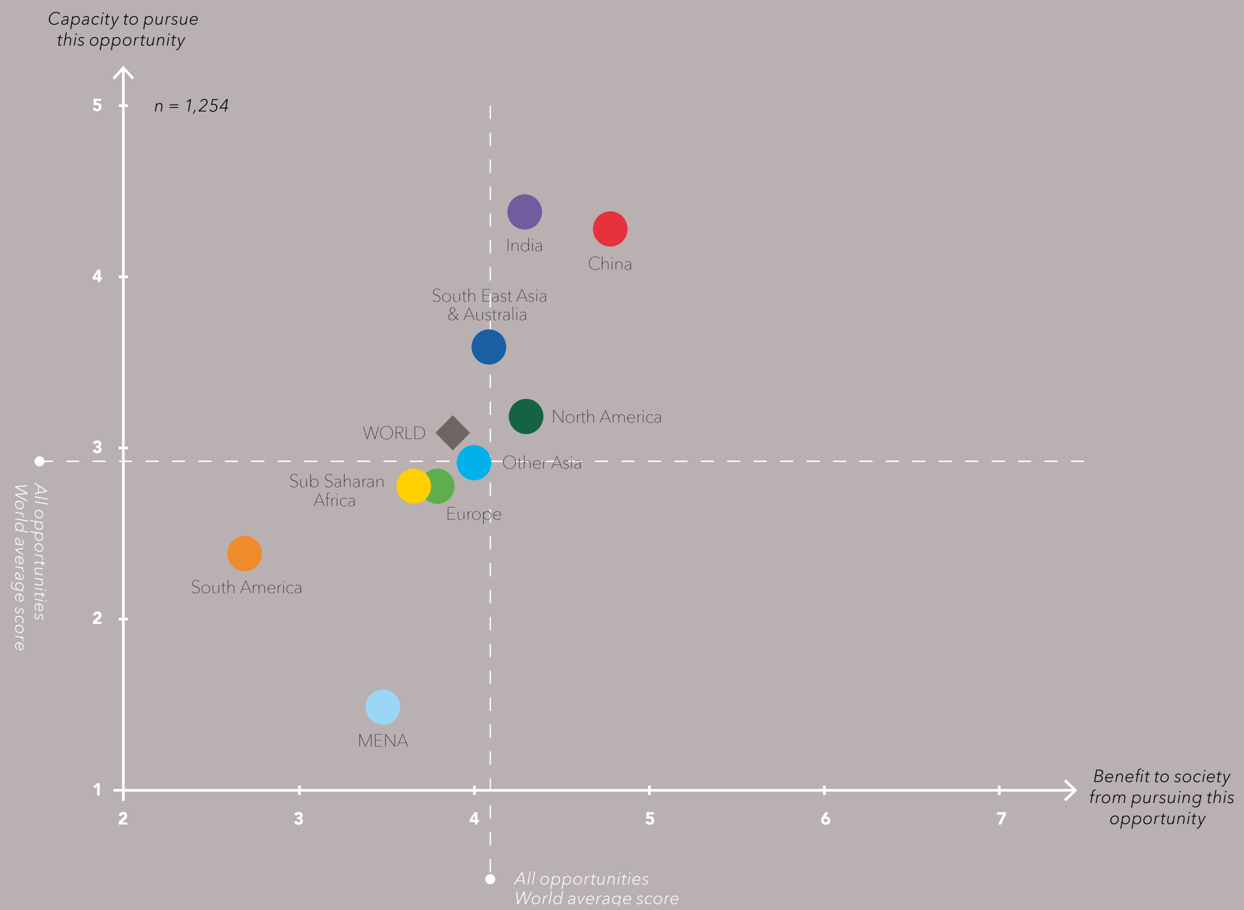
For very high HDI countries it is the most preferred opportunity out of all opportunities and also in the top range when assessed by respondents aged above thirty years.

BUSINESS EYE NEW OPENINGS

Both manufacturing, service and the other business sectors have assessed this opportunity to be the one that will affect their business the most of all opportunities. "Closing the Skills Gap" is also ranked high by the financial and governmental sector. The financial sector and other business sector have perceived this opportunity to be the one they will most likely pursue new business opportunities within, and the other business sectors also have this opportunity among the top rated for new business. It is the opportunity which is perceived by business to hold the greatest new market potentials of them all.

BENEFITS AND CAPACITY

Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.



NUMBER 3 ON THE OPPORTUNITY RANKING

1 SMART FARMING
2 THE DIGITAL LABOUR MARKET
3 **CLOSING THE SKILLS GAP**
4 REDUCE FOOD WASTE
5 PRECISION TREATMENT
6 ANTIBIOTIC-FREE FOOD
7 REGENERATIVE OCEAN ECONOMY
8 NEW BUSINESS MODEL FOR ANTIBIOTICS
9 FLEXIBLE MOBILITY
10 NEW DIETS
11 FUTUREPRENEURS
12 CROWD TRANSPORT
13 CLOSING THE LOOP
14 SMART OCEAN
15 LOW TRANSPORT CITIES

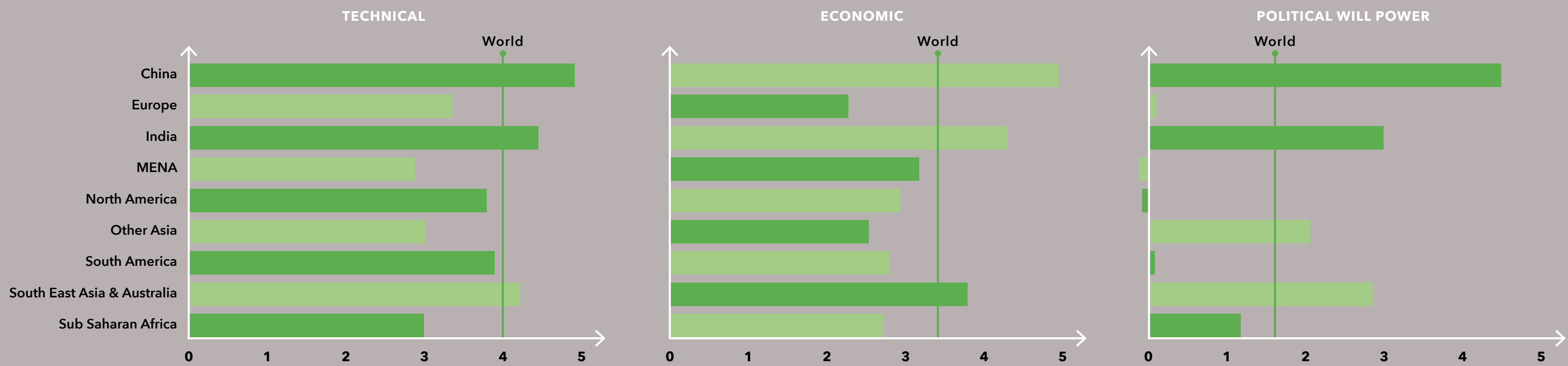
CHARACTERISTICS OF OPPORTUNITY

EUROPE

1ST

Top rated opportunity in Europe

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS



GLOBAL FOOD CRISIS

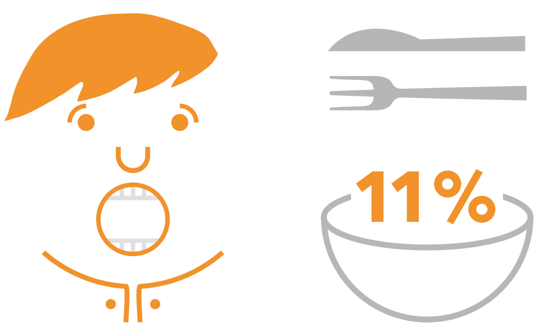
The global food system is disfunctional. People goes to bed hungry in some countries while others consume too many calories and throw away massive amounts of food. Opportunities to fix the broken food system are urgently needed

GLOBAL FOOD CRISIS

There is enough food for everyone on the planet, but 795 million people still go to bed hungry every night. 30 to 50 percent of all food produced never gets eaten. In 2050, the world will have to feed an estimated nine billion people, in a warmer world with lower yields.

Food is the fuel for life, allowing people to live in good health and with dignity. Food security is a prerequisite for building the next generation of human capital in any country, and the right to adequate food is an internationally recognized human right. But, for many, it remains a right only on paper. Even in a world of decreasing poverty, food insecurity persists. In 2014, more than 11 percent of people globally were food insecure.

IN 2014, MORE THAN 11 PERCENT GLOBALLY WERE FOOD INSECURE.



Source: FAO. 'The State of Food Insecurity in the World'. Report. 2014

Today, food insecurity is a problem of access rather than a question of production volumes. Soon, even with perfect global distribution in place, food supplies would not be sufficient to feed the world's growing population. There is a need to find food for the equivalent of another India and another China in the next 50 years. And it cannot be found simply by increasing productivity. The world is approaching a food gap.

In low HDI countries, up to 40 percent of the available food is lost on farm or during handling and storage. As countries move up the HDI scale, the percentage of food wasted in production and storage declines, but the percentage wasted during consumption increases. In high HDI countries, up to 60 percent food is wasted in restaurants and homes.

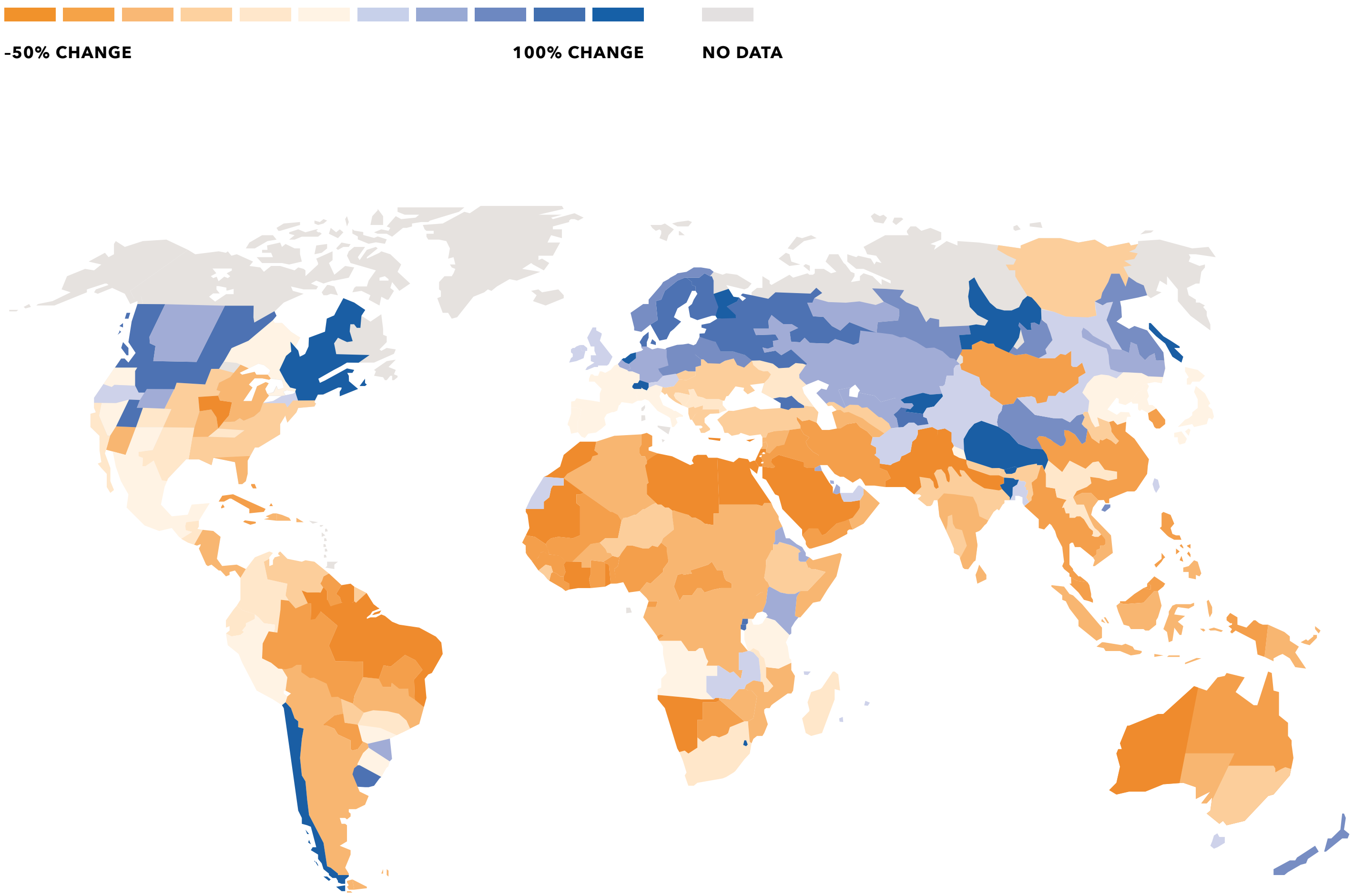
An enormous amount of calories are used as animal feed to satisfy demand for protein-rich diets. The growth of the global middle class will accelerate this trend, with three billion people estimated to enter the global middle class by 2030. Meat consumption is projected to double from 2014 to 2040. More meat means more greenhouse gas emissions from agriculture, which could triple by 2055, if current dietary trends and population growth continue. Crop yields are already reduced in some parts of the world due to climate change. Elevated ozone levels have caused losses of about 10 percent for wheat and soybeans. Global warming of more than 3 degrees will exceed the agriculture's adaptive capacity.

