



Agri- business Agenda 2019

**Acknowledge
Evaluate
Accelerate**

June 2019

kpmg.com/nz



Introducing the 2019 KPMG Agribusiness Agenda

This year's KPMG Agribusiness Agenda marks an important milestone. It is the 10th year we have published the Agenda (and the 16th report we have released). To celebrate this landmark, this year's report is a little different.

Acknowledge

Page 7

As we approach the end of the decade, we reflect on how the agri-food sector has evolved and acknowledge the progress made. Through highlights from each of the previous reports, we celebrate the progress made in transitioning from volume to value, in recognising the license to operate is a privilege, and in establishing greater trust across the industry. We revisit some of the case studies we have featured over the last 10 years, to update on the progress these organisations have made in creating a prosperous future for themselves, and all New Zealanders.

Evaluate

Page 33

While the sector has set a course to a more ambitious future, we recognise that in a global environment where rapid and disruptive change has become the norm, there remains much to do. We have again taken the pulse of the industry through our annual Priorities Survey, coupled with conversations with industry leaders, to understand the current state of the nation. The overriding theme from our conversations is that attitudes and expectations on the industry are lifting continually; whether that relates to how land is used, greenhouse gases mitigated, customers engaged or debt facilities gained, the message was clear: what was acceptable even last year will not be enough to maintain relevance in the future.

Accelerate

Page 55

More analysis is becoming available to suggest that change today is faster and more profound than at any previous point in history. The challenge is that change is only going to get faster. The agri-food sector has been slow to embrace digital disruption, but the fusion of technologies of the fourth industrial revolution has enabled the first Global Agrarian Revolution. Against this background, the sector has no choice but to lean into disruption and work out how it is going to play the infinite game. A game where there are no finish-line winners; only those that keep playing and those that drop away.

KPMG Agri-Food: Ten years of helping fuel New Zealand's prosperity



KPMG New Zealand has always worked alongside many of New Zealand's leading primary sector businesses, given the critical role they play in our economy. We, like many other businesses, assessed all aspects of our operations in the midst of the Global Financial Crisis, and recognised that there were some systematically important sectors of our economy that would be key to recovery and long term growth.

Of these sectors agribusiness stood out. It was a sector inherently connected to our land and water, central to our ability to earn export revenues, linked to growing global demand for food and fibre products and one where key decisions makers were largely based here, and not in Sydney, Melbourne, Hong Kong or London. It was also a sector we identified as ignored by analysts, because it was largely owned through co-operatives and trusts rather than listed entities.

As we started to talking to industry leaders to enhance our understanding of key issues facing the sector it became apparent that organisations were facing similar issues and challenges. These were areas where we could draw on KPMG's global knowledge base to bring relevant insight.

As a consequence we invested in providing knowledge and thought leadership to the agri-food sector to assist it in realising its full potential, for the benefit of all New Zealanders.

First off the rank was making our weekly internal news summary, Field Notes, available to clients and contacts. This newsletter is now sent to more than 5,000 contacts each week and is supported by its own web portal (that is soon to be upgraded) and an app that is available on the Apple AppStore and Google Play.

In April 2010, we released the first Agribusiness Agenda. The response was immediate and confirmed to us that there was demand for independent thought leadership that looks beyond movements in commodity prices towards global trends and opportunities for food and fibre producers.

We recognised that for our thought leadership to be valuable it had to be easily accessible to everybody. We have always made the Agenda available for free on our website, and spent time traveling the country to explain our work to various audiences, be they school groups, industry or company conferences, producer days or board meetings, to help people to recognise industry trends and how they can respond. We have travelled from the Far North to Invercargill talking to thousands of people over the last decade.

We recognised the important role that Fieldays plays in connecting people in the primary sector and we worked with them to create the KPMG Agribusiness Leaders Breakfast in association with Fieldays, held on the first morning of the National Fieldays. This event has become an important part of the Fieldays experience and we have been proud to be a sponsor of Fieldays since 2011.

Following the success of our annual breakfast at Fieldays, we have been delighted to partner with the Canterbury A&P Show to create a similar annual breakfast event with a strong South Island focus.

As part of our strategy to share insights and support the development of people across the primary sector, we have developed relationships with the Rural Leadership Trust (which runs the Kellogg and Nuffield programmes) and the Agri Women's Development Trust.

We have supported the Te Hono Movement since its inception. Part of this relationship included arranging for KPMG's global leader on climate change to attend the first Stanford bootcamp in 2012, and we have supported each bootcamp since.

We have been a partner in the project to create an Agri-Food Experience Centre at the ASB Farm at Mount Albert Grammar School in Auckland since it was initiated. Our ambition is to provide an experience of the sector to 25,000 Auckland students a year.

It has become apparent that innovation and technology will play a significant role in the industry's future, and we have developed relationships with organisations that are supporting our innovation ecosystem. Our partnerships with SPROUT and Agritech New Zealand enable us to explore ways to bring our knowledge to organisations, developing technology that will enhance industry success.

As part of highlighting the impact that change is having on the global food system, we were delighted to partner with Plant and Food Research, AGMARDT, Food Valley and Wageningen UR to enable a group of sector leaders to tour the Netherlands in February 2019 and be exposed to the speed and extent of change shaping the industry in that country.

Ultimately our purpose is to fuel New Zealand's prosperity for the benefit of all New Zealanders. Given the significant impact the primary sector has on our economy and its potential to capture more value from rapidly changing global markets, we are committed to continuing to play our part in enabling the industry to understand and respond to the opportunities in front of it.

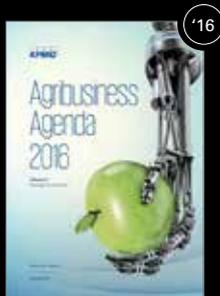
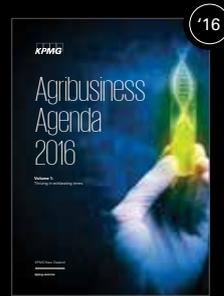
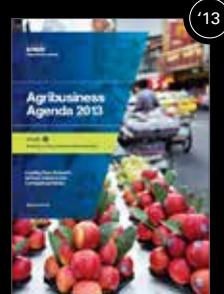


**CANTERBURY
A&P SHOW**

Fieldays^{NZ}



*Global Vision, Leadership
and Innovation in Agriculture*



Ministerial foreword



Hon. Damien O'Connor

Minister of Agriculture, Biosecurity, Food Safety and Rural Communities. Damien is also Minister of State for Trade and Export Growth, New Zealand.

The food and fibre sector is in a very strong economic position. Forecasted growth for the sector is 7 percent for 2019, stemming from continued innovations, developments and exporting of high-value products to our overseas markets.

KPMG's Agribusiness Agenda acknowledges progress achieved over the last 10 years. This shows huge increases in tradeable export dollars with both China and the rest of the world. New Zealand has increased both the value and volume of our products. I want to encourage further growth in value-add strategies to grow our export value more.

Biosecurity is front of mind for agribusinesses, it was again ranked as the top issue in the KPMG Agribusiness Agenda. A robust and well-funded biosecurity system is essential for our food and fibre sectors, and for the wellbeing of New Zealand.

Biosecurity remains a priority for me. We continue to face significant challenges, including the threat of Brown Marmorated Stink Bug, the recent fruit fly discoveries in Auckland, and – especially - the ongoing work to eradicate the cattle disease *Mycoplasma bovis*.

For this reason I remain committed to the 'Ko Tātou This Is Us' campaign which is working to engage New Zealanders in the biosecurity system. We need all New Zealanders playing their part to keep unwanted pests and diseases out of New Zealand.

Part of the campaign is the recently released in-flight biosecurity video, which reminds all visitors to the country, and Kiwis returning home, about the importance of protecting Aotearoa New Zealand from unwanted pests and diseases.

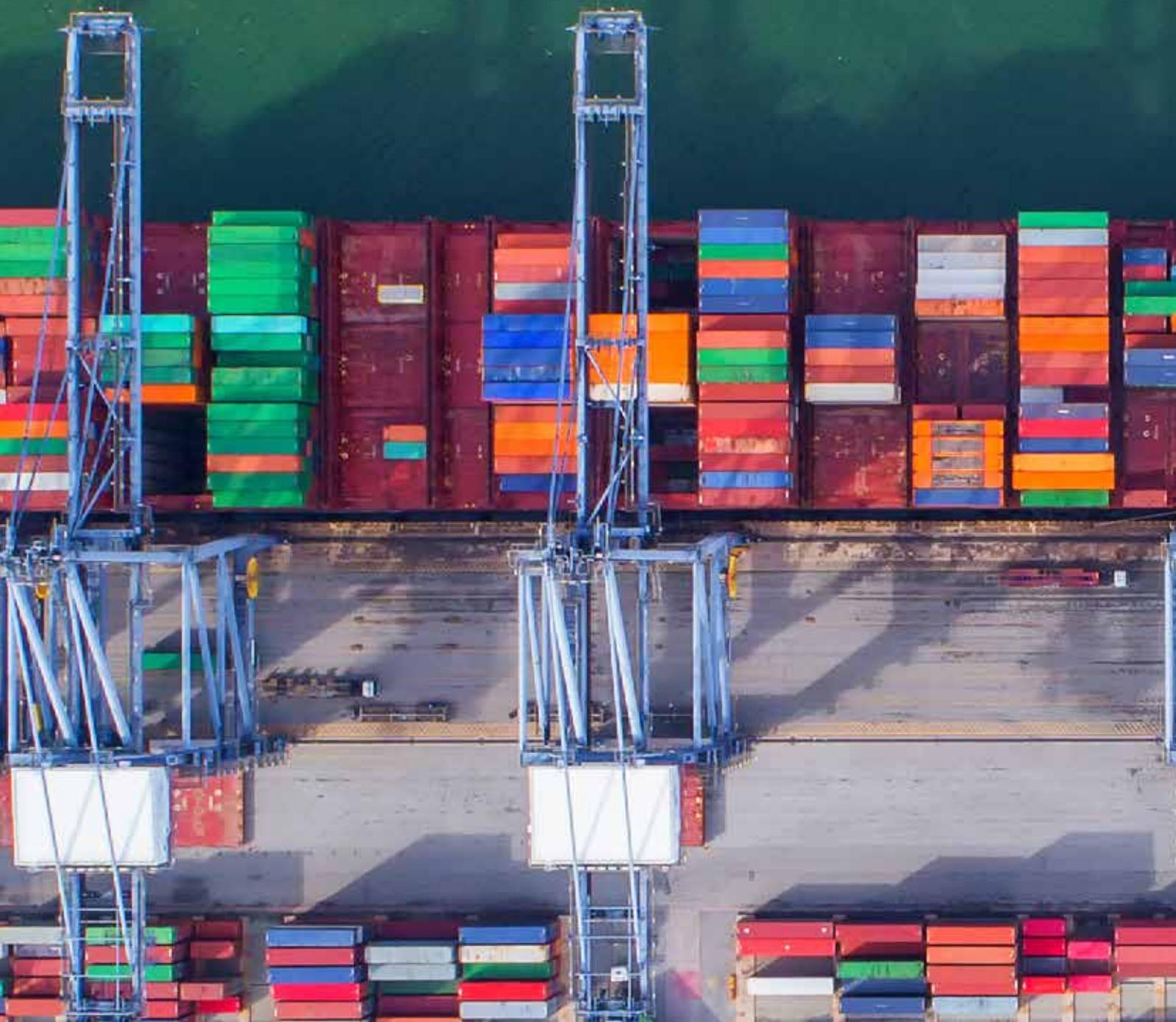
The targets of the Zero Carbon Bill will require significant investment and changes in how some of our food and fibre sectors operate. It will mean boosting innovation to produce technologies that will help us get there. The Government is committed to making this a just transition and will support the food and fibre sectors to meet these targets.

Farmers and growers are calling for certainty over what is coming, which is highlighted by KPMG's Agribusiness Agenda.

