



Whitepaper

**Can an ecosystem  
of partnership**  
help transform the  
food industry?

# How can an ecosystem of virtuous partnership help to transform the food industry?

## The role of collaboration in tackling global issues.

**The challenges facing the food industry are complex and beyond the resources of any single agency. The urgency and severity of the impending climate crises demands a new and radical collaborative approach from all stakeholders. Government, academia, NGOs, and every type of business – from startups to long established corporations – must work together to enact change. The time for action is now.**

Author: Ian Roberts, Chief Technology Officer, Bühler Group

In October 2018, the Intergovernmental Panel on Climate Change (IPCC) published its starkest warning yet on the impact of global warming<sup>1</sup>. The report concludes we have just 12 years left to ensure that global warming keeps to a maximum of 1.5°C above preindustrial levels. The report explores the consequences of 1.5°C global warming compared to a 2°C increase. The scientists warn that if we exceed the 1.5°C threshold, even by half a degree, the risks of floods, extreme heat, and poverty will increase for hundreds of millions of people. It calls for “rapid and far-reaching” transitions in energy, industry, buildings, transport, and cities in order to cut carbon dioxide emissions to 45% below 2010 levels to limit global warming to 1.5°C. We are already living with the consequences of a 1°C temperature rise.

The food industry is on the climate change front line. The IPCC report shows that increased carbon dioxide levels, rising temperatures and changes in precipitation will result in lower yields and nutritional loss for staple crops such as corn (maize) and wheat<sup>2</sup>. Temperatures rising another 1°C will mean insects being twice as likely to lose half their habitats<sup>1</sup> impacting plant and crop pollination as well as our finely balanced ecological systems.

In February this year the United Nations Food and Agriculture Organization (FAO) released its report on the State of the World’s Biodiversity for Food and Agriculture, looking at the role biodiversity plays in food production<sup>3</sup>. It found that 20% of the world’s vegetated

surface has become less productive in the last 20 years due to chemical overuse and the expansion of cities and industry. Despite over 6,000 plant species being grown globally for food production two thirds of the world’s population are dependent on only nine food types: sugar cane, maize, rice, wheat, potatoes, soybeans, oil palm fruit, sugar beet, and cassava. To be so over reliant on such a narrow food source during a time of extreme climate change is high risk. Climate change scientists argue that the development of crop varieties that can cope with greater weather extremes may be the single most important step we can take to adapt to climate change<sup>4</sup>.

### Agricultural reform

Our existing agricultural system is also contributing to the problem. It is estimated that a quarter of all greenhouse gas emissions are coming from agriculture<sup>5</sup>, 70% of our fresh water is used in farming, a third of energy usage is in food production and a third of all food produced is wasted. This is happening as the global population is set to expand to 9.8 billion by 2050, requiring us to increase protein production by 50%<sup>6</sup> above 2012 levels once you factor in food losses.

The major challenge will be increasing production without further degrading our natural resources. The UN estimates<sup>7</sup> that over the next 20 years 2.5 billion more people will be living in cities to further their opportunities. Two out of every three people on the planet will live

in cities or other urban centers, The Brookings Institute calculates and additional 170 million people will enter the middle classes annually over the next 5 years, mostly in emerging economies such as Asia, India, and China<sup>8</sup>. These demographic changes will impact food production as one of the fundamental expressions of increased wealth and status is what we choose to eat.

## Collaboration as solution

We face complex challenges that cannot be resolved by a single agency or sector. Issues such as climate change, food waste and biodiversity loss, impact us all and this generation will be judged on whether it takes action or stands by while the planet's resources and even its existence is imperiled.

Solutions are emerging from many sources. But it is only when different stakeholders work in co-operation that it will be possible to leverage these new ideas to help address the challenges we face. Academia is providing the seeds of change through research into areas such as innovative digital processing, materials science, new protein sources and environmental agricultural techniques. These breakthroughs are being picked up and developed by a new generation of entrepreneurs, often by creating startups that operate outside the protective environs of established businesses.

Startups have the potential to become much needed disruptors to the conventional way of doing things. Rather than seeing them as a threat, established businesses are starting to recognize them as useful crucibles for the development of innovative solutions. Corporations are recognizing the need to use their market power and expertise to provide the scalability, resources and market penetration that so often jeopardize the economic sustainability of novel technologies.

Governments also have a role in providing the infrastructure, economic incentives and regulatory frameworks to drive innovation and change. NGOs are key to developing the resilience of some of the world's more vulnerable communities being impacted most by climate change and population growth. Global solutions no longer lie in the actions of individual agencies but in the development of stakeholder ecosystems, capable of bringing together the resources and skills required to innovate real and urgent change.

The good news is that these ecosystems are already being developed and they are providing a model for change. The NGO MassChallenge Switzerland was set up three years ago to facilitate a link between startups and established industry leaders such as Bühler, Nestlé,

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**Matt Lashmar,**  
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Givaudan, Barry Callebaut, and others. With a focus on sustainable food production and now e-mobility, it provides a platform to accelerate promising startups with the will to address global challenges without taking an equity stake.

To date, MassChallenge has received over 20,000 applications, accelerated 200 startups, created over a thousand jobs and generated over a hundred million dollars in revenue.

“We are trying to create the sort of value that can change society,” explains Matt Lashmar Managing Director of MassChallenge Switzerland. “Startups with great ideas often fail because they don't have market access or the right product that fits the market, so if we can give them the opportunity to access big business and their distribution channels, then the combination of access, insight and distribution gives them a terrific start.”