Today's food systems are global in nature but governed by numerous regional and bilateral trade agreements. The World Trade Organization is the grand idea of one unified trade regime levelling the playing field for all actors in global trade. But the world of trade is fragmenting rather than unifying. While annual WTO conferences continue, a myriad of bilateral and regional trade agreements is forming.

Fragmentation is to the detriment of food insecure countries, as weaker countries have less leverage in bilateral negotiations. UN agencies such as the World Food Programme (WFP) and Food and Agriculture Organization of the United Nations (FAO) work to promote food security, but they bring with them a silo approach to the systemic problem of food insecurity.

AGRICULTURE YIELDS IN SUB-SAHARAN AFRICA AND SOUTH ASIA ARE HIT THE HARDEST BY CLIMATE CHANGE

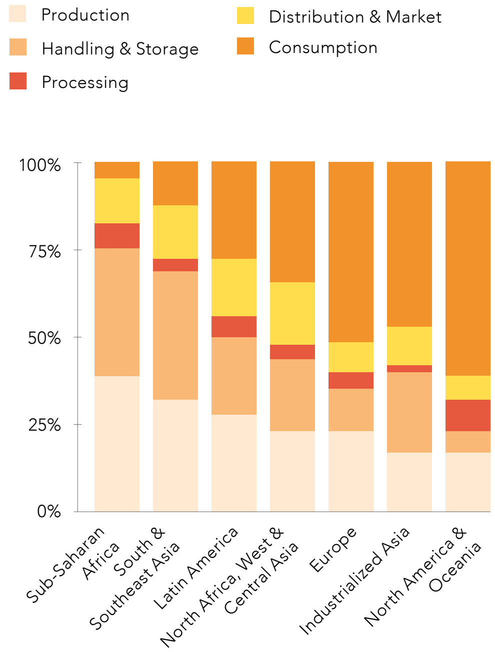
Estimated impact of +3 degrees celsius change on crop yields by 2050.



Sources: World Map (above) – Searchinger, T. et al. 2013.World Resources Institute. "The Great Balancing Act." Working. Paper, Installment 1 of Creating a Sustainable Food Future. (http://www.worldresourcesreport.org. World Bank. 'World Development Report 2010'. Report. 2010. Chart (upper right) – FAO. 'Food wastage foodprint'. Summary report. 2013. Chart (lower left) – World Resources Institute.'World Resources Report - Creating a Sustainable Food Future'. Report. 2013

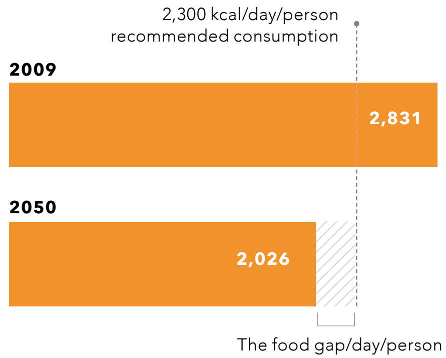
GREAT DIFFERENCE IN WHERE FOOD IS WASTED IN THE SUPPLY CHAIN

Share of total food that is lost or wasted in percent of Kcal.



THE FOOD GAP

Even if all food produced in 2009 was distributed to all people in 2050, the world would need 974 more calories per person per day. Food available for human consumption in kcal/day/person.



SUSTAINABLE FOOD SYSTEMS

Hunger and massive food loss are current defining characteristics of the global food system. Opportunities to change the way we produce, distribute and use food are already with us and most are well tested options for change. Technology is a driver in all the opportunities to innovate diets, to make farming smart and to make food last longer.

EAT

A global dietary transition that includes putting more local produce and a varied source of proteins on our plates is an opportunity to put people, planet and our common prosperity on a healthy track. It is **new diets** for the world.

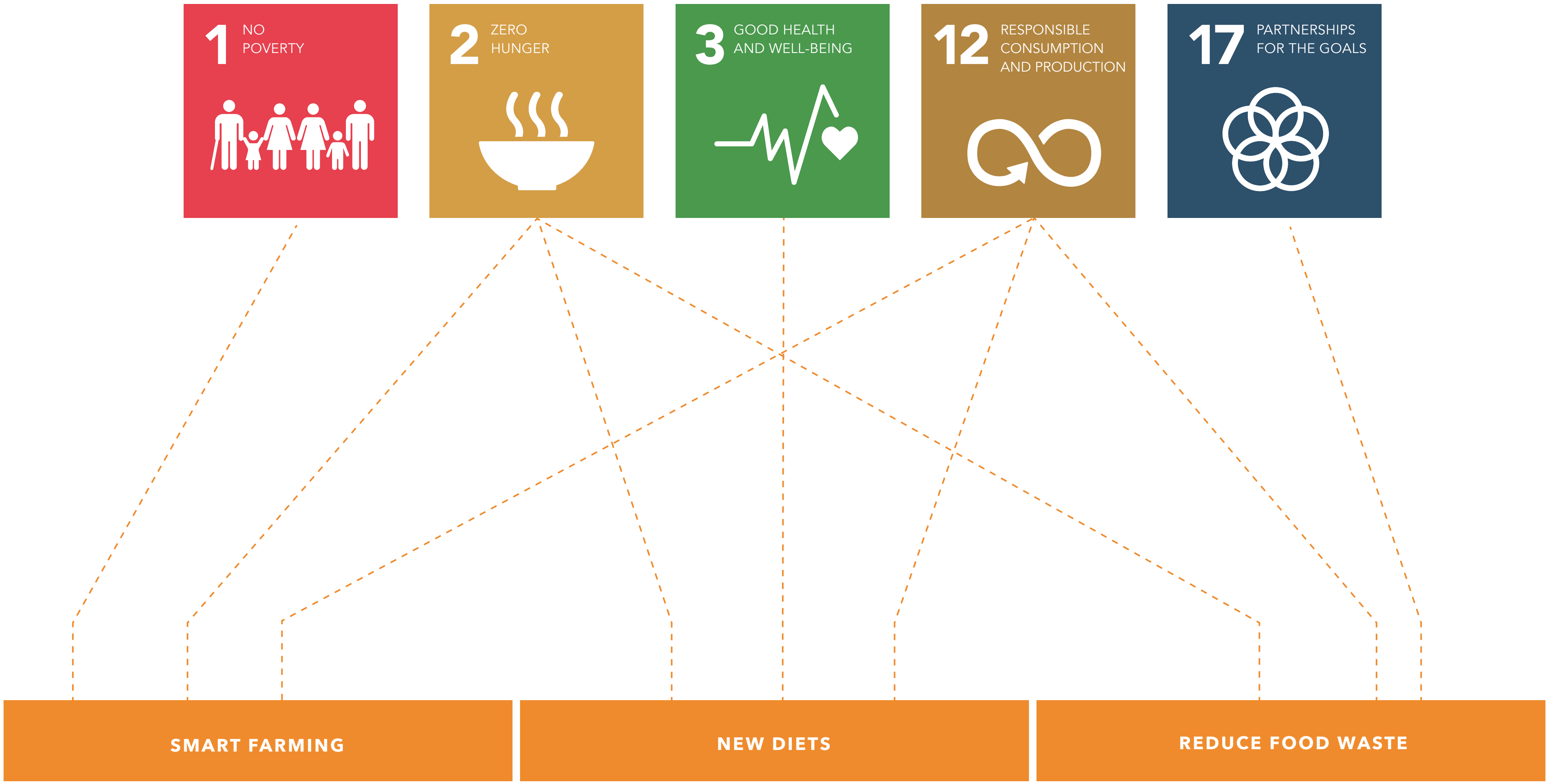
TARGET

Vast dissemination of advanced technological tools at an affordable price has meant that both large and small-scale farmers have new and more precise tools to produce more with less. It is **smart farming** to produce more with less.

EXTEND

From our farms to grocery stores to dinner tables, much of the food we grow is never eaten. **Reducing food waste** is an opportunity to innovate along the value chain.

All three food-related opportunities contribute to SDG 2 by addressing the risk they are shaped by; they all support ending hunger, achieving food security, and improving nutrition. All three opportunities encourage sustainable consumption and production patterns, the core of SDG 12. Furthermore, "New Diets" also contributes to achieving SDG 3, along with preventing non-communicable diseases, and "Smart Farming" contributes to SDG 1 by supporting more resilient agriculture through the use of new technologies. For "Reduce Food Waste" to prosper, it is necessary to cocreate broad partnerships across various sectors, hence this opportunity supports SDG 17.



NEW DIETS

A new global diet is an opportunity to innovate. It is about bringing ancient protein rich plants back to our plates and in our fields – and to eat locally produced food.

Diets are closely linked with environmental and human health. Large parts of the world population eat a diet rich in unhealthy refined fats, refined sugars and meat - and it is taking its toll. People are getting heavier and loose years of healthy and productive living on that account, our planet is getting warmer and our health expenses increase. A global dietary transition that includes putting more local produce and a varied source of proteins on our plates is an opportunity to put people, planet and our common prosperity on a healthy track.

MEAT FOR THE FUTURE

Meat is delicious, but it quickly becomes unsustainable if we eat too much. Today we have a great deal of knowledge about our dietary needs and how they can be met in a healthy and environmental friendly fashion, but little of this has been turned into new products leaving ample room for innovation. Securing a wide source of quality proteins in the diet is a prime concern and bringing protein rich plants back to our plates and in our fields can aid this. The demand for plant-based proteins is set to skyrocket in the future offering business an opportunity to innovate and meet consumers' appetite for novelty. Plankton and insects are attractive candidates for new stable protein-rich meat alternatives. It is about inventing meat alternatives that look, feel and taste like animal meat, with the familiar texture and variation, but with a lower CO_2 footprint.