Simply providing an environmental target they need to meet is not enough – we need to work with our food and fibre sectors to get there by providing the necessary tools, information and advice in practical ways that work for them. It's important we give farmers and growers the confidence and assurance that there is a future in the food and fibre sectors.

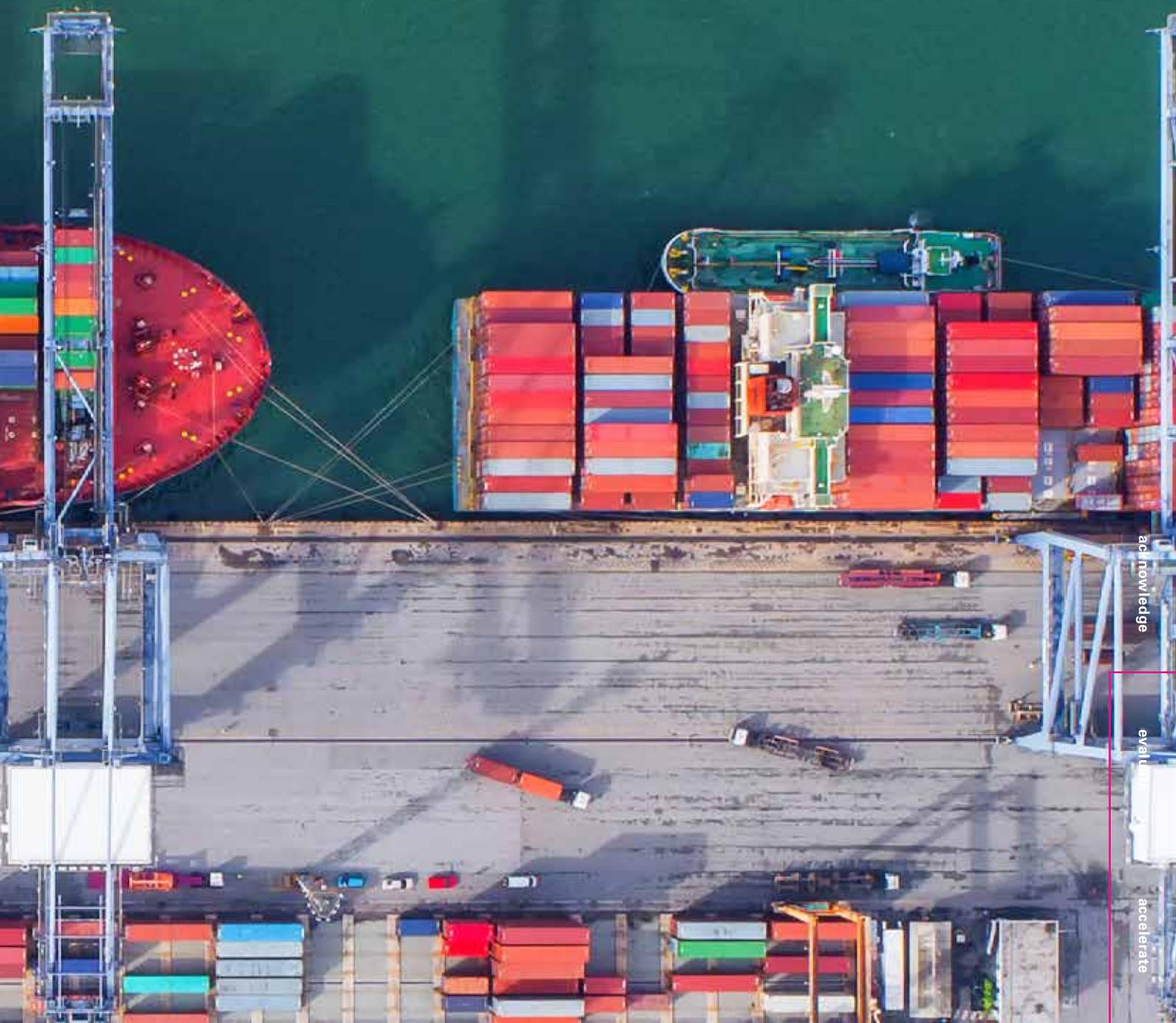
Each sector has its own challenges and opportunities. What we need is a shared vision and I set up the Primary Sector Council in 2018 to do just that. It is not an easy task to bring together traditionally fragmented industries to support common outcomes and objectives. The Council is engaging industry on its draft vision and I anticipate a final version being presented later this year.

The KPMG Agribusiness Agenda is a valuable contribution to the industry's discussion of disruption, innovation and adaptation. The Agenda discusses the acceleration of both global farming systems and trends, such as vertical farming, and heightened awareness and knowledge of consumers and what they are demanding from their products. Understanding these trends will give our food and fibre sectors a strong base from which to encourage further innovation and value creation, and ensure a prosperous and sustainable food and fibre sector well into the future.





Acknowledge



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Celebrating a decade of progress

One of the pleasures of preparing for this year's 10th anniversary KPMG Agribusiness Agenda is the excuse to revisit each of the 15 Agenda publications we have released and reflect on the conversations that they have been based on over the last decade.

Being given an excuse to reflect on the highs and lows of New Zealand's agri-food sector (or agribusiness sector as it was a decade ago) has been a rare privilege and has brought back memories of vigorous debate and exceptional moments of insight. The enthusiastic and open way that contributors have engaged with the Agenda and have been willing to share their personal perspectives on the strengths and weaknesses of their own organisations, as well as the industry, has made these reports a unique record of the sector's evolution over the last decade.

In the blur of everyday life it is often easy to forget the progress that the sector has made. Ten years ago there was no question the principal metric across the sector was volume and there was no question that more was better. The industry's performance in respect of the environment, animal welfare, water, labour and other similar matters were not things to discuss publicly as being open on challenges would, it was perceived, be used against producers in their quest to secure more volume. We were not sure the industry was ready for an independent assessment of its opportunities and challenges but decided to give it a go and the rest, as they say, is history.

New Zealand is a very different country today and the agri-food sector has played a significant part in shaping the new Aotearoa New Zealand. While it is fair to say that commodity prices remain closely correlated with export returns, this broad generalisation fails to acknowledge the significant effort, innovation and investment that has been made in shifting the industry from a volume basis to a value lens.

One of our contributors this year suggested that too often the Agenda has focused on the challenges facing the sector while underplaying the successes that have been achieved, and this has, unintentionally, contributed to the pressure that many in the sector feel they are currently operating under. They added that foreign visitors regularly observe how hard we are on ourselves over relatively minor weaknesses and the lack of credit we take for the world class activities undertaken around the country every day.

Having had the opportunity to review the Agenda's back catalogue, it became apparent that real and measurable progress has been made in transforming the industry in many ways over the last decade.

There is no question that we add more value to our products today than we did 10 years ago through the increased sophistication of processing systems, the formats that our products are delivered to customers in, the brand stories told and the people we surround the product with. We are much clearer on our place in the world. We recognise, that given cost structures and the expectations of the community over the use of the natural environment, that our place in the global food system is supplying premium products to the most discerning consumers around the world.

Huge strides have been taken in understanding that the use of the land and water in New Zealand is a privilege that the wider community grants to producers, rather than an irrefutable right to farm that is passed from father to son. Our contributors today recognise that the privilege is one that needs to be treasured rather than taken for granted and, more importantly, that it comes with

an obligation to ensure that our natural capital is handed onto the next generation in a better state than it was received from the previous generation. We believe that most in the industry now recognise that land is borrowed from our children rather than inherited from our parents.

From our perspective, one of the biggest changes across the industry has been the progress in building strong connections between leaders and influencers across the industry which are starting to foster a wide range of innovative collaboration. When we started running our Roundtable discussions it was not unusual for many people in the room to be meeting for the first time. That is not the case today; it is more likely that attendees are connected with each other and doing business together. There are many initiatives that have helped to deepen relationships and trust, but there is no question that they are enabling the industry to take advantage of more of the opportunities in front of it today than would have been the case 10 years ago.

The connections built between Māori organisations and traditional agribusinesses are starting to deliver benefits across the sector. A key learning is improved understanding of the long term perspectives that Māori take when making decisions. The agri-food sector has historically struggled to think much beyond the end of the current season, So, recognising that there is a fifty or one hundred year time horizon that is relevant to decision making if you aspire to be a good steward of your land and your community brings a new focus to decision making. It has also become apparent that this long term focus resonates with customers, particular in Asia.

The industry has also made progress in lifting the perspective of some participants beyond the farm or orchard gate to help them understand that they are an integral part of a value chain that ultimately provides a food or fibre product to a consumer somewhere in the world. While much remains to be done in fully connecting every producer to their consumers, encouraging them to think of themselves as food producers is an important first step. This forces farmers and growers to think more carefully about what they are producing and why and the care that needs to be taken. While we would like to see everybody across the industry having the opportunity to be immersed into the markets their products go to and to meet the consumers that ultimately appreciate what they produce, the efforts made in the last decade to provide clearer market signals will help to accelerate value capture.

Despite the progress the industry has made over the last year, confidence is currently low. Efforts to encourage farmers and growers to celebrate their role as food producers have not fallen on deaf ears but the positive messages have on occasion been drowned out by a chorus of criticism, much of which has been unbalanced. If you have been told for years that you are the past, that you are bad for the environment, that you underpay your labour, even if you know these claims to be inherently wrong many end up believing them. It is this long term erosion of confidence that needs to be reversed.

A number of contributors referred to a recent conference they had attended in Tasmania. Tasmania as a state has been told for decades by the rest of Australia that it is different. Rather than continuing to stew on the put downs, they have decided to celebrate their differences and taken pride in the competitive advantages they deliver. The food production sector in Tasmania has built a highly engaging provenance story on the back of these differences

and use it to explain to customers why their products are better choice than those produced elsewhere. The State Government in Tasmania has backed this initiative, ensuring it is properly funded, and as a consequence it is building confidence and creating value.

In a world where change is unrelenting there is always more to be done. However, it should never be overlooked that much has already been done. Everybody connected with the industry should be incredibly proud of the progress that has been made over the last decade. Recognising publicly and proudly the contribution that our food and fibre producers make to the economy, in the same way that Tasmania celebrates its differences, will offer a strong message of support to those that have found themselves farming in a fishbowl in recent years. Their efforts are valued and appreciated by the wider community.

Ian Proudfoot
National Industry Leader,
KPMG Agri-Food New Zealand

Global Head of Agribusiness,
 KPMG International



New Zealand - A different country 10 years on

Aotearoa New Zealand is a very different country to 10 years ago. We have grown in presence, and become more diverse. This infographic shows a country that has been economically successful - growing exports, tourism and wealth. This same growth, however, has stretched our infrastructure and challenged our environment; and has not been shared equitably across the whole population.





KILOTONNE CO2 EQUIVALENT
Annual Greenhouse Gas Emissions from Agriculture



HECTARES
Land covenanted to the nation through QE2 Trust



ANIMALS 000'S
Total cattle in New Zealand



ANIMALS 000'S
Total sheep in New Zealand



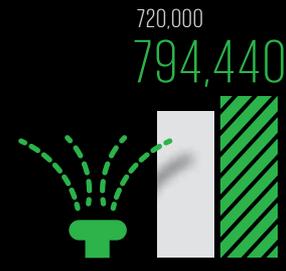
NUMBERS
New Zealand population



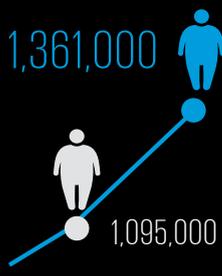
SCORE [RANK]
Yale University Environmental Performance Index



NZ\$M
Government investment on biosecurity in budget



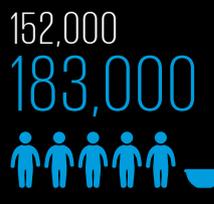
HECTARES
Irrigated land in New Zealand



PEOPLE
Incidence of obesity in New Zealand



SCORE [RANK]
Corruption Perception Index



PEOPLE
Children living in low income households



NUMBERS
Overseas visitor arrivals



RANK
The Good Country Rankings



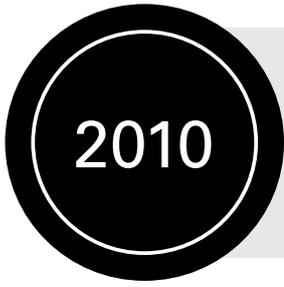
% LIVING IN URBAN AREAS WITH POPULATION OVER 10K
Percentage of New Zealand population living in urban areas

Aotearoa New Zealand is a young country. We are a country with growing pains, but one that is becoming clearer on the values that are most important to our society. The evolution of the primary sector over the last decade positions our agri-food industries to play a significant role in a maturing country; one that aspires to both care for its citizens and contribute to the world.