Another example of collaboration in action is Partners in Food Solutions, an NGO that links the expertise of six global food companies, including Bühler, with food processors in Africa. Partners in Food Solutions marries a food processor facing a processing, production, packaging or marketing problem in Africa with experts from major food companies in a bid to help develop the sort of efficient food value chain that will enable self-sufficient and sustainable food systems across Africa.

“At the moment Africa imports close to USD 40 billion of food each year and yet it is a continent that can feed itself and other parts of the world if it can get its whole value chain working,” explains Jeff Dykstra CEO and Co-founder of Partners in Food Solutions. “We are taking 700 years of knowhow acquired by the world's leading food companies and applying it to any problem, challenge or opportunity faced by an African food producer, the fire power of knowledge developed by these six companies is totally unique.”

## Conclusion

- It is only through collaboration that we can effectively address climate change, population growth, the protein gap, loss of biodiversity and urbanization.
- Models already exist that illustrate how collaboration between multiple stakeholders can be much more effective than the actions of a single agency.
- Barriers to change are less to do with technological innovation and more to do with the ability to change behavior and understand the benefits of collaboration.
- Industries that do not innovate within ecosystems risk becoming isolated.

### Mutual benefits

The challenge facing the food industry is how to exploit the skills and resources at its disposal to tackle climate change while producing safe and nutritious food sustainably and profitably for a growing global population. Technological innovation is less of an obstacle to achieving this goal than breaking down the old business conventions that state the primacy of competition and so discourages transparency and collaboration. Lashmar regularly argues the merits of cooperation through MassChallenge to corporations and he believes significant changes are taking place. “Twenty years ago, companies talked solely about profits and shareholder value but today I am struck by how everyone is talking about business and sustainability coexisting,” he explains.

The message that cooperation can be of mutual benefit needs to be spread more widely. Company boards are looking for stories to tell about the sustainability of their products and processes. A new generation of millennial employees want to work for ethical organizations and companies that need to be seen to be actively addressing our global challenges if they want to attract talent. The speed of technological advances means established businesses can no longer hope to keep abreast of change solely through their own research and development and so by supporting startups they are able to access some of the best new ideas on the horizon.

“If a corporation comes to one of our demonstration days, they may end up talking to 12 startups in a single day, which is going to provide invaluable insight into the way the market is changing,” says Lashmar. The process of collaborating also generates a whole new set of abilities and talents in your workforce. “Imagine you are working for Bühler and you are part of a virtual team with colleagues in Cargill and General Mills solving a processing problem for a firm in Uganda without the resources you are used to,” explains Dykstra. “The skills you are

developing helping that firm in Uganda – cross cultural working, virtual team effectiveness, solving problems with less resources – all help you to perform even better in your day job.”

New examples of collaboration should be established based on existing successes such as MassChallenge and Partners in Food Solutions. Existing projects need to develop scale generating larger and more effective collaborative ecosystems. Greater cooperation must also take place at the point where innovation is created.

One example is Bühler joining forces with Unitech International to form the Carbon Footprint Challenge, a collaboration that brings together people in business and academia to explore how best to decrease the carbon footprint in manufacturing, industrial processes and throughout the value chain. Conventional business relations between service provider and customer should also be seen as potential collaborations to address climate change. In 2016, Bühler set out its sustainability target to use new digital solutions to cut food waste and energy consumption 30% by 2020. Since then the targets have been raised to 50% and include water use.

Digital technologies are facilitating greater transparency across the whole value chain, which in the food processing industry is reducing waste, increasing yield, raising quality and cutting energy costs. While transparency is an opportunity to some and a perceived risk to others, by exchanging capabilities through collaboration the whole value chain has the opportunity to better exploit the increasingly limited resources at our disposal.

New collaborative models also need to be explored such as the creation of a climate change fund, the development of an accelerator specifically for startups or the creation of a business consortium to make early stage technologies available faster. All these potential approaches must be within the context of the need for urgent change.

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## Matt Lashmar

Managing Director of MassChallenge Switzerland



Matt Lashmar is Managing Director of MassChallenge Switzerland. He joined the NGO in March 2019 as he has a passion for helping entrepreneurs bring their ideas to fruition. He's a qualified coach and combines this with his extensive commercial experience. In a past life, Lashmar worked at Procter & Gamble managing both a country and region, leading marketing, sales & commercial management across consumer focused and B2B businesses in developed and developing markets in Europe, and Asia. He enjoys building bridges between startups and corporate partners, both have very different approaches, but both need each other to succeed.

## Jeff Dykstra

CEO and co-founder of Partner in Food Solutions



Jeff Dykstra is CEO and co-founder of Partners in Food Solutions. He has spent half his career in business and the other half in relief and development, including two years living and working in Zambia, and he has worked for both global organizations like Cargill and World Vision as well as several start-up ventures. For his work with PFS he was recently named an Ashoka Fellow, an honor reserved for leading social entrepreneurs around the world and was awarded a Bush Fellowship in 2018.

## Ian Roberts

Chief Technology Officer



Dr. Ian Roberts graduated in Chemical Engineering and obtained a PhD in Process Engineering from the University of Wales (Great Britain). From 1997 to 2009, he held various management positions at Nestlé, acting among other positions as internal management consultant, as Director of Innovation for Nestlé Mexico, and as Director of the Chocolate Centre of Excellence in Switzerland. He has been Chief Technology Officer at Bühler since 2011. He is also a board member of the academic institutions Wyss Institute and IFNC-EPFL and president of MassChallenge Switzerland. Ian Roberts was awarded European CTO of the Year 2016 and is a Fellow of the Institute of Chemical Engineers.

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