EATING UGLY FOOD

Supermarkets seem convinced that consumers will not buy food which has the "wrong" weight, size or appearance. However, a recent survey shows that most consumers are willing to buy heterogeneous produce as long as the taste is not compromised.

For some crops, up to 30 percent of a harvest is often deemed too ugly to leave the farm and ends in landfills because it does not meet the societal expectation of what we consider edible. Marketing campaigns by retailers, governments and schools are an opportunity to drive a change in the perception of what proper food should look like to drive ugly food onto our plates, not in the garbage.

A NEW GLOBAL DIET

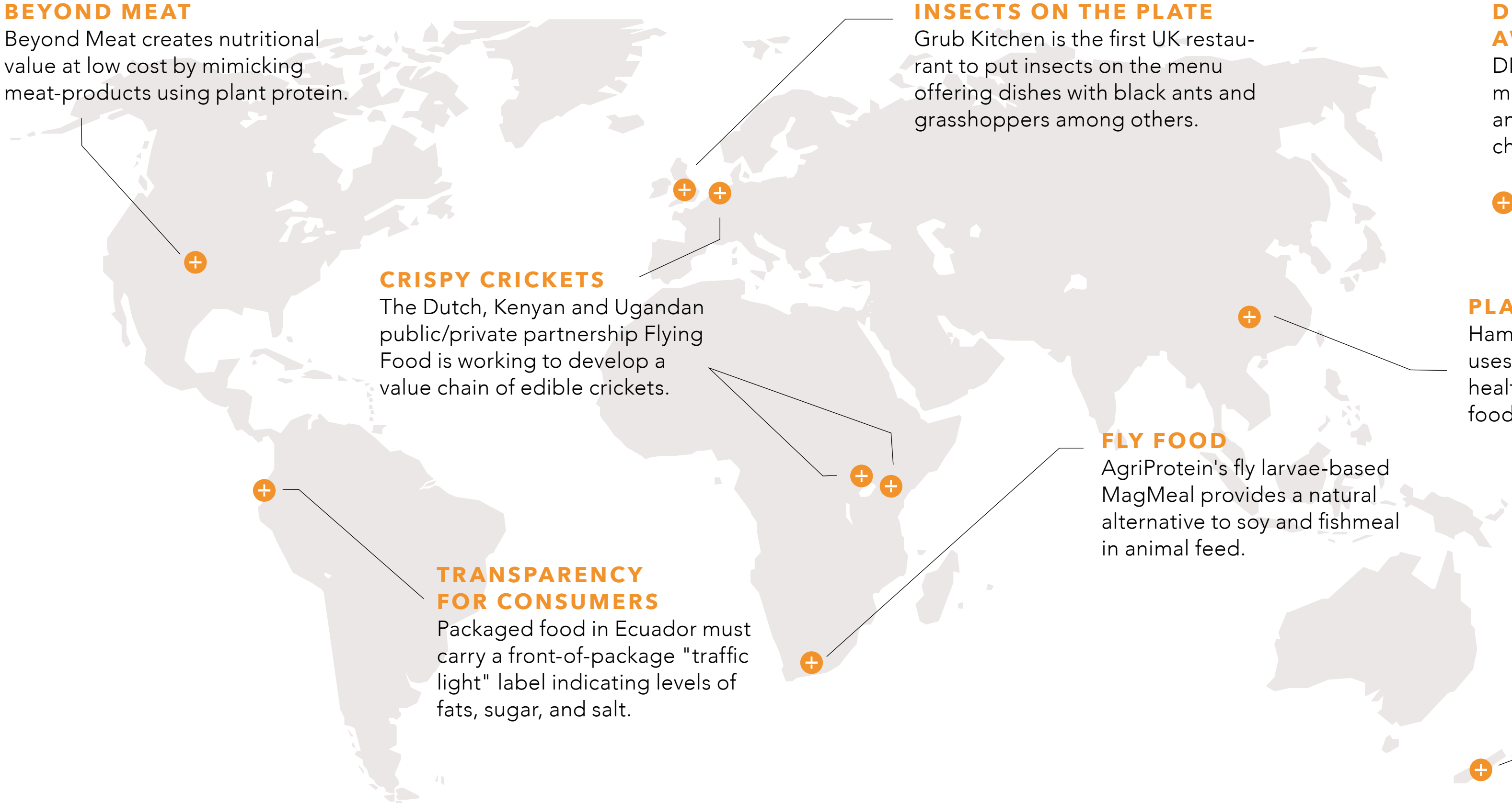
A new global diet is an opportunity for change-makers, such as famous chefs, to take the lead in promoting dietary changes by altering the public perception of local and sustainably produced food. Reigniting an interest in – and a taste for – indigenous foods can help improve nutrition for those at risk of suffering from malnutrition while improving biodiversity.

Business plays a key role in promoting a global dietary shift by pushing healthy and protein-rich meat substitutes onto our plates such as legumes, seaweed and insects. Exploring more varied and protein intensive diets can result in more people consuming the recommended amount of nutrients. Companies can be leaders in this movement by making vegetarian dishes the default option at conferences, on airplanes and in other forums where large groups of people eat.

In all, reintroducing native plants and developing protein-rich meat alternatives are opportunities to address the global food crisis in a way that shapes a healthier planet with healthier people living in healthier economies.

SOLUTIONS TO GO BACK TO THE ROOTS OF A MORE PLANT BASED DIET

Please click on the solutions to learn more



BEYOND MEAT
Beyond Meat creates nutritional value at low cost by mimicking meat-products using plant protein.

INSECTS ON THE PLATE
Grub Kitchen is the first UK restaurant to put insects on the menu offering dishes with black ants and grasshoppers among others.

DEVELOPING FOOD AWARENESS
DNV GL's Sustainable I is an app which makes users aware of the carbon and water footprint of their everyday choices, incl. dietary choices.

Global

CRISPY CRICKETS
The Dutch, Kenyan and Ugandan public/private partnership Flying Food is working to develop a value chain of edible crickets.

PLANT PROTEIN
Hampton Creek identifies and uses plant proteins to produce healthier and more affordable food options for everyone.

FLY FOOD
AgriProtein's fly larvae-based MagMeal provides a natural alternative to soy and fishmeal in animal feed.

INFORMATION FOR A BETTER DIET
Go Vegan is an organisation dedicated to inform families in New Zealand about the benefits of a plant-based lifestyle.

TRANSPARENCY FOR CONSUMERS
Packaged food in Ecuador must carry a front-of-package "traffic light" label indicating levels of fats, sugar, and salt.

70%

more calories available - if current crop production used for animal feed & other nonfood uses were targeted for direct consumption.

46%

of global freshwater use is for producing animal-based food.

30%

of some crops are deemed too ugly and ends in landfills.

Sources: West, P.C. et al. 'Leverage points for improving global food security and the environment'. Science. Vol. 345, Issue 6195 pg. 325-328. 2014 - SUSTAINIA. 'Eat in Sustainia'. Report. 2015.

THE TOP OPPORTUNITY IN INDIA AND CHINA

"New Diets" is the least favoured of the three opportunities to address the current global food crisis. Even though, there are great variations between regions, it is fair to say that the world has limited appetite for "New Diets."

MIXED APPETITE FOR NEW DIETS

In six out of the nine regions, there is a perceived lack of capacity to pursue this opportunity compared to the remainder 14 opportunities. It is especially the four regions of North America, Europe, other Asia and MENA where confidence in the ability of new diets to change societies for the better is low. The same goes for their perception of the capacity to pursue it. These four regions have particularly limited faith in the political will power to pursue the opportunity of new diets.

Sub Saharan Africa and South America, believe that new diets will have positive impact on society, but that the political will to pursue it as low. For Europe, the MENA region, North America and South America the survey data shows that the respondents perceive lack of political will power to be holding the regions back in pursuing this opportunity. For India, South East Asia & Australia and China capacity to pursue this opportunity is perceived to be present.

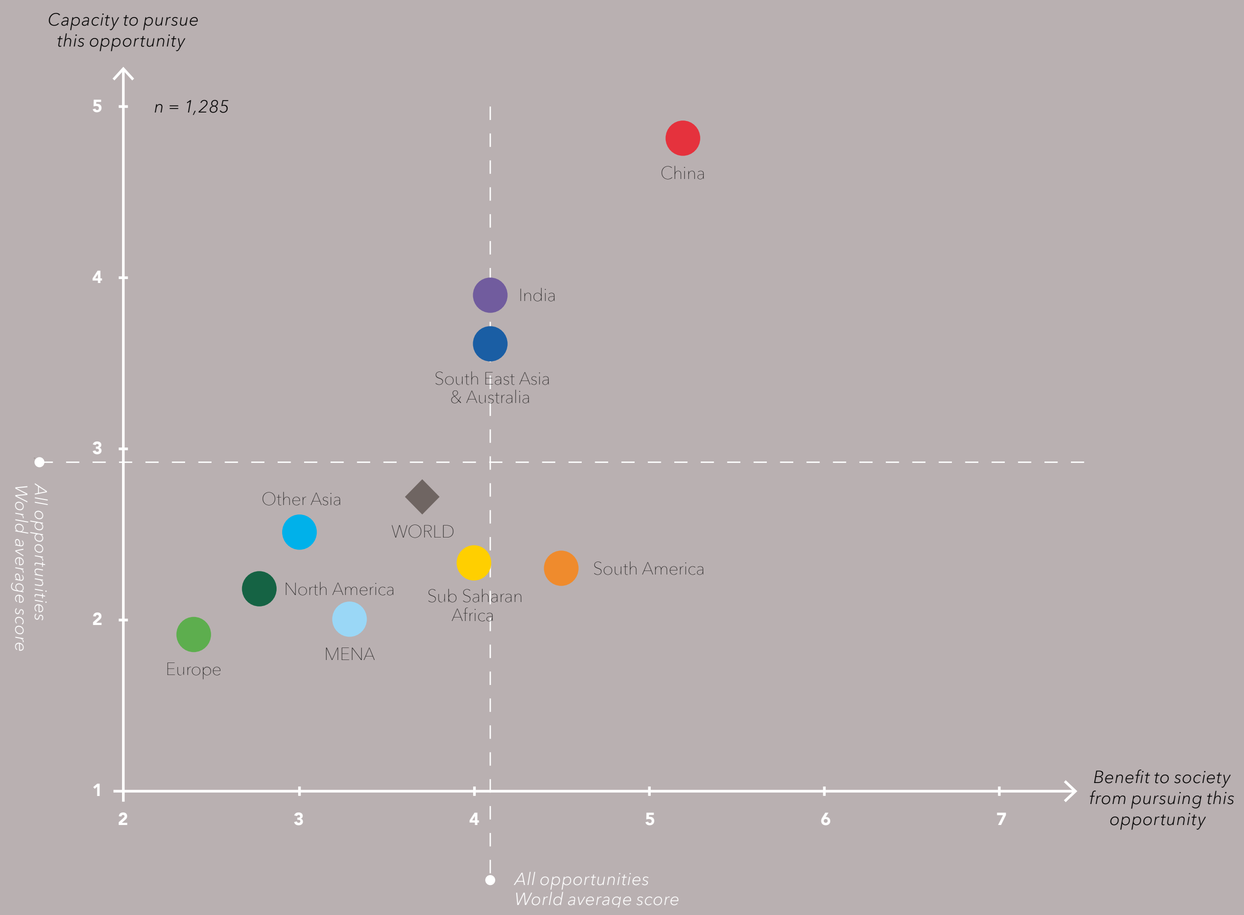
EAT TO CHANGE THE WORLD

What you put on the plate is not perceived to be a very effective avenue for addressing the global food crisis, as a new diet is the least preferred of the three opportunities addressing the food crisis. It is not perceived to make a big difference on the greater society as this opportunity consistently is rated low on positive impacts on society. "New Diets" is the opportunity of all 15 which shows the greatest difference in rating between medium and very high HDI countries. Medium HDI countries see more potential in new diets as an avenue for positive change than high HDI countries.