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The big opportunities and challenges facing New Zealand Agribusiness



Released on 19 April 2010, the first KPMG Agribusiness Agenda hit a quiet news day. It got an immediate response. Federated Farmers suggested the report overlooked micro on-farm issues by delivering a strategic helicopter view which pushed the 'clean green' issue. However they did concur with our views on the importance of profitable farm businesses, investing in broadband, and water storage.

The report was tabled in Parliament as part of a question to the Minister for Communications and Information, Stephen Joyce, on the Government's investment into rural broadband. David Carter, then Minister of Agriculture, referred to the report in an address to DairyNZ's Farmers Forum, agreeing that New Zealand can no longer compete as a food exporter on the basis of low prices.

He also supported the report's description of water resources as NZ's liquid gold.

The report provided commentary around 12 themes grouped under: production methods, market realities, sustainability, and rural infrastructure. It argued that New Zealand's future was tied to securing better prices for the products we grow rather than trying to compete with low-cost producers on volume.

We highlighted that the intangible connection between New Zealand and its clean-green-pure experiences and products; which had developed through the country's nuclear free positioning, 100% Pure tourism campaign, and the Lord of the Rings. While this was benefiting the industry, it was at risk. Noting claims of 'commercial greenwash', the report suggested the industry must urgently ensure it was using practices consistent with the golden goose, New Zealand's global image.

On co-operative structures...

We consider that co-operatives have the ability to deliver the future for New Zealand agriculture; however they need to be flexible in how and where they source capital, and non-supplier structures may need to become a more common source of capital.

On volatility...

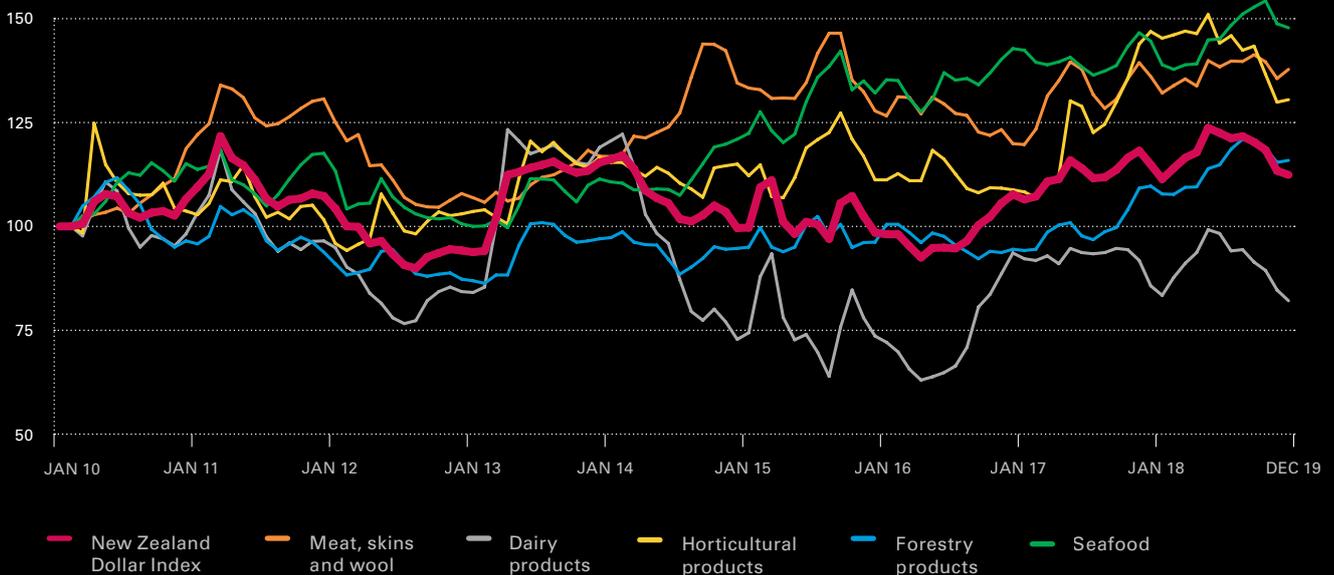
Volatility has been a fact of life for the agribusiness sector and we expect that as demand and supply positions in global markets become tighter, further price shocks will become an increasingly common phenomenon.

On sustainable business...

Industry leaders must be prepared to put their personal views on climate change to one side, and think about sustainability as a business opportunity rather than purely a cost.

Commodity prices have remained volatile across the decade - but have trended up

1 JAN 2010 – 31 DEC 2018





Realising global potential



The second Agenda was prepared against a backdrop of high commodity prices, biosecurity issues, extensive free trade negotiations and the Christchurch earthquakes. Leaders recognised the significant growth opportunities available to the sector but also highlighted that most of their time was spent talking about issues they had little ability to influence (including exchange rates, commodity prices, and the weather).

Drawing on Jim Collins' book, Good to Great, we suggested that the primary sector needed to face up to some brutal facts if it was to move forward and realise its potential. Specifically, that customers have significant power; that New Zealand is a small producer on a global scale and the world does not owe us a living; and that markets are consistently volatile. It is fair to say that

most in the industry have recognised these realities, and now spend far more of their time and effort targeting the attributes they can control.

The Agenda suggested that successful countries, like successful companies, develop a vision of what they wish to achieve and build plans to deliver their vision. We suggested that the industry was ready for a national conversation on its 50-year aspirations; so that policy choices and strategies on priority issues like biosecurity, market access, sustainability and governance could be made within an aspirational growth framework. It is pleasing that the Primary Sector Council is finally leading this conversation and will deliver a consensus vision for the industry later this year.

The Agenda also saw the debut of the industry leaders' Priority Survey, to identify and rank the most pressing issues facing the sector. We saw biosecurity assume top slot, which was not surprising, given that the kiwifruit sector was starting to recognise the full impact of the PSA incursion.

On R&D spending...

Equalling or exceeding the OECD R&D benchmark must be achieved in the fullness of time.

On water..

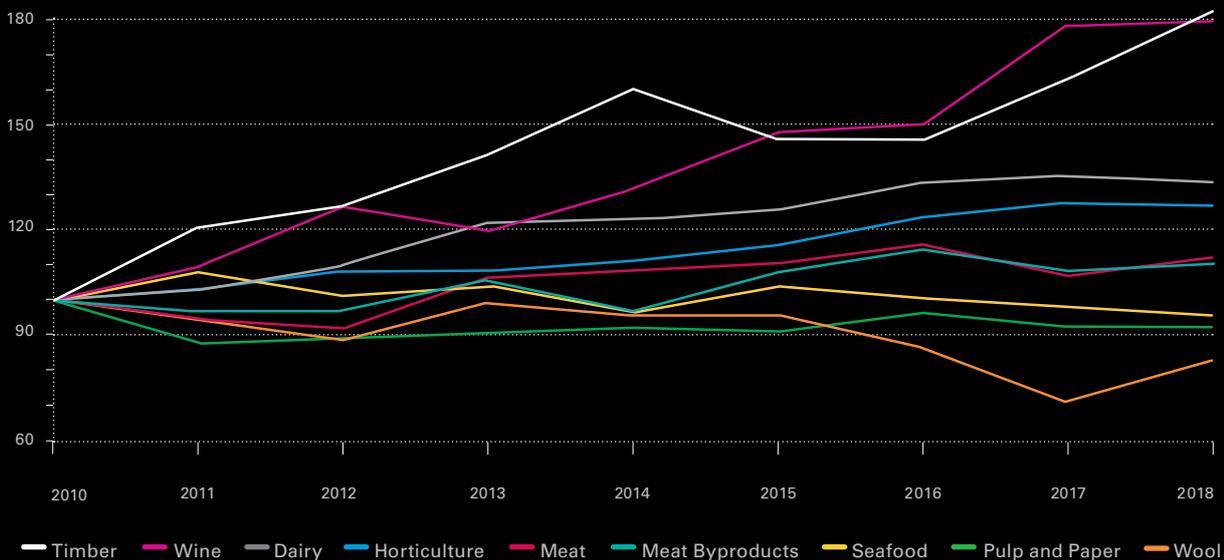
Without the necessary investment in storage and infrastructure, our water will remain a great natural asset rather than a great economic asset.

On foreign investment...

As a small country with a limited amount of equity available, we will always need foreign capital to take advantage of good ideas.

Timber leads the way in volume growth over the decade - Seafood, Pulp and Wool have declined

2010 - 2018



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People unlocking the future



Underpinning the 2012 Agenda was the recognition that traditional volume-based, production-push models were not going to create the future that the industry aspired to. The report argued that success would come from connecting passionate people with the tools they need to build strong customer relationships; thus creating sustained prosperity for all New Zealanders.

We challenged industry leaders on the need for an industry strategy. More than 80% considered there was a benefit in articulating a vision to accelerate attempts to lift the value of New Zealand food and fibre products, and to attract talented people into the sector. The vehicle to create such a strategy was far from clear; although we highlighted that the most important component to success would be the mix of people selected to lead the exercise, something demonstrated when Minister O'Connor appointed the Primary Sector Council last year.

The Agenda also explored the effectiveness of 'industry good' activities and the innovation system.

The sector's historic success has been built on intergenerational investments made in the 1960s and 70s. There was concern that levy arrangements did not enable similar investment to be made into the platform for future success. Our work highlighted strong support for levy investments targeted at areas of market failure.

Since 2012, the industry good sector has transformed. New levies have been introduced and the organisations have become clearer on how they contribute to supporting their funders to prosper.

The Agenda also highlighted that New Zealand business relies heavily on government funding for innovation. With government's reticence to take big R&D risks (as failure doesn't play well in the newspapers), the message was clear: companies need to take the lead on bold innovation strategies. We need to rely on more than the 'eureka moment' and No. 8 wire for success.

The need to amplify limited R&D budgets by collaborating with domestic and international partners was highlighted; as was the need to develop an ecosystem to support innovative start-up businesses.

On broadband...