The surveyed five sectors surveyed do not see any particular business case in pursuing the "New Diet" opportunity, and it is believed to have limited influence on their business.

BENEFITS AND CAPACITY

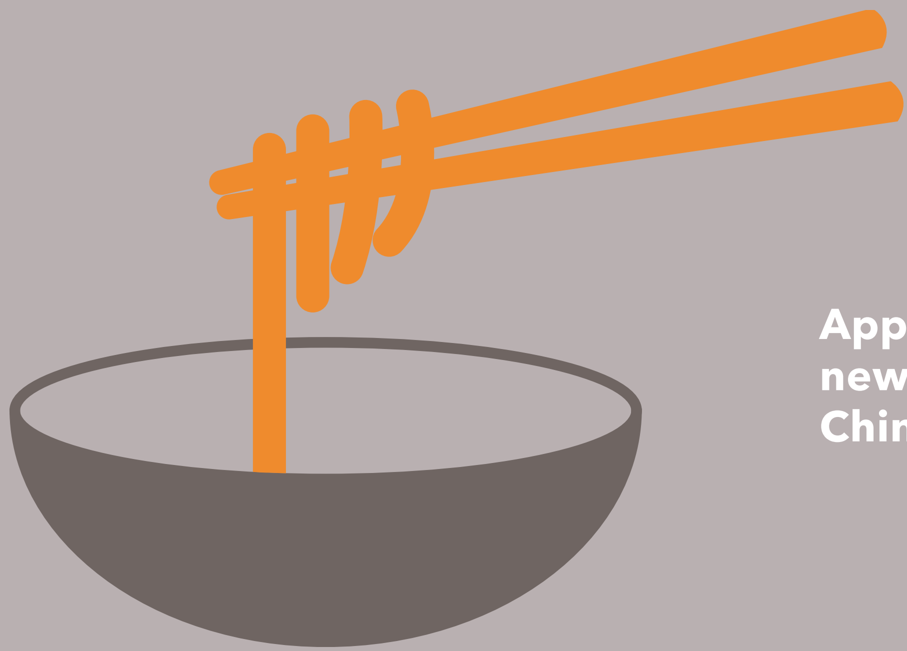
Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.



NUMBER 10 ON THE OPPORTUNITY RANKING

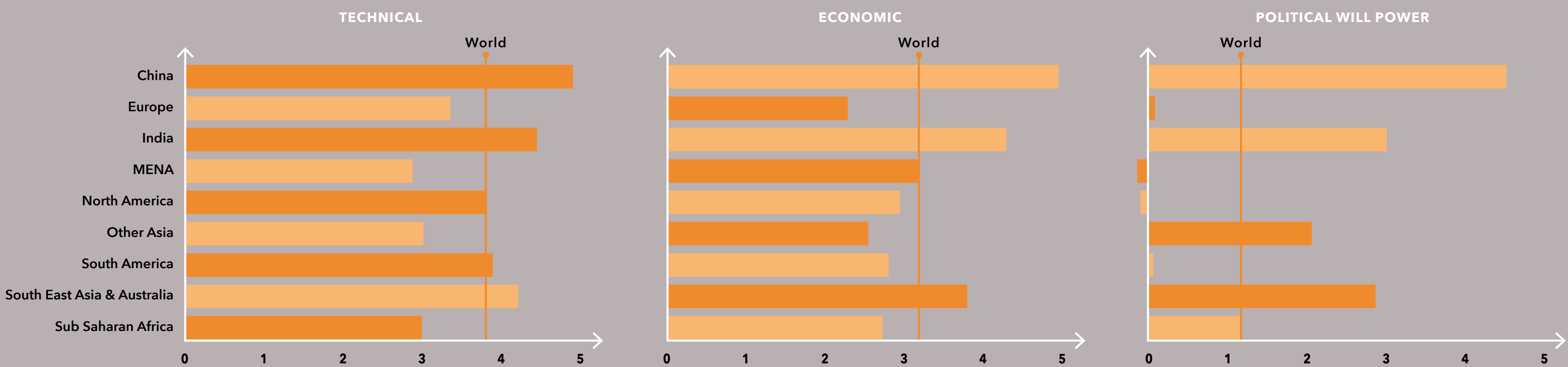
1	SMART FARMING
2	THE DIGITAL LABOUR MARKET
3	CLOSING THE SKILLS GAP
4	REDUCE FOOD WASTE
5	PRECISION TREATMENT
6	ANTIBIOTIC-FREE FOOD
7	REGENERATIVE OCEAN ECONOMY
8	NEW BUSINESS MODEL FOR ANTIBIOTICS
9	FLEXIBLE MOBILITY
10	**NEW DIETS**
11	FUTUREPRENEURS
12	CROWD TRANSPORT
13	CLOSING THE LOOP
14	SMART OCEAN
15	LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY



Appetite for new diets in China & India

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS



SMART FARMING

Farmers have always used information about wind and weather to know when to plant and harvest. Recent development and dissemination of advanced technological tools at an affordable price have resulted in both large and small-scale farmers having new and more precise tools to produce more with less.

Farming takes skills. You have to know when to plant, when to water, when to fertilise and when to harvest. You need to know how to protect your crop from pests and from spoiling after harvest, and you need to know what the proper price is for your produce. Luckily, farmers worldwide are facing a suite of technological advances that can assist them in growing more food and bring more of it to market at a fair price. The opportunity for making farming smarter can increase yields and profits and reduce the use of precious water and fertiliser.

A FARMER'S MOST VALUABLE TOOL: THE PHONE

The phone is the new agricultural tool. The fast growing access to communication services also for smallholders offers a range of benefits to farmers. Better weather and climate data will help planning which crops to plant, when to harvest etc. Moreover, with a phone in hand, even small-scale farmers can connect to new customers who were previously unreachable giving them greater power in the marketplace. This kind of knowledge was previously the reserve of farmers on modernised agricultural production units but can now be available to a much wider group.

GROWING MORE WITH LESS

Another set of advances that can aid farmers globally is precision farming. It is techniques ranging from relatively simple and affordable drip watering to advanced hydroponics which allows farmers to target water and fertiliser precisely when and where plants need it. Rising prices for agricultural inputs like water and fertilizers are fuelling the development of smart farming technologies and techniques to produce more with less. Some countries regulate water and fertilisers use on farms, which in turns drives the uptake of precision farming practices. As an added benefit, targeting fertiliser to where it is most needed can significantly reduce greenhouse gas emissions from farming currently amounting to between one-fifth and one-third of greenhouse gases emissions.

SMART URBAN FARMING

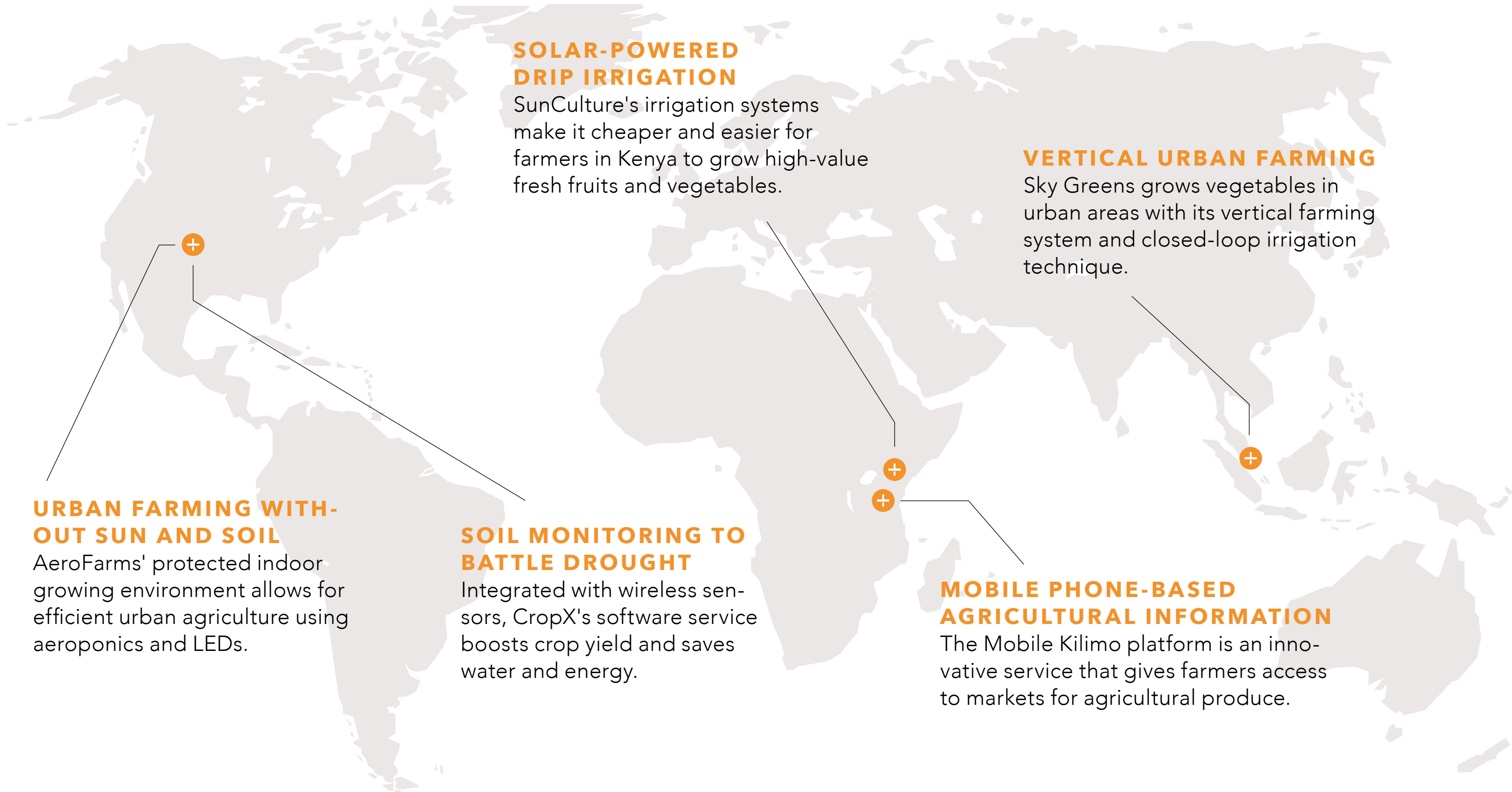
Smart farming is also an opportunity in cities. In urban areas, lack of vacant plots of land is driving more and more urban farmers to produce food upwards on the side of buildings rather than outwards. This vertical farming is a spatially efficient option for urban food production, which can be made smart by the use of information technology to time and target inputs.

Even today, urban agriculture produces 15 to 20 percent of the world's food supply and plays a major role in global food security. Most urban farming is placed in low income areas, adding directly to food security of the poorest part of global population. Urban farming can be made smart through the use of information technology to increase yields.

This smart farming opportunity can benefit from the development of a variety of different types of technologies e.g. analytics solutions, sensors, soft- and hardware systems and positioning technologies. If successful, it has the potential to increase agricultural production, improve small farmers' competiveness and provide a growing urban population with fresher produce.

WELL TESTED DIGITAL SOLUTIONS TO PRODUCE SMARTER

Please click on the solutions to learn more



SOLAR-POWERED DRIP IRRIGATION
SunCulture's irrigation systems make it cheaper and easier for farmers in Kenya to grow high-value fresh fruits and vegetables.

VERTICAL URBAN FARMING
Sky Greens grows vegetables in urban areas with its vertical farming system and closed-loop irrigation technique.

URBAN FARMING WITHOUT SUN AND SOIL
AeroFarms' protected indoor growing environment allows for efficient urban agriculture using aeroponics and LEDs.

SOIL MONITORING TO BATTLE DROUGHT
Integrated with wireless sensors, CropX's software service boosts crop yield and saves water and energy.

MOBILE PHONE-BASED AGRICULTURAL INFORMATION
The Mobile Kilimo platform is an innovative service that gives farmers access to markets for agricultural produce.

DRONES FOR EFFICIENT CROP MANAGEMENT
Lightweight drones from PrecisionHawk optimize area usage and increase land use efficiency.

Global

WIRELESS SURVEILLANCE FOR CROP PROTECTION
Webstech's technology monitors temperature and relative humidity in biomass, alerting farmers when food is at risk.

Global

SMART ANIMAL FEED CERTIFICATION
DNV GL's GMP+ Feed Safety Assurance is developed to guarantee safe impact of feed on the end products.

Global

18%

annual increase in profit for a farmer using precision farming.

60%

of farmers say precision farming will become the norm as technology advance.

$4.55B

expected market size for digital-based farming services, in 2020.

Sources: Nesta. 'Precision Agriculture: almost 20% increase in income possible from smart farming'. October 2015. Online: www.nesta.org.uk - Corsini, L. et al. 'Crop Farming 2030 – The Reinvention of the Sector'. The Boston Consulting Group. Report. 2015 - Accenture. 'Digital Agriculture: Improving Profitability'. 2015. Online: www.accenture.com.

BEST OF ALL OPPORTUNITIES

A phone, a robot and/or a computer are the new farming tools alongside the hoe and the tractor. Farmers everywhere use technology to produce more with less and to make resources last. "Smart Farming" is a globally applicable tool box adaptable to different contexts. It is smart farming and good business.

THE WINNER
Smart Farming tops this year's opportunity list. It is the favourite of all fifteen opportunities on the overall opportunity ranking across all regions. This opportunity deviates from the overall trend of low political will power to pursue opportunities as it is perceived to be backed by political will power. All regions are also in general perceived to be equipped to implement it both in terms of technology and economic capacity. There are some exceptions to this trend as North America shows to have low perceived political will power to pursue the opportunity

Men and women globally agree that smart farming is a winner. For both genders the opportunity is in the top – number one opportunity for women and second for men. There seems to be a high degree of consensus among the different HDI groups, as it is the most favoured opportunity for high as well as the very high HDI countries, while for the medium HDI group it is the second most favoured opportunity. Respondents in the age range between 30 and 50 years see "Smart Farming" as the most favoured opportunity, while the young respondents below the age of 30 are less attracted by it.

SMART FARMING IS GOOD BUSINESS
For all the assessed business sectors the message is clear that smart farming will affect their business. However, only respondents from the service sector state to be more likely to pursue this opportunity than on average for all the other opportunities. The opportunity is the most preferred opportunity for the governmental and other business sector.

BENEFITS AND CAPACITY

Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.

NUMBER 1 ON THE OPPORTUNITY RANKING

1. SMART FARMING
2. THE DIGITAL LABOUR MARKET
3. CLOSING THE SKILLS GAP
4. REDUCE FOOD WASTE
5. PRECISION TREATMENT
6. ANTIBIOTIC-FREE FOOD
7. REGENERATIVE OCEAN ECONOMY
8. NEW BUSINESS MODEL FOR ANTIBIOTICS
9. FLEXIBLE MOBILITY
10. NEW DIETS
11. FUTUREPRENEURS
12. CROWD TRANSPORT
13. CLOSING THE LOOP
14. SMART OCEAN
15. LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY

1 ST

A global favourite

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS

REDUCE FOOD WASTE

We can feed an additional 3 billion people if we stop wasting food. Stakeholders along the food value chain can benefit economically from reducing waste, which opens opportunities for innovation all the way from soil to stomach

Saving one-fourth of the food currently wasted is enough to feed all the hungry people in the world. From our farms to grocery stores to dinner tables, much of the food we grow is never eaten. Reducing food waste is an opportunity to innovate along the value chain.

REDUCING POST HARVEST FOOD LOSS

Just after harvest, food is mainly lost because of lack of proper storage and distribution practices. This is true in both low-, middle- and high-income countries, but most severe in low-income countries. A recent survey by Food and Agriculture Organization of the United Nations estimates that 30-40 percent of total food production in developing economies is lost before it reaches the market. Recent technical advances in mobile refrigeration – e.g. solar power – raise the opportunity to create a 'clean cold revolution' that harnesses renewable energy to fix the broken cold chains by adding refrigeration capacity where it is missing. Not only offering to save food, it can also reduce the footprint of the current refrigeration systems by upgrading under-performing units in cold chains that have insufficient capacity or are not energy efficient.

By 'greening the cold chain', we reduce food loss, feed more people and substantially reduce the carbon footprint of the food industry. Furthermore, reducing waste will also free up other resources since it is not just the food itself that is lost; it is also the water, human effort and resources that go into production. Helping families in off-grid communities to 'keep it cool' calls for especially innovative low tech – high impact solutions.

Reducing food waste via improved cold chains benefits everyone. Food producers benefit from greater efficiency in being able to sell closer to 100 percent of the food they produce. Food retailers benefit from a more stable supply of food and they can ensure the food they receive can be stored and sold fresh while enjoying savings from new energy-efficient refrigeration.

REDUCING FOOD WASTE AT POINT OF CONSUMPTION

After making it to supermarkets and into our homes, food spoils and is eventually wasted. A variety of tools and systems can stop this waste. This includes innovations in packaging and incentivising consumers and retailers to sell and purchase more responsibly with respect to reducing food waste.

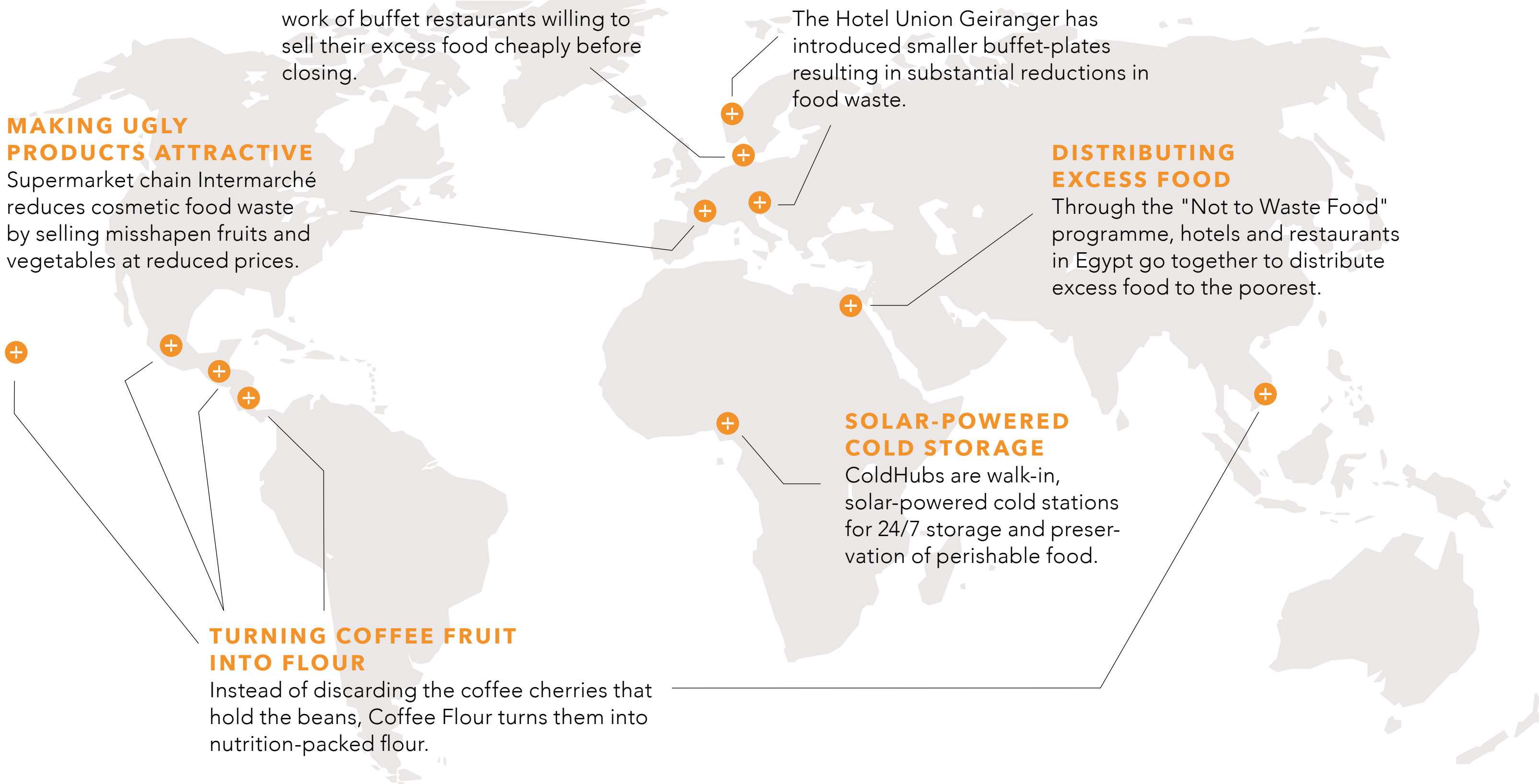
In high and very-high HDI countries, most food is wasted by consumers or from distribution and market practices that discard much food. This happens because the food might not look or feel as consumers prefer it to, or because of stringent regulation. This results in large amounts of waste. In Europe and North America, food waste per person is more than 10 times greater than in South America and South East Asia.

Changing consumer behaviour can be arduous. While innovations like smart labelling – that allows products to stay on the shelf as long as they are fresh – can help. There is plenty of room for innovations that can change irresponsible consumer behaviour and incentivize retailers to adopt less wasteful practices.

Reducing food loss in early stages of food production when combined with measures to reduce food waste at the retail and consumer level, can have a significant impact on addressing food scarcity and reducing the CO_2 footprint of the food industry.

MATURE SOLUTION SPACE TO MAKE THE MOST OUT OF FOOD

Please click on the solutions to learn more



SAVING BUFFET FOOD
"Too Good To Go" is an online network of buffet restaurants willing to sell their excess food cheaply before closing.

SMALLER BUFFET-PLATES
The Hotel Union Geiranger has introduced smaller buffet-plates resulting in substantial reductions in food waste.

MAKING UGLY PRODUCTS ATTRACTIVE
Supermarket chain Intermarché reduces cosmetic food waste by selling misshapen fruits and vegetables at reduced prices.

DISTRIBUTING EXCESS FOOD
Through the "Not to Waste Food" programme, hotels and restaurants in Egypt go together to distribute excess food to the poorest.

SOLAR-POWERED COLD STORAGE
ColdHubs are walk-in, solar-powered cold stations for 24/7 storage and preservation of perishable food.

TURNING COFFEE FRUIT INTO FLOUR
Instead of discarding the coffee cherries that hold the beans, Coffee Flour turns them into nutrition-packed flour.

LOW-TECH EVAPORATION COOLING
Mitticool's clay refrigerator runs without electricity, serving as an affordable cooling alternative for rural communities.

Global

COOLING-FREE FOOD PRESERVATION
The Wakati tent produces a sterilized microclimate that keeps produce fresh for a week without refrigeration.

Global

$40M

annual saving for just 1% reduction in post-harvest losses in Sub-Saharan Africa.