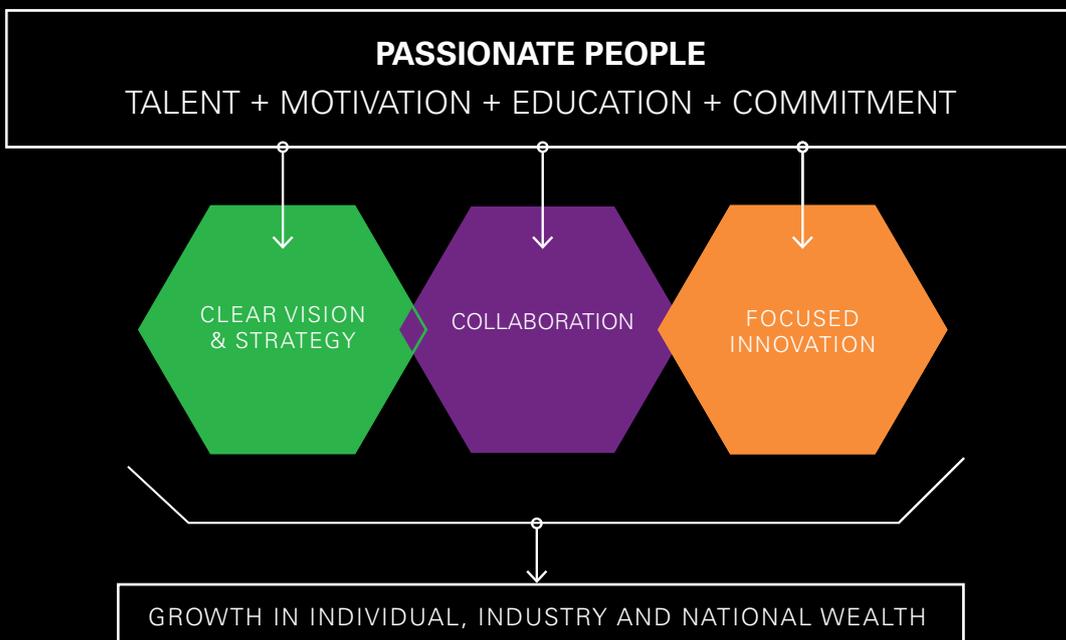
There is concern that the Government's focus is on delivering more entertainment options to urban voters, rather than leveraging their investment to create economic value.

On trade...

Industry leaders express concern that the Government was focused on volume over value in respect of the wide range of trade negotiations in progress.

On Halal food...

The attributes of New Zealand production align superbly with Halal, and we should aim to be the world leader in this market.



2013
Vol 1 & 2

The State of the Nation Maintaining people- powered performance



Volume 1: The State of the Nation

The 2013 Agenda was published in four instalments across the year, each covering a different theme. We introduced case studies to celebrate organisations striving for step change in their organisations.

Volume 1 sought to understand what motivates those who work across the primary sector; and more fundamentally, why do we do agriculture in New Zealand?

Our attempt to articulate this purpose was captured as **“enhancing the lives of New Zealanders and international consumers through utilising our world-class natural resources sustainably to provide prosperity to our society and a commercial return to those investing capital.”**

The report highlighted that the contribution the primary sector makes to New Zealand is not well understood by wider society, and that the onus was on the industry to make the effort to engage more substantively with the public. The industry stood to benefit from better regulation, reduced inconsistency and lower costs; while a better-performing industry would pay more tax to enhance social investment in assets such as schools, roads and hospitals. The report suggested that open conversations exploring the factors that are most important to stakeholder groups is critical, as well as ensuring the facts are presented in an engaging way (something that has become more critical with the rise of social media).

Volume 2: Maintaining people-powered performance

New Zealand’s agricultural success has been driven by talented and passionate people since commercial farming started in this country.

In this volume, we suggested the industry’s X-factor was the capability, know-how, passion and drive of our people – which competitors cannot easily replicate. The challenge was securing enough people with the necessary skills to not only replace retirees, but to enable long-term growth. The report also noted that the skills needed are changing, as new technology is adopted and the regulatory environment evolves.

The Agenda highlighted there is no single solution to securing the necessary talent to maintain and accelerate our people-powered performance. One suggestion was that industry organisations need to position roles as opportunities that should be sought-after by the next generation. We highlighted the development of the St Paul’s Collegiate School’s Centre of Excellence for Agribusiness, and the associated NCEA programme that is now being used in 56 schools. (See the case study on page 17).

The report also highlighted the importance of investing in people (both employment conditions and development), which has started to become a fundamental measure of whether a business is truly sustainable. It discussed the need to provide clearer pathways into the industry and farm ownership. As Professor Jacqueline Rowarth noted in her Foreword, getting this right will ensure primary production professionals will choose to stay in New Zealand and thus realise the vision of a dynamic, vibrant industry.

On collaborating with the wider the community...

If we can have broad agreement around how New Zealand’s natural assets will be managed and utilised for our collective social and economic benefit, that is something worth getting out of bed for.

On a Capital Gains Tax...

There is a relatively widely-held view [that this tax] has the potential to level the playing field in respect of investment options behind and in front of the farm gate.

On the role of women...

The under-representation of women in leadership roles in business in New Zealand and in the global agri-food sector more generally, does not justify the industry continuing to ignore the transformational contribution that 50% of the population can bring to it.

On attracting urban youth...

Attracting young and unemployed people in our cities to jobs in the rural sector would alleviate this wasted economic potential.

2013
Vol 3

Evolving a truly customer-centric industry



This was the first Agenda to focus exclusively on a theme that has become central too much of our thinking over the last decade – namely, the key role that consumers play in shaping markets. The report suggested it is not New Zealand's place to be 'all things to all people', but that organisations need to be very selective about the opportunities they pursue. Success should be measured by how effectively an organisation services their key markets, rather than the total number of countries they sell to.

We argued that the ability to capture a greater share of our products' value relies on us actively promoting relevant attributes of the product. We suggested it was critical organisations invest in getting 'boots on the ground' in their markets; to better understand their customers, and identify the most effective way to articulate their story.

This Agenda featured case studies on Zespri, Comvita and NZ Winegrowers to showcase the investments organisations were making, both individually and as industries, to build sustainable relationships with customers. As John Brackenridge noted in his Foreword, New Zealand has woken up to both our vulnerability and the amazing opportunities in front of us. What has got us here, however, will not get us to where we want to be.

On the realities of adding value...

A winning strategy is easy to write, but realising it in practice is far more difficult. Challenges at every step of the journey include changing customer expectations, working with regulators, responding to competitors and taking producers with you.

On immersing in markets...

Having people on the ground in offshore markets, with daily exposure to a country's culture, enables early detection of emerging trends which can be fed into product and marketing strategies.



St Paul's
COLLEGIATE SCHOOL

When we first spoke to Peter Hampton, St Paul's Collegiate's Deputy Headmaster back in 2013, the school was preparing to open the doors to its ground-breaking new Centre of Excellence for Agricultural Science and Business.

Fast-forward six years and the Hamilton-based school has created a new NZQA approved curriculum - Agribusiness - designed to attract some of our best and brightest into the primary sector – that's gaining traction throughout New Zealand.

The University Entrance (UE) approved achievement standard based courses were gazetted in 2018, following five years of planning with NZQA and the Ministry of Education. In its first year, the programme won a Prime Minister's Education Excellence Award; as well as being short-listed for an International Schools Award.

In 2018, more than 1,000 students across 56 schools studied Agribusiness at NCEA Levels Two and Three. As a shining example of successful collaboration between education and business, the initiative had industry support from the start. Drawing together both rural and urban educators was another key to success.

"From early on, we had support from the likes of DairyNZ, Beef + Lamb, and Gallagher," says Peter Hampton. "We also engaged with other schools from throughout New Zealand; both rural and urban, ranging from big public schools to smaller private schools."

The curriculum covers a wide range of topics relevant to the next-generation of agri-producers – including supply chain innovation, value-add products, future proofing and trends such as alternative proteins.

"We wanted to develop material along the entire value chain, and improve the public perception of primary careers and what they can offer our tyouth," says Peter.

And the effect of the new curriculum has rippled even wider. St Paul's Collegiate through the financial support of its business partners is also providing free resources for all New Zealand teachers, free teacher training, and is creating links with agri-related programmes in New Zealand universities.

Their ambition is to increase participation to 200+ schools and 5,000+ students by 2021; feeding the primary industry with a talent pipeline of motivated and career-focused students.





Balancing the needs of the environment, communities and businesses



The industry relies on everybody doing the right thing every day. It only takes one person, accidentally or intentionally, to abuse an animal, contaminate a stream or underpay their workers and the reputation of the whole industry is put at risk. The final volume of the 2013 Agenda addressed the increasing focus being placed on the industry's license to operate.

The report argued sustainable businesses are not grown from rules and regulations; but from individuals and organisations standing up and making practical contributions to restore the environment, strengthen their community, or enhance the economy. The need to better understand the urban mind-set in relation to issues like water, land use, animal welfare and biotechnology was highlighted during the Roundtables.

This understanding would enable organisations to paint a more compelling picture of how they are contributing to making the country a better place for all New Zealanders.

In addition, we noted that customers are becoming increasingly interested in how sustainability issues are managed. Open, honest engagement around these issues builds trust and can assist in securing a premium in market.

In 2013, many industry leaders still saw community and consumer interest as a threat. Over the past five years, however, we have observed more contributors welcoming scrutiny; given that it sharpens an organisation's focus on how it can benefit all stakeholders. We also sensed in 2013 an emerging perspective that is now commonly being articulated by many in the industry. Namely, that economic value alone is not a compelling enough purpose to guide strategy – the industry needs to articulate a bigger 'why'.

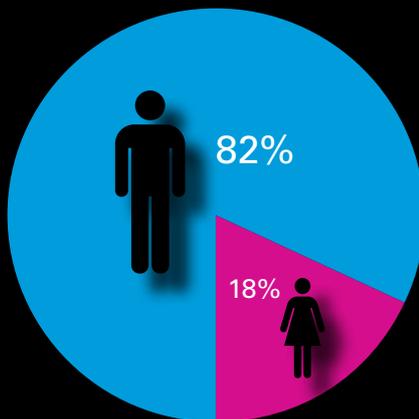
On the full environmental costs...

An estimate of the direct and indirect environmental costs of food and fibre production amounted to 224% of global EBITDA in 2010, or USD199 billion, the highest of any sector of the economy.

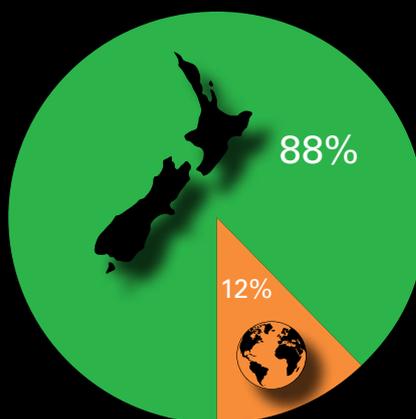
On biotechnology...

The industry is currently stuck in a no-man's land between a GM and a non-GM future; which provides neither the production benefits nor the market benefits that could be derived from having a clear strategy either way.

Director Diversity in Boardrooms



MALE VS FEMALE



NEW ZEALAND VS OVERSEAS

The diversity of thought in boardrooms across the agri-food sector has featured in many roundtable conversations over the years. In 2013, 93% of co-op Directors were male and 2% lived overseas. Progress has been made on both measures but there is more to be done.

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2014
Vol 1 & 2

Facilitating growth in an uncertain world Exploring our global future



We began work on the 2014 Agenda against a background of growing global uncertainty. Much of this connected to the lingering impacts of the Global Financial Crisis, but also concerns about climate change, terrorism, digitalisation, and the impact of emerging disruption in food value chains.

We therefore decided to produce two Agendas in 2014; one which had a New Zealand focus (**Facilitating growth in an uncertain world**), and another which explored global megaforges and their potential implications for agri-food systems (**Exploring our global future**). In Part 3 of this 2019 Agenda, we update our global agri-food outlook and consider how organisations should be responding to these issues.

Uncertainty about New Zealand's political future dominated the 2014 Roundtables. With an election ahead, there was some concern about how a potential change of government might impact the industry's ability to sustain growth. That said, it was recognised that a new government might also bring greater investment to address sustainability challenges, support growth of the forestry sector, and develop an industry strategy.

After the WPC80 scare which had occurred during the year, there was also discussion on whether the industry had invested appropriately in food safety, or had treated it as a cost to be minimised.

This scare – together with a perception that the wider community had lost confidence in the ability of farmers and growers to appropriately manage the environment – led one contributor to suggest that it felt like they were 'farming in a fish bowl'. In 2014, this was viewed as impediment to progress. Today, the industry is now much more open to scrutiny; it is acknowledged that such engagement can increase the prices our products command in premium markets.