$750B

worth of food is lost globally each year - equivalent to the GDP of Switzerland.

$6.7B

worth fruits and vegetables can be saved in India by effective cooling technology.

Sources: World Bank. 'Missing Food: The Case of Postharvest Grain Losses in Sb-Saharan Africa'. Report. 2011 – FAO. 'Food Wastage Footprint – Impacts on Natural Resources'. Report. 2013 - The Guardian. 'How technology can prevent food waste in developing countries'. December 2014. Online: www.theguardian.com

A MENA FAVOURITE AND POPULAR AMONG YOUNG RESPONDENTS

The perception of waste as a resource is maturing in many populations around the globe. It is both an ethical issue that we live in a world where food is wasted while an alarming number of people go to bed hungry every day, as well as a question of misuse of resources.

FOOD FOR A SUSTAINABLE FUTURE

Wasting less food is good for our societies in the eyes of most respondents. To reduce food waste is the second best of the food related opportunities – just behind smart farming. It is among the top four of all opportunities – assessed for the potential impact on society and capacity to pursue across all regions. Assessed for the potential impact on society, reduce food waste is the second top ranked opportunity, just after "Smart Farming" – putting two food related opportunities in the very top in terms of perceived positive impact on society.

It is on the top of the' to do' list for the MENA region where it is the most preferred opportunity of all 15. It is also one of the most favoured opportunities in North America and Europe. In South America, the opportunity is also perceived to have high benefits for society, but there is low faith in the political will power to pursue it.

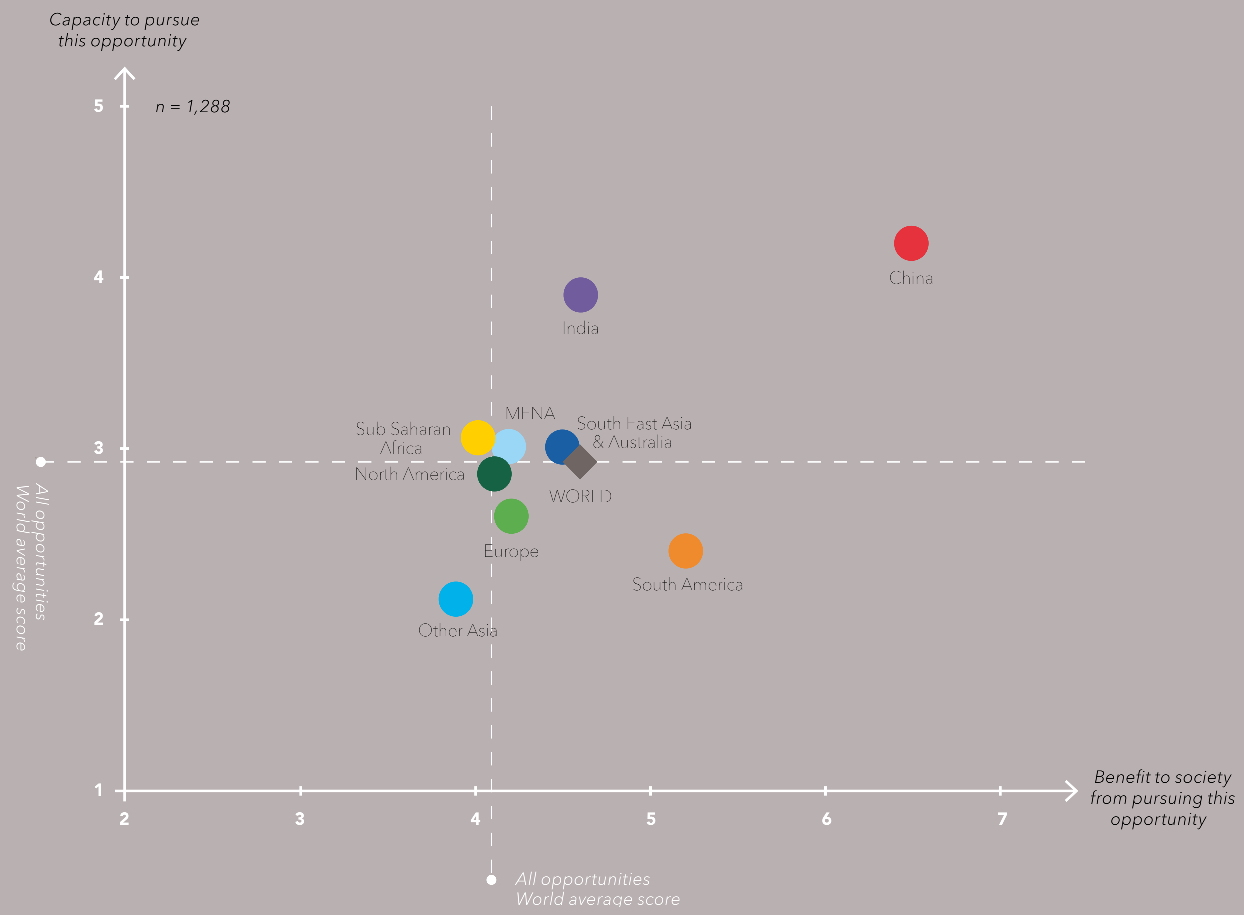
FINANCE SECTOR AND YOUTH ARE THE OPTIMISTS

The finance sector seems to be the only business sector which is more likely to seek business opportunities in reducing food waste. It is not perceived to be a top opportunity in the eyes of the governmental sector, as the sector rates it low in terms of both benefits for society and capacity to pursue.

Respondents below the age of 30 perceive this opportunity to be the second runner up after the digital labour market. The higher the age of the respondents, the lower perceived positive impact on society of the reduction of food waste.

BENEFITS AND CAPACITY

Perceived benefits from pursuing this opportunity (x), and capacity to do so (y), World and geographic regions. Scale goes from -10 to +10.



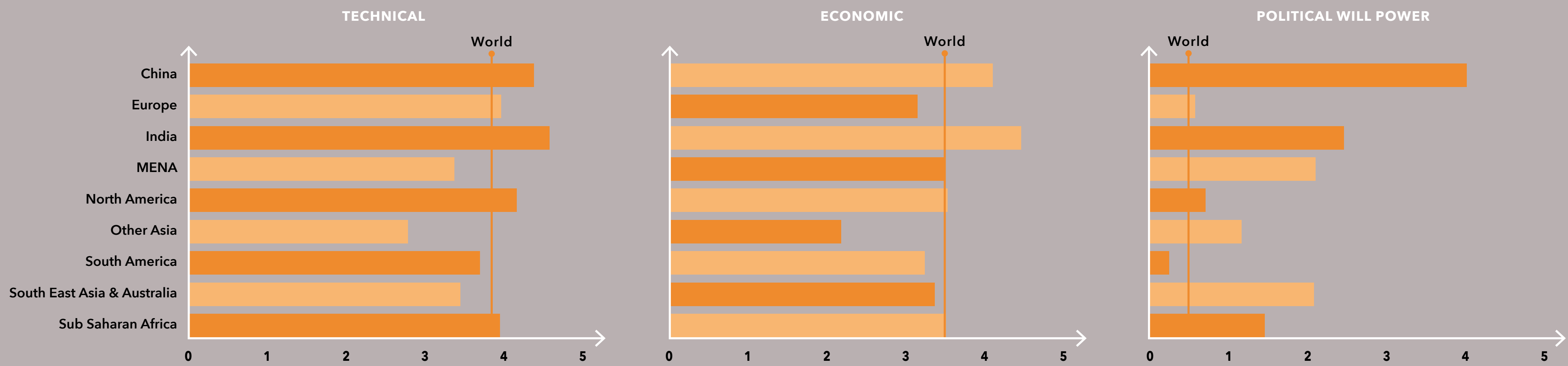
NUMBER 4 ON THE OPPORTUNITY RANKING

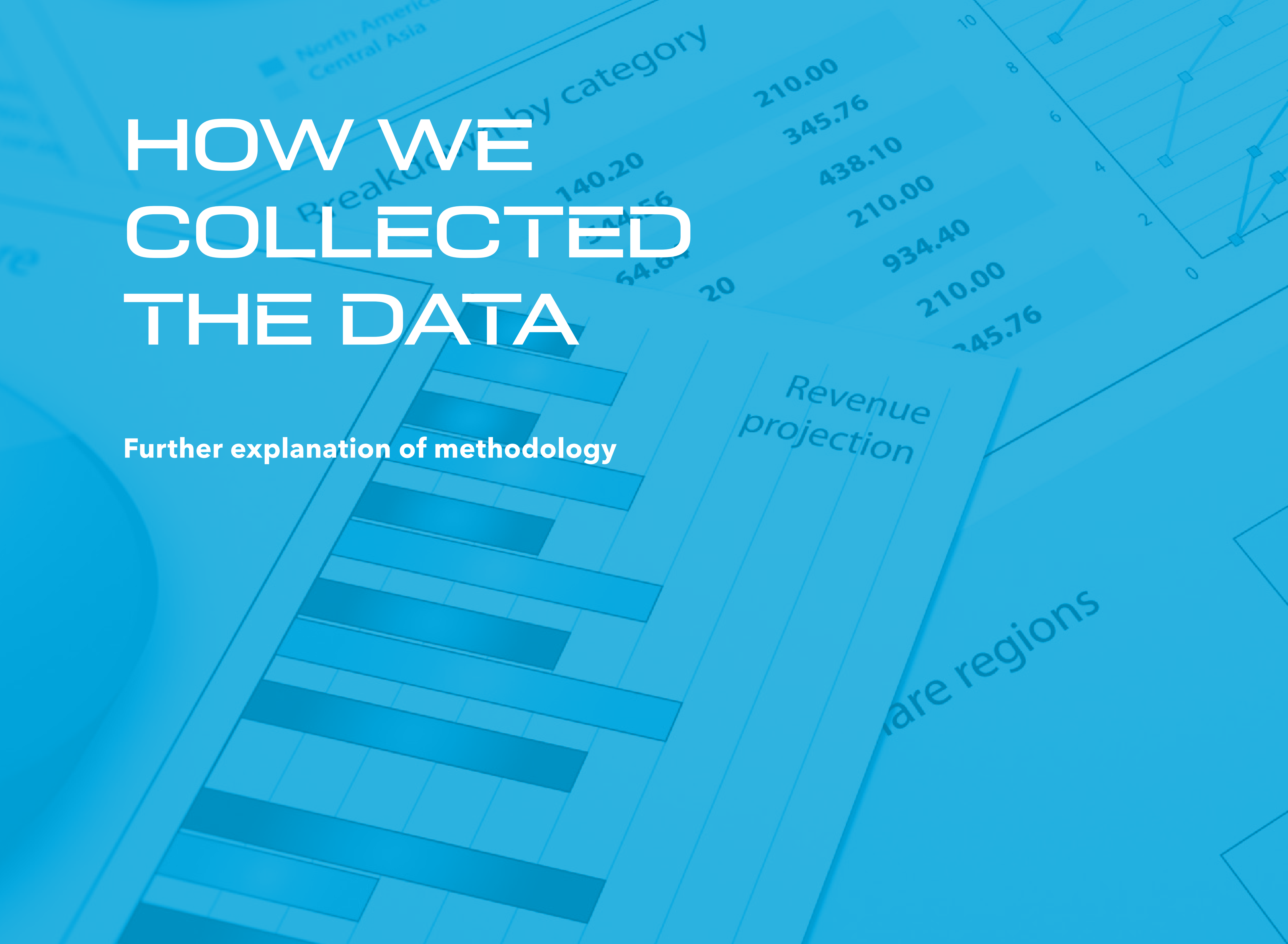
1 SMART FARMING
2 THE DIGITAL LABOUR MARKET
3 CLOSING THE SKILLS GAP
4 REDUCE FOOD WASTE
5 PRECISION TREATMENT
6 ANTIBIOTIC-FREE FOOD
7 REGENERATIVE OCEAN ECONOMY
8 NEW BUSINESS MODEL FOR ANTIBIOTICS
9 FLEXIBLE MOBILITY
10 NEW DIETS
11 FUTUREPRENEURS
12 CROWD TRANSPORT
13 CLOSING THE LOOP
14 SMART OCEAN
15 LOW TRANSPORT CITIES

CHARACTERISTICS OF OPPORTUNITY

A favourite for the MENA region

THE ECONOMIC CAPACITY, TECHNOLOGICAL CAPACITY, AND THE POLITICAL WILL POWER TO PURSUE THIS OPPORTUNITY ACROSS NINE REGIONS





HOW WE COLLECTED THE DATA

Further explanation of methodology


Outstanding
Equity
20
15
10
5
0

HOW WE MADE THE SURVEY

Survey respondents were identified as working within a specific sector of the economy. In this report we operate with five sectors: Finance, Manufacturing, Service, Governmental, and Other Businesses.