We also celebrated the export successes the industry had enjoyed in the previous year, highlighting that many sectors had achieved record returns; while also noting that continued success requires long-term investment in nurturing markets. The recently-launched New Zealand Avocado Go Global Primary Growth Partnership (PGP) was featured in a case study, as an exemplar of a collaborative long-term market transformation plan. Their PGP goals included opening new export markets and increasing industry value four-fold to \$280 million. We get an update on the growth of the avocado industry as a result of this PGP collaboration on the following page.

On vibrant rural communities...

Policymakers need to recognise that one-size-fits-all legislation will not always work, and rural communities often require different solutions to deliver equitable outcomes.

On utilising collectively-owned Māori land...

Given the country has finite land available, Māori organisations are well-positioned to make a significant contribution to industry growth by providing owners with options to bring underutilised collectively owned land into full production.

On trading with Asia...

Adopting a vision to become Asia's delicatessen could guide the industry towards products that have attributes that are not easily replicated, and are tailored to Asian consumers.





When we talked to CEO Jen Scoular back in 2014, the New Zealand avocado industry had set an audacious goal to triple productivity and quadruple returns by 2023. She's happy to report they're on-track to achieve this – helped along by the global consumer love affair with the Insta-worthy fruit.

"We've doubled our yields and our industry value in five years; so we're tracking to reach \$280m by 2023. It's a value story more than a volume story – we're still challenged by very irregular volumes of fruit, but we are creating more value for every tray we produce."

Other milestones include gaining access to China in 2018, boosting domestic sales to \$50m this year, and launching a New Zealand marketer's group that sees competitors working collaboratively to improve the local consumer experience.

"Back in 2014, we didn't yet have clearly-defined ambitious goals and a path to meet them," recalls Jen.

"We were fortunate to get Primary Growth Partnership (PGP) investment from the Crown to undertake the activity required. Since then, we've worked really hard collectively as an industry – and we have absolutely made a step-change."

Jen says there's been another global "tailwind" that's helped to drive their success.

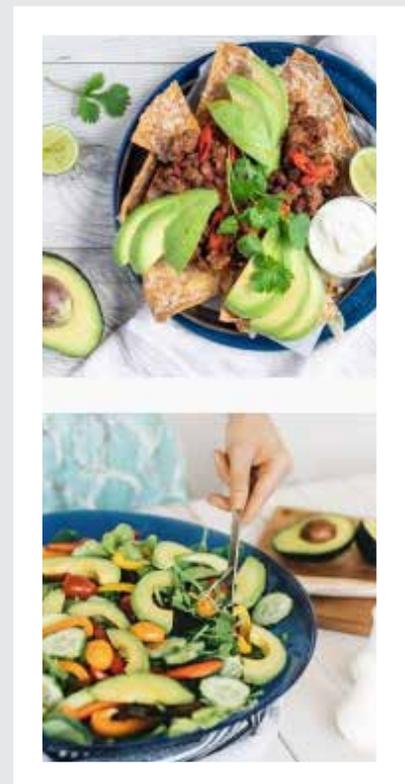
"The demand for avocados has really sky-rocketed in both developed and less developed countries, and without a doubt, social media is helping that. Avocados are one of the most pinned foods on Pinterest."

To capitalise on this, NZ Avocado has invested heavily in digital platforms – with websites in New Zealand, Australia, Japan, South Korea, Singapore, China and Thailand.

They are noting some subtle cultural differences among users. Thai consumers post beautifully-styled photos, for instance, while Kiwis tend to post more comments. The Chinese prefer to visit the New Zealand website, because they want to authenticate the product.

"Previously, as a producer of just 1% of the world's avocados, we would struggle to hear what our consumers thought of New Zealand avocados. But with 125,000k followers on Facebook, we now get their feedback straight away.

"We used WeChat recently to ask our Chinese social media followers which images they associated with avocados from New Zealand, so we could test-market some hero shots. Conversations like that are incredibly valuable to us."



2015
Vol 1 & 2

Growing value The future is in their hands



Volume 1: Growing value

With the 2015 Agenda, we mixed things up again. Growing value, the annual state of the nation analysis, was released at Fieldays. We then asked agribusiness CEOs to nominate the person in their team most likely to have their seat in 20 years. We led this group of future leaders through a day-long design-thinking workshop, to envisage what the industry could look like in 2035. These findings formed the basis for Volume 2, The future is in their hands.

During our Roundtables, the steep decline in dairy prices was top of mind for many. While there have always been contributors that do not support co-operatives (or the dairy industry model), the discussion in 2015 was more extensive, and explored whether the dairy industry has a fit-for-purpose structure to maximise the value of milk produced in New Zealand.

Recently, Minister O'Connor has initiated a comprehensive review of the Dairy Industry Restructuring Act to ensure this question can be confidently answered in the affirmative. We see the review as a positive step for the dairy industry; not least for demonstrating to the wider community the critical role the industry plays in securing New Zealand's economic future.

In the context of the milk price decline, the 2015 Agenda highlighted that New Zealand has no inherent right to sell products in global markets at a premium. To maximise value, each step in the value chain needs to be understood and worked on proactively to maximise the benefits secured. The report suggested a comprehensive conversation about the industry's future can no longer be deferred, despite the majority of the industry being in a comfortable position.

The Agenda explained the KPMG Enterprise DNA model that we developed through work with Te Hono member companies. We identified a series of common nodes in the organisational DNA of companies consistently successful in capturing higher value for their products. These nodes include: existence of a pivotal leader, a strong ambition, a clear strategic anchor, an understanding that success relies on resources and investment, a commitment to customer

intimacy, an emphasis on recruiting capable people and, importantly, a ruthless focus. Many organisations are recognising the commitment needed to become a high-value enterprise and are working to enhance their DNA to lift the value they capture from their products. Sanford had started this transformation journey and was profiled in 2015 Agenda. We provide an update on progress from Sanford's CEO, Volker Kuntzsch, on page 22 of this edition.

Volume 2: The future is in their hands

The first Volume talked about the need to paint a picture of the industry's future, in order to inspire disruption and provoke action. That is exactly what we did when we joined with Chrysalis to run the Fork to Farm Summit with over 50 future industry leaders. Volume 2 of this Agenda was produced by two of KPMG's own future leaders, Justine Fitzmaurice and Julia Jones, who worked with the group to develop a picture of New Zealand's thriving agri-food sector in 2035. The group came from diverse backgrounds – including students, farmers, scientists, marketers, accountants, engineers, government officials and more – bringing a wide range of perspectives to the table.

The future leaders were very clear on key matters. Firstly, the industry will only achieve its potential if it has a collective vision of its future. Secondly, success will depend on organisations learning to collaborate. They were clear that those leading the industry today need to learn to trust others; and let go of history. They highlighted that change is a conscious choice – requiring willingness, energy and commitment from individuals and organisations across the sector.

Another key insight was that organisations need to listen to voices of young people and leverage their enthusiasm. They see a disrupted future as packed with opportunity. They believe we have the potential to succeed by thinking big and engaging with disruption head-on.

We challenged the future leaders to think about what has to happen at four points in value chain (fork, distribution, processing and farm) to deliver long-term industry success.

They identified four areas where the most urgent action was needed. Firstly, we must be focused on deep consumer insights rather than relying on traditional market research data – to find smarter strategies targeted at the best opportunities. Secondly, they suggested it was time to stop talking about collaboration and get on with actually doing it in a meaningful way. They strongly believed that we need to lift R&D investment at both company and industry level. Their final priority was attracting more top talent to the industry. Despite the room being filled with more than 50 very impressive future leaders, they still wanted to see a greater diversity of people in the industry across all levels.

On leadership...

CEOs are appointed to lead. Directors, management and the wider team are looking to the CEO to set strategy, make the necessary decisions that lead the business into the future.

On brands...

It is still hard for many in the industry to comprehend that value is not always linked to hard assets, but can come from investing in brands; intangible value is created by articulating what our products are and what they stand for.

On food safety...

When it comes to food safety, New Zealand cannot afford to be average; our economic prosperity relies on the trust we earn from being ahead of our competitors.

On positioning our products...

Our food and fibre products should be as aspirational as a Louis Vuitton handbag, as must-have as an Apple iPhone, and as sought-after as a table at Copenhagen's Noma Restaurant.

On redefining export...

Stop defining your market around your product and start defining your markets around what your product makes possible; its experiential value.

On learning from champagne...

There are 32 Champagne houses that compete actively in the marketplace, under the umbrella of Champagne; this is orderly free enterprise and is what we want to replicate.



When the KPMG Agribusiness Agenda last profiled Volker Kuntzsch back in 2015, the energetic and passionate CEO had been in the job just 18 months. He'd begun the important work of instilling a culture change throughout Sanford, and had set a bold new vision: "to be the best seafood company in the world."

Moving from volume to value-add and customer-driven, while striving to utilise every aspect of the fish resource, was another key goal for Kuntzsch – and he's been busy implementing this in a variety of ways.

Firstly, the company underwent an improvement programme introducing capabilities that would enable Sanford to cope with its strategic shift as an organisation. In addition to these significant changes, the Board then approved a \$120m investment programme over two years starting with FY19; covering both operational upgrades, and an emphasis on innovation and brand development programmes. One such programme has seen Sanford enter the nutraceuticals market, producing Greenshell mussel capsules from its farms in Marlborough.

This retails online via www.seatome.co.nz, with the product's point-of-difference being the company's end-to-end product stewardship.

Kuntzsch has always been passionate about "showcasing who we are and what we can produce here in New Zealand." Cue the opening of the Auckland Fish Market in December 2018 – a stylish 8-restaurant, two-bar operation which is attracting tourists and locals. Located on the ground floor of Sanford's 94-year-old building, it also features a Sanford & Sons fishmonger in the centre of the market.

Despite the progress, the past few years haven't been all plain sailing for New Zealand's oldest and largest fish operator. The effect of climate change is being felt, with abnormally high water temperatures during the 2018 summer resulting in supply challenges across the aquaculture and fishing divisions. "If you had asked me five years ago what our biggest risk would be, climate change would not have been it. Now, it is our main risk across every part of the business."

However he says this further reinforces that's Sanford's strategy is on the right track. Making the pivot from volume to value-add, while diversifying the company's portfolio, will help mitigate those external and future unknowns.

FUTURISTIC FORK TO FARM

Our future leaders had many ideas about how the agri-food sector would operate in 2035. These are some of the big ideas they suggested.



Zero processing

because products are grown market-ready



Global version of My Food Bag

delivering New Zealand meals to the world population



Edible packaging

to reduce waste and make it easier to eat on-the-go



Running a pipeline to China

to deliver liquid milk



3D printing

to create food at home



Super – freighters

equipped with full on-board processing facilities

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2016
Vol 1 & 2

Thriving in exhilarating times
Foresight to the future



The World Economic Forum declared that 2016 marked the start of the Fourth Industrial Revolution, also known as the fusion revolution. Fittingly enough, our Agendas focused on the speed of change facing society and how organisations need to respond.

The first volume, **Thriving in exhilarating times**, explored how effectively New Zealand's agri-food businesses were handling transformation-related challenges. The second volume, **Foresight to the future**, extended our analysis of global trends shaping the agri-food system, and explored three future-state scenarios for New Zealand agri-food.

The fusion technologies of the Fourth Industrial Revolution unleash unprecedented change for agri-food sector. Heralding the arrival of the first Global Agrarian Revolution, we are observing unprecedented investment into farm system innovation, genetics, novel food, processing solutions, distribution channels and circular waste applications.

We estimated that primary sector exports of around \$37 billion (at the time) were ultimately generating around \$250 billion in revenue at the point of final consumption. As we looked at the numbers, the realisation was that we grow plenty of value, the challenge is to

capture a bigger piece of this pie in New Zealand. The ability to evolve our business models will determine how much more of this value can be realised for the benefit of all New Zealanders.

The Agenda recognised many organisations had maintained their growth ambitions over the preceding 12 months, despite a background of volatile market prices in many sectors. We were pleased to find an industry largely in good heart, despite the challenges that consecutive years of depressed milk prices had placed on the financial and emotional wellbeing of many. Case studies on Plant and Food Research, Villa Maria, Rockit Apples and Landcorp showcased organisations challenging themselves to do things differently to secure their long-term future. We are pleased to revisit the Pāmu story in this Agenda, to reflect on the more recent steps in their transformation from volume to value.

Among the wider sector, though, we identified something of a disconnect. While many leaders recognised that rapid change was the new normal – with technology and business models quickly evolving – they were doing little to interpret and embed these new opportunities within their organisation. There was an over-riding belief that their business models were robust enough to thrive, despite the change going on around them.

Our discussions led us to question whether the industry has fit-for-purpose governance. We questioned how many Boards were seeking to reimagine their agendas, or possessed the necessary knowledge to support management in unleashing the potential of their organisations. Leadership capability across the sector is critical to long term success and it has again been a key theme of our discussions this year.

On brand New Zealand...

There is a need to take proactive steps to preserve and enhance the perception of New Zealand being a 'good country' for the world rather than just good for itself.

On customer intimacy...

We don't just need to walk in our customers shoes, we need to live in their houses and understand the challenges in their day to day lives, our executives need to be in market as often as possible rather than trying to make decisions from Auckland or Christchurch.

On taking calculated risks...

The desire to replicate past success makes organisations vulnerable to the future; and breaking the gravitational pull of the status quo is one of the most pressing leadership issues the industry faces.



When we last interviewed Steve Carden in 2016, he succinctly explained why Landcorp needed a new purpose – and brand name – for its future: “We can no longer intensify farming and push more animals on farms. The animals and the environment cannot handle any more stress. The model previously used is no longer viable.”

In recent years, we've seen the State-owned business shrug off a complete focus on the traditional volume based, risk-averse approach of the past – and work to be a more nimble and successful innovator. Underpinning this transformation is a diversified land-use model that's capable of producing a range of specialty animal and plant-based products.



“We've transitioned from being conservative into a nimble and vertically-integrated foods company,” says the Pāmu CEO.

“Driving innovation on farm and post farm gate has been our focus.”

Developing cow-alternative milk products is just one example. Within the past two years, Pāmu



We concluded the first volume of the 2016 Agenda with JFK's famous line:

"We choose to go to the moon in this decade and do these other things, not because they are easy, but because they are hard."

President Kennedy recognised that the biggest benefits come from things that can appear almost impossible. The rewards come from doing the hard stuff, the stuff that seems a bit crazy, the stuff that makes you uncomfortable (even scared), the stuff that makes you stand out. That was our message to our agribusiness audience: the rewards of articulating your moon shot is the incredible focus and direction you will gain and it could make the seemingly impossible possible.

has launched the Spring Sheep New Zealand brand; and inked a deal with South Korea's largest pharmaceutical company to supply deer milk for its range of cosmetics. (Pāmu is into its third year of milking 80 red deer hinds, which produce 5000 to 6000 litres of milk each season).

Sustainability is now one of the key platforms of the modern brand. Pāmu' translates as 'to farm' in te reo, and also reflects Kaitiakitanga, the Māori concept of guardianship of the environment.

Carden says the business has continued to expand its forestry operations, as part of its income diversification strategy. There's also been a focus on boosting technology on-farm – with Farm IQ software being used to "keep a really accurate eye on everything that is happening across our farms."

And on the people side, the Pāmu Academy was launched in 2017 to improve health and safety on farms. The business reported a 25% reduction in significant harm-related incidents in FY2018.



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2017

The recipe for action



Designed around the theme of a cookbook, the **Recipe for Action** set out 110 ideas from industry leaders aimed at helping enabling New Zealand's primary sector to capture more of the value it grows. It was another election year, but in stark contrast from three years earlier, there was very little focus from leaders on the potential outcome of the election. Their focus had pivoted from matters of domestic concern towards how they could best operate within consistently-changing global markets.

Instead, leaders indicated they were focused on developing strategies based on doing what is right for the environment, their communities and their consumers. This approach would require them to reach beyond regulatory requirements, regardless of the colour of a future government. This expanded focus meant our Roundtable conversations touched on a wider range of issues than ever before, and the Agenda explored some themes in-depth for the first time.

One theme that stood out was the lack of a compelling New Zealand food story. We produce food of exceptional quality and have world-class chefs, yet most tourists leave without having a singularly New Zealand food experience. The Agenda offered a range of ideas that would help to build a stronger food culture; such as making indigenous ingredients and cooking methods more accessible, and designing unique experiences for tourists. We profiled Monique Fiso of Haikia, who we caught up with again this year to see how her journey has progressed. We also case study EAT New Zealand in this Agenda; a national organisation that has launched Feast Matariki this year, with the goal of creating a uniquely New Zealand food festival.

The 2017 Agenda explored the advantages of accessing more diverse thinking - whether listening to youth, investing in the Māori agribusiness sector, or creating pathways for people with diverse backgrounds into the industry. We also canvassed ideas for changes to our education system to promote easier access to lifelong learning; as well as ideas to foster collaboration, accelerate the pace of technology adoption, and deepen connections with customers.

On creating value...

It is not the processing asset that makes a product exceptional; but the brand, innovation, people and tailoring we put into it.

On effective storytelling...

The goal for the sector must be creating content that people want to share; viral content that educates, entertains and engages the community.

On water quality...

The industry has appealed to the head, but it is the heart that is shaping policy; bold action is needed to preserve the license to operate.

Some of the bolder ideas in the Recipe for Action

**Utilising food to engage with New Zealand's global whanau**

Ireland are masters of leveraging the power of their diaspora to keep them connected with the homeland and acting as promoters of the country and its products. New Zealand food offers an opportunity to reconnect kiwis with home, reignite their passion for our products and encourage them to act as promoters.

**Professionalising the industry within the farm gate**

Growing compliance obligations make it harder for professional farmers to draw on past experience to ensure that they are complying with all relevant legislation. A continuing professional development programme would make it easy for them to access the knowledge they need and recognise farming as the professional career choice it is.

**Providing public support only for collaborative projects**

The government is too often seen as a solution to a problem in New Zealand. It was suggested that the government should limit support and co-investment to projects involving multiple organisations collaborating to create a more prosperous future for the country.

**Creating a green bank that funds environmental enhancement**

Meeting regulatory and community expectations in respect of the environment is going to place costs on the industry with limited potential of short term return. Creating a green bank collaboration, involving existing banks that can lend only for sustainability investment on preferential terms could accelerate the necessary investment.

HIAKAI



Plenty has transpired since we last caught up with Monique Fiso. In less than two years, she's transformed a pop-up restaurant into a bricks-and-mortar restaurant, featured on a Netflix series with some of the world's top chefs, and shone the global spotlight on New Zealand's food culture.

Her Wellington restaurant Hiakai, which uses Māori and Polynesian ingredients to create excitingly authentic dishes, has firmly established itself as a flag-bearer for New Zealand cuisine. But growing demand means increased amounts of ingredients – and some unique challenges in sourcing them.

Fiso has been connecting with iwi and others across the country to ensure a steady supply of little-known ingredients; from dozens of indigenous plants, to tītī (muttonbird) and weka.

"It can still be a struggle at times, but now with popularity increasing we can get some ingredients in commercial quantities – we work very closely with our suppliers we can give them a heads up when we know we'll need more."

They also forage locally for ingredients. Adding to the richness of the provenance story, they have had to work closely with Wellington City Council to ensure transparency and overcome regulatory barriers.

"The Council quickly understood that New Zealand would be missing a huge part of the food culture if we didn't have access to these ingredients we have to forage for."

Seasonality is another factor. With very fleeting seasons for some ingredients, Hiakai has had to get creative around perseverance – which Fiso views as a positive.

"The menu has consequently become more complex, dynamic and interesting with the different preservation methods," she says.

"For example, the Kiekie blossom is only available for a month in August; so we have to do a massive haul and preserve, dehydrate and ferment as much as we can."



Dark chocolate smoked harakeke seed truffles - a filling of smoked chocolate terrine, with a coating of toasted harakeke seeds, smoked with manuka in the cloche.

2018

We need to tell you our stories



For the 2018 Agenda, we talked with both industry leaders and groups of ambitious farmers, to gain an alternative perspective on the issues facing the industry. These conversations clearly highlighted the pressures farmers are under on a daily basis – as they seek to balance the environment, weather, animal welfare, employees and their families; while also trying to run a profitable business.

They also highlighted the ‘reality gap’ between their working lives and the perceptions held by the wider population. Our contributors were proud to be food producers, but were questioning the lack of understanding around what they do and the contribution they make.

To this end, the Agenda argued the need for the sector to gain more ownership of its own narrative. Now is the time for the industry to actively tell its stories – as an unbalanced narrative is threatening both the social license to operate, and the provenance stories that support product premiums. In a world of fake news and unreliable facts, the sector needs to focus on telling the truth.

This means data-backed, verifiable stories that support product provenance but also connect a product to the real people that grow them.

Technology is transforming supply chains and putting an informed consumer at the centre of a value web. This consumer-centric value web means every organisation involved in producing a product has the opportunity to connect with consumers and tell their story. We suggested that using verifiable attributes – product features that are valuable to a consumer and proven by data – offered many opportunities to tell effective, truthful stories to consumers.

Given that water and land use played a central role in the 2017 election, and has a prominent position in the Coalition Government’s policy programme, it was not surprising that industry’s use of natural capital featured highly in Roundtable conversations. Leaders recognised the sector needs to be more transparent in explaining its impact on the environment; and as a case study, we highlighted Ravensdown’s launch of its integrated reporting initiative. We recently followed up with Greg Campbell, Ravensdown’s CEO, to get an update.

On forestry...

Policy settings offer opportunities for the forestry sector to provide environmental mitigations to other agri-food producers, as well as lifting its economic contribution to the economy.

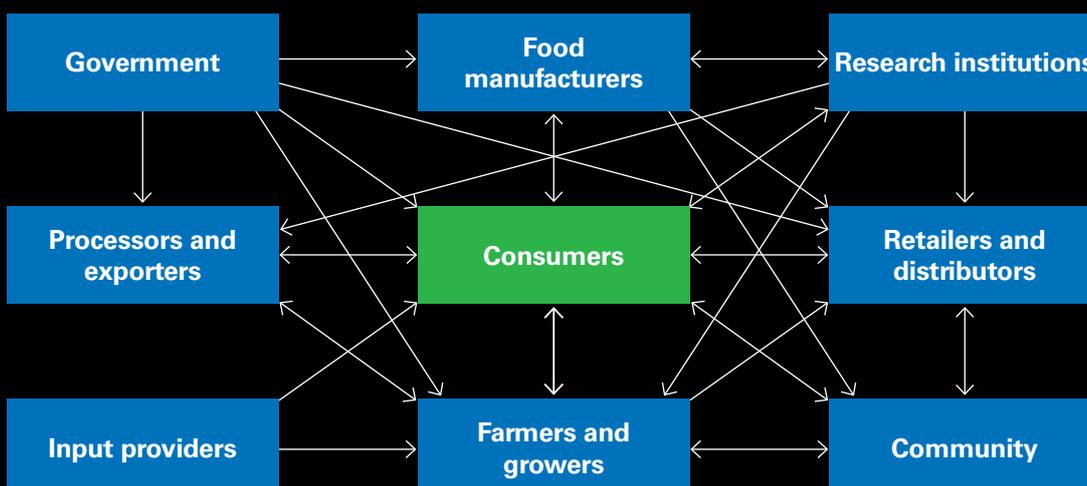
On rural energy supplies...

The ability of our ageing rural power network to reliably deliver power to remote businesses at an economic costs is making the decision to invest in transformational technologies harder.

On social media...

While social media strategy remains a dark art to many industry leaders at a personal level, they recognise these tools are critical to engaging with consumers and potential business partners.