In reporting on the survey results, we will name these "business sectors" or "sectors."

Respondents were also asked to indicate how strongly they believe representatives of different stakeholder groups in society will support each of the opportunities. The four stakeholder groups in the survey are: Business, Finance, Politics, and Civil Society.

To avoid confusing terms, we will name these "stakeholder groups" or "stakeholders" when reporting survey results. Geographically, respondents are grouped into nine regions. Some regions are groups of several countries; other regions are single countries with very large populations (namely China and India).

For some cross-sections of data, we use the United Nations Development Programme's Human Development Index (HDI) which is a criterion for assessing the development of a country, not only including economic growth. The HDI classifies four country groups of "Low-," "Medium-," "High-" and "Very High HDI." No "Low HDI" countries are represented in the survey.

When presenting results, we strive to use the term most/least favourable opportunities. This reflects that survey responses are generally very positive towards all opportunities and we don't have a baseline from which to assess the absolute score. Instead we focus on comparing results between individual opportunities, regions, etc.

Data are indicative and should be interpreted conservatively.

Further description of the survey methodology, questions, etc. will be available on www.globalopportunitynetwork.org.

ASSIGNING RANKS TO OPPORTUNITIES

Survey respondents were asked to rate opportunities on a scale from -10 to 10 on a range of questions. These ratings are used to rank the opportunities in two specific ways:

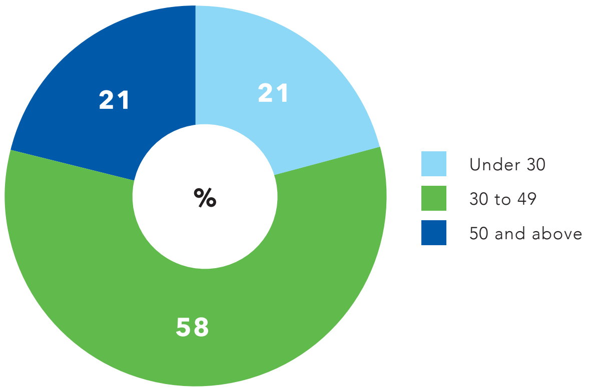
Impact on society: These rankings are based on two questions. The first asks for respondents' evaluation of the benefits to society of pursuing the opportunity; the second asks for the respondents' evaluation of the economic, technological, and political capabilities within their own country to pursue the opportunity.

Each opportunity is ranked based on the percentage of responses it receives that are 'most positive' (respondents rating them above 5 on a scale from -10 to 10 for both questions). This reflects that opportunities need to be both beneficial and attainable.

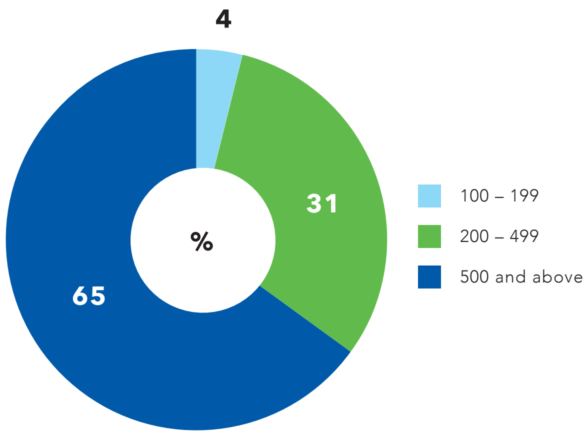
Impact on society is used throughout the report as the main ranking.

Impact on business: Respondents have evaluated the value of opportunities to business by two questions. The first asked the respondents to consider the expected general effect on their own business; the second asked how likely their own business is to develop new business ventures related to the opportunity.

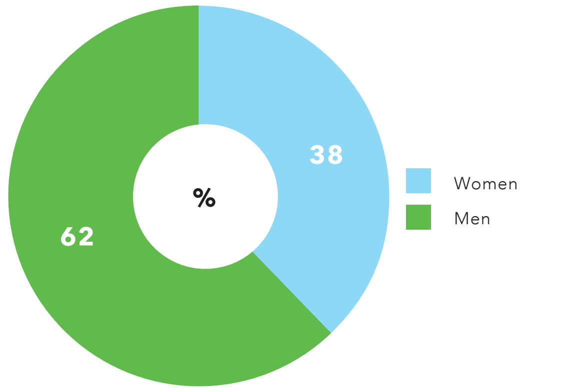
RESPONDENT PROFILE - DEMOGRAPHICS



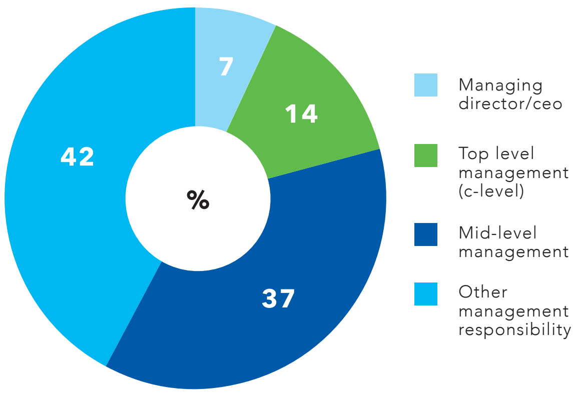
AGE PROFILE



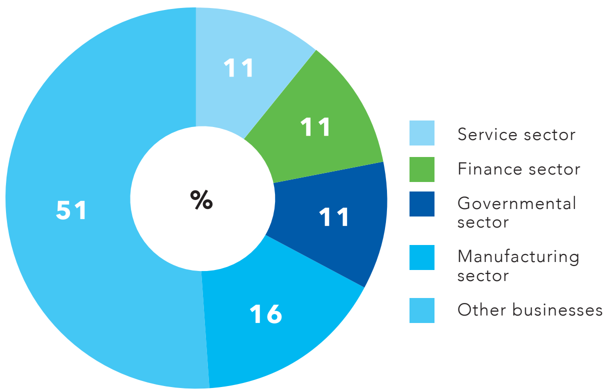
NUMBER OF EMPLOYEES IN RESPONDENTS' BUSINESS



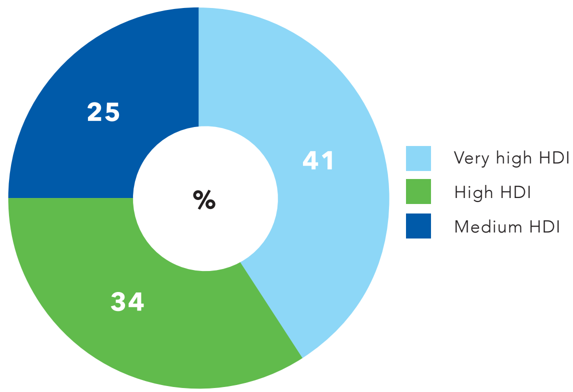
GENDER PROFILE



RESPONDENTS' PRIMARY ROLE



BUSINESS SECTORS OF RESPONDENTS



COUNTRY OF RESIDENCE PROFILE*

* Using UN Development Programme definitions. No 'Low HDI' countries are represented in the survey

WHERE DID WE GO?

The insights in the Global Opportunity Report are based on two large investigations: a global series of eight workshops with leaders in business, academia, civil society, etc. – labeled Opportunity Panels – and a survey of 5,567 private and public sector leaders.

The survey reported on in this report was conducted in collaboration with the research company YouGov. There are a total of 5,567 completed Computer-assisted web interviews (CAWI) with persons with management responsibility working in companies with a minimum of 100–200 employees. The survey was conducted between 6 to 21 October 2015. YouGov has been responsible for collecting the data and the Global Opportunity Secretariat has conducted the analysis of the data. Survey responses are based on perceived behavior rather than actual metered data.

Respondents to the survey were identified as working within a specific sector of the economy. In this report, we operate with five sectors; brackets indicate the number of respondents:

Finance (618)
Manufacturing (898)
Service (597)
Governmental (606)
Other Businesses (2,848)

In order to have a solid number of respondents, various different sectors have been combined to one named Other Businesses. Other Businesses is a combination of the following sectors: Academia (348), Agriculture (68), Construction (296), Food (170), Healthcare (390), Mining and Extraction (99), Trade (260), Transport (221) and Other (996).
The survey was conducted globally and in the report we operate with nine regions. Some regions are groups of several countries; other regions are single countries with very large populations (China and India).

THE REGIONS ARE COMPOSED OF:

CHINA (508)

EUROPE (France, Germany, Spain, UK) (823)

INDIA (506)

MENA (Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates Yemen and Turkey) (262)

NORTH AMERICA (US, Canada and Mexico) (954)

OTHER ASIA (Russia and Japan) (550)

SOUTH AMERICA (Argentina, Brazil, Chile, and Peru) (899)

SOUTH EAST ASIA AND AUSTRALIA (Australia, Indonesia and Singapore) (812)

SUB-SAHARAN AFRICA (South Africa) (253)

Respondents' management responsibilities, country of residence, age, sectorial affiliation, gender and age were also recorded to enable analysis of the survey results along these lines.

When illustrating answers from the survey in the report, the number of answers is denoted as n. In some instances n is reported as an interval, as not all opportunities have been assessed by the same number of respondents. In order to get representative data, each opportunity has been assessed by at least 1,270 respondents and at least 100 for each business sector and region.

When illustrating percentages in the figures not all of them add up to 100, due to rounding.