Envisaging the future: a consumer-centric value web



ravensdown



Last time we spoke with Greg Campbell, CEO of Ravensdown, the farm nutrients and environmental experts were preparing to release their first integrated report. Now they are about to release their third – as they continue to position themselves as part of the environment's solution, not the problem.

Campbell says the company is not afraid to "put its feet to the fire" by publically reporting on its sustainability performance. "Among other measures, the dedicated website at integratedreporting.ravensdown.co.nz reports on the company's carbon footprint (154,407 tCO₂e in 2017). Ravensdown is soon to publish its 2018 footprint and announce its 2030 reduction target"

"The low-carbon economy is a reality that we all need to get our heads around," says Campbell.

"While we're helping farmers reduce their environmental impact, we've got to walk the talk ourselves. This starts with publically reporting on our CO₂ emissions; and then continuously looking at the technology, training and processes that will help reduce that."

Campbell was also one of 60 CEOs from a cross-section of New Zealand industries – including the likes of Air New Zealand and Z Energy – who signed up to the Climate Leaders Coalition in July last year.

As well as setting the big goals, reducing the environmental impact of agriculture comes down to the work Ravensdown is doing with farmers – day in, day out – behind the gate. "Fertiliser is a valuable tool in the tool-box. But like anything,

there can be consequences if it is under or over-used. We educate our farmers on how to use it smartly, and that's why our farm consultancy practice is a crucial tool for us."

Investing time and resources into reducing environmental impact has been an exciting area of growth for the company; with both staff and shareholders appreciating their honest reporting. The company is building on its 19 Net Promoter Score and is proud of its top-quartile employee engagement score.

"Being transparent about our values has also improved our employment brand out of sight. Generations coming into the workforce want to work for a company that's part of the solution."



The ClearTech collaboration with Lincoln University strips farm dairy effluent of e-coli

Updating the views of the latte drinkers

When it comes to the democratic process in New Zealand – whose voice really matters? One of the themes of the 2013 Roundtables was that the views of the industry or the rural sector were increasingly irrelevant; because it is the Auckland latte drinkers who ultimately determine who the government will be. This inspired us to ask our Auckland team their views on a range of issues that directly impact on the agri-food sector's license to operate. For this latest Agenda, we again asked our largely millennial, culturally diverse, mostly urban teams across the country for their views on the same issues.



This year we also asked our team if they are proud of New Zealand's primary industries. Despite their concerns about the environment, 86% suggested that they were proud of industry, and 76% felt some degree of connection to food produced in New Zealand. This is an encouraging sign; and suggests there is a platform for the industry to develop deeper, trust-based relationships with our urban communities.

Net support / (opposition)
(Supportive – opposed)

2013 2019

Limiting the use of animal housing to intensify farming practices	41%	11%
Limiting construction of irrigation and water storage schemes designed to increase agricultural output	-41%	2%
Strengthening legislation to protect our waterways and landscape	86%	93%
Requiring farmers to obtain resources consents to continue farming activities	-15%	3%
Continuing to limit use of GM technologies in day-to-day food production in New Zealand	61%	7%
Allowing Councils freedom to develop water and environmental policies	-24%	-31%
Including agriculture in the ETS so that sector pays the cost of its GHG emissions	42%	30%
Using taxpayer funds to develop a NZ integrity brand backed by accreditation standards	53%	34%

While we claim no scientific rigour, some of the movements in net support levels for the issues (those supportive or strongly supportive of the statement less those opposed or strongly opposed) are notable.

1 While still not supporting the use of animal housing or genetic technologies, the net level of support for limiting the use of animal housing has reduced 30% and by 54% for the use of GM technologies. Given these technologies could provide part of the solution to reducing the greenhouse gas footprint, the warming in attitudes towards them is interesting.

2 In contrast, our team has become stauncher in their belief we need to protect the environment and water resources. Support for strengthening legislative protections for the environment has increased to net 93% positive. From a majority in 2013 opposed to constraints on irrigation development, there is now a small majority supportive of such limits being introduced.

3 It is interesting that our team are even less convinced that leaving the regulatory function to Councils is the correct course of action. This could mean a lot of work at a national level, as net opposition to requiring farmers to obtain resource constraints has become another small net majority in support.

Taking the industry's pulse - shifts in priority over time

We introduced the industry leader's Priority Survey in the second Agenda in 2011, and have used it to track their views for each Agenda since. The survey has evolved over the years, as new priorities have been added and others removed or edited. However one thing has remained constant: the top ranking given to maintaining a world class biosecurity system.

YEAR / AVERAGE PRIORITY SCORE

2011 / 7.10

World class biosecurity	8.90
Understand global product/ eating trends	8.29
Ensure practices support clean/ green image	8.24
Effective mechanisms for extension	8.08
Innovate with customers	8.02

2012 / 7.34

World class biosecurity	9.17
Deliver market signals to producers	8.31
Codify environmental expectations	8.31
Invest in irrigation/ water storage	8.19
Deliver high speed broadband	8.12

2013 / 6.90

World class biosecurity	9.28
Deliver market signals to producers	8.28
Invest in irrigation/ water storage	8.22
Developing future leaders	7.90
Deliver high speed broadband	7.88

2014 / 7.23

World class biosecurity	9.55
Food safety strategic importance	8.64
Sign high quality trade agreements	8.58
Invest in irrigation/ water storage	8.52
Deliver market signals to producers	8.41

3 UPS
3 DOWNS

Deliver high speed broadband

Sign high quality trade agreements

Invest in irrigation/ water storage

Increasing rural/ urban understanding

Evolving capital structures

Incentivising students into agri careers

Restricting foreign land investment

Sourcing and utilising global innovation

Developing light export models

Restricting foreign land investment

Effective mechanisms for extension

Understand global product/ eating trends

Codify environmental expectations

Creating global sourcing chains

Implement water costing mechanism

Evolving capital structures

Exploring scale organics

Embed resources in export markets

Analysing the results over the first eight years of the survey (to avoid a spoiler of 2019's results), no other priority has featured in the top five in every year. Delivering high-speed broadband connectivity has appeared on six occasions, but its aggregate score (8.19 out of 10) only makes it the fourth-highest ranked priority across the period. The second highest aggregate score (8.59 out of 10) goes to treating food safety as strategically important, a priority which

has been ranked second or third in each year since it was introduced to the survey in 2014. The remaining two top five aggregate priority scores over the period include: delivering clear market signals to producers (8.23 out of 10), and signing high quality trade agreements (8.13 out of 10).

It is also interesting to look at the movers and shakers each year. Restricting foreign investment in land has always been a low-

ranked priority, but it is the only one that has featured in the 'largest increase in priority score' list on three occasions. Other priorities to make this list on two occasions include: increasing rural/urban understanding, incentivising students into agri careers, developing light export models, establishing an umbrella body to unify the industry's voice and, more recently, tracking synthetic and alternative proteins. The largest decreases in priority

score are more of a mixed bag. They are often issues that have dropped from focus as the world has moved on, being superseded by newly-emerging priorities driven by regulatory, consumer or investor pressure.

2015 / 7.17

World class biosecurity	9.58
Deliver high speed broadband	8.60
Food safety strategic importance	8.60
Deliver market signals to producers	8.38
Sign high quality trade agreements	8.30

2016 / 6.97

World class biosecurity	9.38
Food safety strategic importance	8.55
Deliver market signals to producers	8.25
Deliver high speed broadband	8.20
Create NZ provenance brands	8.18

2017 / 7.25

World class biosecurity	9.23
Create NZ provenance brands	8.60
Food safety strategic importance	8.54
Deliver high speed broadband	8.51
Innovate with customers	8.50

2018 / 7.41

World class biosecurity	9.62
Deliver high speed broadband	8.73
Food safety strategic importance	8.63
Create NZ provenance brands	8.52
Innovate with customers	8.50

Restricting foreign land investment	▲
Exploring scale organics	
Changing policy to influence FX rate	

Umbrella body to unify industry voice	▲
Tracking synthetic and alternative protein	
Developing light export models	

Engaging with communities	▲
Tracking synthetic and alternative protein	
Increasing rural/ urban understanding	

Umbrella body to unify industry voice	▲
Restricting foreign land investment	
Incentivising students into agri careers	

Increasing rural/ urban understanding	
GIA collaboration/ cost sharing	
Articulating a collective industry vision	▼

Reforming levies for long term projects	
Creating single open access data platform	
Mandating minimum H&S practices	▼

Mandating minimum H&S practices	
Food solutions for dominant demographics	
Incentivising students into agri careers	▼

Engaging with communities	
Delivering R&D incentives	
Licensing to accelerate market access	▼

acknowledge

evaluate

accelerate





Evaluate

evaluate

accelerate

The year in review

June 2018

- **MPI** and **Plant & Food Research** issue a report assessing consumer response to protein, recognising the meat industry are aware of the potential threat but highlighting the opportunity for New Zealand's traditional animal based agriculture.
- **Woolworths** and **Coles** announce environmental commitments in line with consumer expectations; with **Coles** pledging to half foodwaste in two years, and divert 90% of waste from landfill from 2022, and **Woolworths** stopping the sales of plastic straws and reducing plastic packaging of fruit and vegetables.
- **Organic Wine Growers New Zealand** entered European markets on behalf of its 180 members.
- Germany's, **Bayer** closes USD63 billion **Monsanto** takeover.

December 2018

- **Coalition Government** announce farmers will have access to grants to plant trees on their properties as part of a new fund.
- **Pāmu** sign deal with South Korean Pharmaceutical Company **Yuhan** to supply deer milk for cosmetic products.
- Taranaki's first farm with *Mycoplasma bovis* is confirmed by **MPI**.
- The revamped **Auckland Fish Market** is opened in Auckland with owners, **Sanford**, using the market to showcase the wide variety of quality New Zealand produce.
- **CPTPPA** came into effect on 31 of December, with the trade agreement enhancing access to new markets.

July 2018

- **Synlait** launches an environmental sustainability programme with impact reduction ambitions such as increased premium pay-outs to suppliers for best practice dairy farming.
- New laws in Australia are introduced to stop **modern slavery**, meaning around 3,000 Australian businesses would need to identify modern day slavery in their supply chain.
- **Federated Farmers** elect Karen Williams as arable chairperson, being the first woman to lead the Federation's arable sector.
- **Danone, Mars, Nestle** and **Unilever** launch a sustainable food policy alliance to focus on driving progress in public policies that effect health, communities and the planet.

January 2019

- **New Zealand Yarn** and **Hemp NZ** form strategic partnership to be catalyst for market leading hemp fibre processing.
- **Fish & Game** survey reports Kiwis are more worried about levels of pollution in lakes than they are about the high cost of living.
- Government sets to roll out **new organic standards** as the organic industry continues to grow by 30% over the last few years, being worth NZD600 million.
- A record USD3.1 million for a 278kg Bluefin tuna was paid at the first auction of the year at **Tokyo's new fish market**.
- Signing of a **veterinary agreement** between the UK and New Zealand should provide reassurance to farmers and exports about trade after Brexit.

August 2018

- New Zealand **wool producers** land contract to supply a US company with fibre for home insulation as a healthier alternative to fibreglass.
- **PGG Wrightson** sell seeds division to **DFL** for \$421 million.
- **Fonterra** appoint Miles Hurrell as interim CEO.
- **Lincoln** and **Canterbury Universities** explore partnership options under a new memorandum of understanding.

February 2019

- The cost of the response to *Mycoplasma bovis* to dairy farmers has been released with **DairyNZ** asking farmers to approve a levy of 3.9cents/kg milksolids over the next two years.
- Broccoli prices double, with lettuce also increasing by 80%.
- **Government** declare a Hawkes Bay seasonal worker shortage, one of the countries primary apple growing regions.
- **Walmart** announce their subsidiary, **Jet**, has launched same-day delivery of fresh seafood to customers.
- French insect farming startup **Ynsect** raises USD125 million, breaking European agtech record.