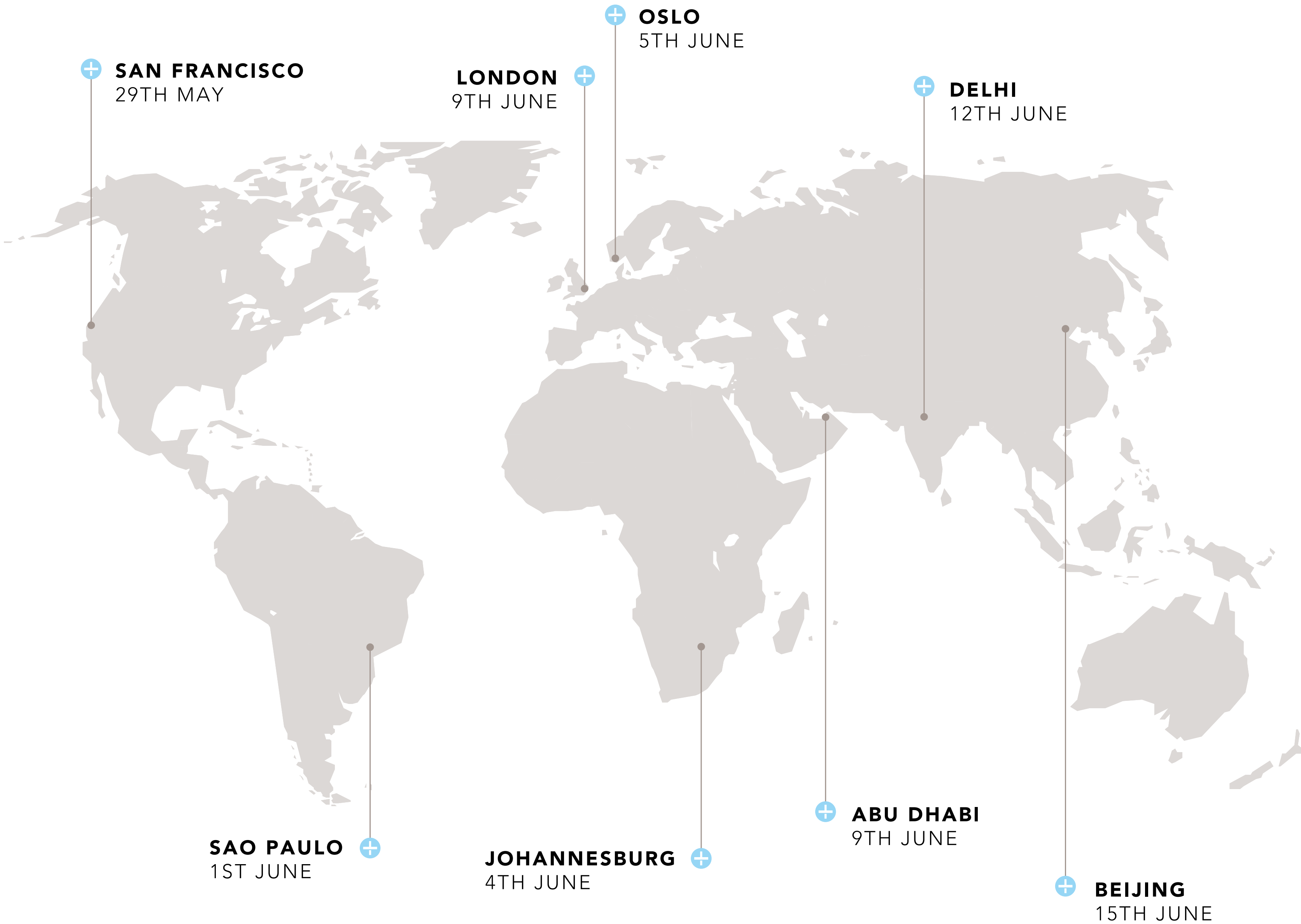
In the report we operate mainly with two areas — the impact on society and the impact on business. These two areas are reported differently:

Each opportunity's impact on society is reported as the percentage of responses it receives that are 'most positive' (respondents rating them above 5 on a scale from -10 to 10). When the impact on society is illustrated on a scatter chart, the values are simple averages.

The impact on business is reported as a simple average of the responses, either within a specific sector, region or other cross sections of data used throughout the report. Data are indicative and caution should be taken when interpreting them, especially closely positioned data points as confidence intervals do not allow all rankings to be distinguished.

WHO HAVE WE ASKED ?

The selection of opportunities is inspired by eight opportunity panels on five continents



THE ROAD AHEAD

The journey towards the opportunity mind-set continues with strategic outlook, open innovation and co-creation – for a safer, smarter, and greener future

THE RISK LANDSCAPE

As global risks steer us towards new opportunities, we asked leaders in our global survey which risks they perceive to be the most pressing. The risks they highlight give us a starting point for the next Global Opportunity Report, granting business leaders worldwide a say in selecting the risks for next year's report. The results of the survey form a list of risks that is updated annually, a dynamic process ensuring its composition reflects what is happening in the world around us. The only new risk added to this year's list is migration.

When we analyse risk trends, we adopt the World Economic Forum's Global Risk Report's categorisation of risks, comprising environmental, economic, geopolitical, societal, and technological risks. The top five risks in the 2015 list were a mix of economic, societal, and environmental issues, pointing to the fact that, in the eyes of business, the global risk landscape is deeply interconnected. This year, as was the case last year, unemployment and poverty top the list of the most pressing concerns. These two risks are related to the overall well-being of the economy, society, and people. Well-managed economies translate growth into jobs and greater well-being for the population. This is the foundation of any well-functioning society, without which business finds it much more difficult to thrive.

A notable change in this year's top five: it no longer includes an environmental risk and is dominated by societal risks. Explanations for this shift are complicated by a number of uncertainties. However, it seems that the evolution in the ranking of how pressing a risk is perceived to be is influenced by its visibility in the media, on digital platforms, and in political discourse. Communicable diseases ranked highly in the 2015 list of risks but experienced a drastic fall on the list this year. In fact, it is the risk that has experienced the greatest drop. This is likely a consequence of the Ebola outbreak in West Africa, which last year dominated social media platforms, TV screens, and policy discussions, but which has now almost totally vanished from the public eye.

The fact that societal risks dominate this year's top five may result from the ongoing migration and refugee crisis, where people either decide, or are forced, to leave their homes due to acts of war or societal problems of inequality, poverty, and joblessness. Although the risks perceived to be the most pressing change in response to media exposure, looking broadly at the top 10 reveals a mix of different risk categories. This indicates that all are important to address as they are interconnected and one can impact the ability to tackle the rest.

The search for opportunities continues. Next year we will add to the pool of opportunities when we share an additional 15 opportunities with you. With the third Global Opportunity Report, to be published early in 2017, the number of opportunities to help us address more of the risks will reach 45. We hope you will join us on this ongoing quest to uncover global opportunities unfolding in the years ahead.

THE MOST PRESSING RISKS

Green arrows indicate an upward movement of a given risk from last years ranking and red arrows indicate that a risk has fallen on the ranking realtive to last year. The numbers communicate the difference in ranking between 2015 and 2016.

→		UNEMPLOYMENT AND UNDEREMPLOYMENT
→		POVERTY
↑	+ 1	FINANCIAL CRISIS
↑	+4	LACK OF EDUCATION
↓	-2	SEVERE ECONOMIC INEQUALITY
↑	+8	HUNGER AND MALNUTRITION
→		RISING CO_2 EMISSIONS
↑	+1	INEQUALITIES IN ACCESS TO HEALTH, ENERGY, AND WATER
↑	+2	RESOURCE SCARCITY
↓	-4	LACK OF FRESHWATER
↑	+9	ESCALATION IN DATA CRIME
↓	-7	EXTREME WEATHER
↑	+4	DESERTIFICATION, SOIL DEGRADATION, BIODIVERSITY LOSS
↓	-1	NON-COMMUNICABLE DISEASES (CANCER, DIABETES, CARDIONVASCULAR ETC.)
↓	-3	LACK OF INVESTMENT IN CRITICAL INFRASTRUCTURE
→		LACK OF GOVERNANCE
↓	-2	DEGRADING OF RULE OF LAW
↑	+4	RESISTANCE TO ANTIBIOTICS
↓	-9	COMMUNICABLE DISEASES (AIDS, EBOLA)
↓	-2	MISMANAGED URBANIZATION
		MIGRATION (NEW ON THE LIST)
↓	-1	UNSUSTAINABLE URBANIZATION
↓	-4	GOVERNMENT SURVEILLANCE
↓	-1	GENDER INEQUALITY

JOIN THE GLOBAL OPPORTUNITY NETWORK

This year's report is the second in the endeavour to seek out and champion global opportunities. In the coming years the project partners will continue to expand the network and build momentum towards action for a sustainable future. As it grows, the Global Opportunity Network will strive to establish itself as a collaborative innovation platform to foster a global shift in mindset.

A crucial component of these efforts will involve inviting more individuals and organisations to join us as partners in this mission. True to the belief that no meaningful change can take place without multi-stakeholder collaboration, the Global Opportunity Network will continue to engage innovators from all sectors, regions, and professions, as the process of identifying risks, collectively brainstorming opportunities and measuring their appeal by means of a global survey enters its third iteration.

News and developments will be announced on our social media outlets throughout the year. You are more than welcome to reach out to us if you would like to learn more about our ongoing work, discover how you can participate, or if you would like to join us at an opportunity panel.

Read more at Globalopportunitynetwork.org

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2015

Read about the opportunities on this page in the Global Opportunity Report 2015

EXTREME WEATHER

Extreme weather events are likely to be more frequent and more severe in the coming decades. The concentration of people in vulnerable areas exacerbates the impacts.

OPPORTUNITIES:

EARLY WARNING AND FORECASTING SERVICES

Strong forecasting services can protect millions of people from extreme weather and have numerous business applications.

INVESTMENTS IN RESILIENCE

Channeling institutional investors' assets towards resilience-building can play an instrumental role in protecting societies from extreme weather.

COST-EFFECTIVE ADAPTATION

The necessary expenditure on climate resilience can be turned into pioneering projects creating a more sustainable future.

LACK OF FRESH WATER

Though access to water is protected under international human rights law, lack of fresh water threatens health and social cohesion and also poses risks to food and energy security.

OPPORTUNITIES:

WATER-EFFICIENT AGRICULTURE

Traditional approaches and modern technology can be combined to create agriculture that withdraws less water and produces more crops.

FRESH WATER PRODUCTION

New technologies and use of renewable energy can make desalination and purification viable options to meet water demands in arid environments.

SMART WATER REGULATION

Clever regulation can dramatically reduce the withdrawal of water in many contexts and open the area up to private investment.

UNSUSTAINABLE URBANIZATION

200,000 people migrate to cities every day. If not managed properly, the cost of congestion, pollution, and the detrimental health effects of such rapidly growing cities threaten future prosperity.

OPPORTUNITIES:

COMPACT, GREEN AND CONNECTED CITIES

Developing emerging cities in a compact, green and connected manner can reduce the capital cost of infrastructure and result in more attractive cities.

RURAL GROWTH INITIATIVES

Creating job opportunities and fostering growth in rural areas can relieve migration pressure and alleviate overcrowding in cities.

SMART CITIES

Big data and real-time data analytics and responses can make better use of available resources in stressed urban areas.

NON-COMMUNICABLE DISEASES

Non-Communicable Diseases (NCDs), including cardiovascular diseases, cancers, diabetes, and chronic lung diseases, pose a siginificant threat to lives, livelihoods and economic development globally.

OPPORTUNITIES:

COMBAT NCDS WITH MOBILE TECHNOLOGIES

Mobile technologies have an almost universal reach that can be converted into better access to health services and stronger health systems.

INNOVATIVE FINANCE FOR A HEALTHY GENERATION

New financial mechanisms can accelerate social policy innovation and include private sector finance for health initiatives targeting early childhood.

EVERYDAY HEALTH ENABLERS

Environments that facilitate health in the form of nutritious food choices or sufficient amounts of daily physical activity can greatly reduce NCDs.

LOCK-IN TO FOSSIL FUELS

In the energy system, lock-in to fossil fuels inhibits not only the immediate reductions in GHG emissions but also public and private efforts to introduce alternative energy technologies.

OPPORTUNITIES:

REGULATED ENERGY TRANSITION

Regulatory initiatives can accelerate the transition to cleaner and more efficient energy generation and provide dynamic incentives for innovation.

ENERGY AUTONOMY

Autonomous energy generation through off-grid or micro-grid renewable sources is tackling energy poverty and reinventing the role of households in energy systems.

GREEN CONSUMER CHOICES

Consumers' concerns about the environment and climate change can be translated into sustainable choices and initiate larger structural changes.

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UN GLOBAL COMPACT

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