September 2018

- **NZ AgriTech** officially recognised by globally connected **Farm2050**, a collective of major global venture firms and agribusinesses dedicated to supporting AgTech innovations.
- The **UK government** introduces new agriculture legislation to replace the EU subsidies for farmers after Brexit, placing more emphasis on environmental standards.
- **Potato virus**, PMTV is found for the first time in New Zealand, affecting potatoes used to make chips.
- **Food safety crisis** in Queensland in which numerous punnets of strawberries were found to be contaminated with needles.
- **MPI** confirm no strawberries as part of the Australian contamination scare were on New Zealand shelves.

March 2019

- **Fonterra** invest in minority stake in **Motif Ingredients**, a US based food ingredients company developing plant based and cell-grown animal products.
- **Westland Co-operative** signed conditional agreement to sell the West Coast dairy co-operative to Chinese-owned **Mongolia Yili Industrial Group** in a deal worth NZD588 million.
- A full size merino sheep is used in a scoping study into **robotic sheep** shearing.
- **AngusPure New Zealand** announce they are partnering with 63 Angus beef farmers in a programme to improve the quality and taste of their meat.
- **General Mills** commit to regenerative agriculture across one million acres of land by 2030.
- Dutch company **DSM** develop a feed additive to limit methane burped out by cattle, sheep and goats by up to 30%.
- Avocado-wrecking beetle is detected by **Biosecurity NZ** in five Auckland areas.

October 2018

- **Lewis Road** launch Gold Top jersey milk containing a2 B-Casein protein.
- **Tegel** plans to build farm in Northland are denied by overseas employment office.
- **Silver Fern Farms** commit to investing in future red meat sector leaders through its Plate to Pasture Youth Scholarships.
- **Massey University** are developing a state of the art consumer and sensory science facility to determine what drives people in their food choice behaviour.
- **Marks & Spencer** puts New Zealand wool at the centre of a new menswear range.
- **Countdown** pledge to sell only New Zealand grown free farmed fresh pork.

April 2019

- Recycling programme **Agrecovery** provides an easier way for farmers to sustainably dispose of waste offering a one stop shop approach.
- Wairarapa company **Breadcraft** launches hemp seed, cricket flour wraps.
- **Coca Cola** plans to establish a dairy processing plant in Ireland.
- **Beef + Lamb** launch "Taste Pure Nature" campaign in California, with positive feedback and demand.
- **MPI, Dairy NZ** and **Beef + Lamb** release a 2019 Mycoplasma bovis national plan to support farmers.
- **Meadow Mushrooms** create world first green packaging for their products made of out mushrooms.

November 2018

- **Greenlea** claim blockchain first with their 'single trade window' service, providing service to process an export deal with Korean Customer.
- Cannabis start-up **Helius** has approval for Auckland's first cultivation license, after a NZD15 million investment from a small group of investors.
- As honey counterfeiters pose a major threat to New Zealand, **Midlands Apiaries** introduce high tech solutions of complex packaging materials and manufacturing processes to make it difficult for others to counterfeit their products.
- Tauranga agtech startup **Robotics Plus**, received USD8 million from **Yamaha**.
- The **European Commission** release report setting new policies to boost supply of plant based protein products by European farmers in response to demand of plant based products.

May 2019

- **Zespri** reports gross earnings exceed \$3 billion, a first for the kiwifruit marketer.
- **PepsiCo** patent a process to ferment oat flour and dairy milk together signalling that drinkable or spoonable clean-label products such as yogurt could be coming from the well-known brand
- Meat alternative company **Beyond Meat** topped year's best first day for a US initial public offering after rising 163% from its IPO price of USD25.
- **Fonterra** sells **Tip Top** to global dairy company **Froneri** for \$380 million as part of its review of their investment portfolio targeting on reducing debt by \$800 million.
- **Zero Carbon** bill goes to parliament with targets for greenhouse gas reduction including specific provisions for methane.

Leading in a world of unprecedented change



A central element of the annual Agenda is our 'State of the Nation' assessment of New Zealand's agri-food sector. Each year, we provide an analysis of the top-of-mind opportunities and challenges from conversations with industry leaders and influencers, as well as publishing the annual Priorities Survey.

In the first section of the report, we acknowledged the progress the agri-food sector has made over the last decade. In this section, we evaluate where it is today.

With the start of a new decade just over six months away, we asked leaders to think about how the industry is positioned to unlock its potential on issues that are critical to them. Given that many organisations have had a '2020 vision' for years, it seemed an opportune time to ask our contributors to what extent their organisations have delivered on these aspirations. Or perhaps more importantly, how prepared they felt for the decade ahead.

Te Hono recently invited a globally-recognised innovation expert, Larry Keeley, to talk at an industry forum. Keeley is the founder of Doblin, a Chicago-based innovation consultancy, and the author of *Ten Types of Innovation, the Discipline of Building Breakthroughs*. During his talk, Kelley confirmed that the unprecedented pace of change society is experiencing is likely to continue to accelerate. He also explained that the rising levels of societal angst and uncertainty is driven by fear, the natural reaction to change.

We have been writing about the impact that transformational change will have on the agri-food sector for many years – and have always argued this should be primarily viewed as an opportunity. It is

fair to say, however, that our perspective on how change will impact the industry has not been something all contributors have agreed with. The top-of-mind issues raised during our Roundtables have often been focused on immediate, tactical challenges; rather than actions needed to shape a business fuelled by disruption.

We had no reason to expect anything different this year, particularly as the sector has generally experienced a good year. Pricing has been strong, exports are at record levels, and the weather has largely been normal. We have had no major new biosecurity incursions, and labour shortages have not got any worse. We expected that water would still be a key theme, as supply reliability issues continue due to inadequate investment in storage. We also expected the impacts of the US/China trade war to be a talking point, along with a range of views on the review of the Dairy Industry Restructuring Act (DIRA); and, of course, biosecurity, particularly in light of the *Mycoplasma bovis* eradication investment. Finally, we expected discussion on the environment and the future of the tertiary education sector.

Our expectations, however, were turned on their head. The industry leaders who joined us at our eight Roundtables across the country raised the broadest spectrum of topics we have ever had as our source material for an Agenda. While they raised all of the expected topics (with the exception of DIRA, which never got a substantive mention), they were certainly not the focus of our discussions. Instead, the conversations all took their own direction and focused on distinctly different themes – but all underpinned by a perspective that revolved around the central question: *what do we need to do to get closer to consumers, in order to secure benefits for industry stakeholders and the wider community*. Notably, for the first time, there was widespread acceptance that significant

change in markets, in communities and in organisations is inevitable rather than a controllable variable.

The underlying driver of this new clarity was apparent. Industry leaders are concerned about the long-term viability of the industry; in light of the environmental, social and financial pressures they are facing. They recognise that attitudes and expectations have shifted across society, and will continue to shift. Some practices that were once acceptable, because the end justified the means, are no longer acceptable. Other practices that are still in common use today will become harder to justify in coming years, particularly in relation to the stewardship of living creatures. Change consequently becomes a matter of survival rather than choice. Concerns about the demands this change will place on the operational and financial capabilities of organisations were discussed in every session. Contributors also highlighted concerns about the impact such dramatic change will have on the mental wellbeing of producers.

Having analysed the Roundtable conversations, we have distilled them into five core themes which are outlined on the following pages. All of these themes recognise that doing things differently is becoming increasingly urgent and requires strong leadership.

Analysing leaders' priorities

Reviewing the results of the annual Priorities Survey served to reinforce our conclusions. In 2019, leaders are very conscious of the multiple challenges the industry faces – along with their own organisations – with regard to the social license to operate. Accordingly, they are more focused on priorities that will help address these.

Biosecurity – still #1

We were not surprised to see world-class biosecurity retain the number one ranking for the ninth consecutive year (although its priority score dropped 5.6% on 2018, reflecting the lack of a high-profile incursion during the year). It was interesting to note that leaders want to see higher priority placed on 'collaboration and cost-sharing to proactively manage biosecurity risk through the Government Industry Agreement (GIA) structure'. This gained seven places, to finish in the Top 10 priorities for the first time. This supported the conclusion we had drawn from our conversations; that leaders are willing to invest their time in enhancing collaborative models that are working effectively.

Also moving into the Top 10

The Top 10 sees two other new entrants in 2019. 'Imposing penalties on those farmers who fail to protect their livestock' raised six places to rank sixth. This had previously sat just outside the Top 10 in the last two years, and with the increased focus on the ethical framework underlying food production, it was no surprise.

'Delivering R&D incentives to support innovation' also raised six places to equal seventh. The need to accelerate investment in innovation was a recurring theme during the Roundtables. Changes the Government has made to supporting R&D activities, via the introduction of a tax credit mechanism are designed to assist in accelerating investment.

Moving out the Top 10

Three priorities dropped out of the Top 10 this year. 'Developing future leaders' fell from eight to 13. This likely reflects the sector's broader focus on securing the full spectrum of skills and capabilities needed, versus leadership talent specifically.

'Schemes to regenerate native ecosystems' dropped from ninth to 15th equal. We suggest this reflects the current uncertainty around what the Zero Carbon framework will mean in practice, and the unwillingness to commit to significant system change until these rules are clarified.

'Investment in irrigation and water storage infrastructure' fell from ten to 19. This no doubt reflects the increased challenge of getting a project off the ground as Government seed money has been withdrawn; and, potentially, the lack of significant drought events compared to recent years.

Arriving at 11 and 12

The two priorities ranked 11 and 12 both recorded significant lifts in their rankings – and further support the conclusion that leaders are intent on preparing their

HERE ARE THE 2019 TOP 10 PRIORITIES...

RANK 2019	RANK 2018		ACTION	PRIORITY SCORE 2019 / 2018
1	1		World-class biosecurity	9.08 / 9.62
2	4		Create New Zealand provenance brands	8.38 / 8.52
3	6		Sign high quality trade agreements	8.27 / 8.35
4	2		Deliver high speed broadband	8.08 / 8.73
5	3		Food safety strategic importance	7.95 / 8.63
6	12		Penalties for those that don't protect animals	7.91 / 8.04
=7	5		Innovate with customers	7.89 / 8.50
=7	13		Delivering R&D incentives	7.89 / 8.02
9	7		Deliver market signals to producers	7.72 / 8.31
10	=17		GIA collaboration/ cost sharing	7.67 / 7.71

organisations for disruptive change ahead. ‘The need to lift commercial collaborations with partners across the industry’, which rose from priority 22 to rank eleventh this year, reflects our Roundtable discussions that focused on where collaboration needs to evolve in the future. ‘The need to embed resources into export markets’ ranked at 12 (up from 17th equal last year). This reflects the growing recognition that having people on the ground is a highly-effective way of getting closer to consumers in off-shore markets.

All-time high scores

Only two priorities recorded their all-time high score this year (compared with 16 last year). ‘Mandating minimum health and safety practices’ (which ranked 23 with a score of 7.08) reflects recognition that there are consequences to not taking health and safety seriously; including constraints on the ability to sell products to premium markets.

‘Taking practical steps to minimise food waste’ (which increased 13 places to 26 with a score of 6.81) was also the priority recording the highest score increase. We were interested to note this – given that food waste is a significant focus globally, but one that has largely existed under

the radar in New Zealand. As leaders turn their attention to the impact their organisations are having on the environment, and the community, addressing issues associated with waste may well provide the low-hanging fruit for immediate impact.

Declining average priority score

Having seen the average priority score increase year-on-year over the last two years, we noted that the average priority score fell from 7.41 to 7.00 this year. This reflects a drop in the priority scores given to all of the priorities, bar four. In a world where leaders must juggle an ever-growing range of pressing issues, one potential explanation for this is that leaders are adopting a ‘watch and wait’ approach. In other words, they are seeking clarity on which priorities will have the most immediate impact on their organisation. It could also explain why more collaborative priorities, such as creating New Zealand provenance brands and signing high-quality trade agreements, have moved up the rankings to sit at two and three.

The largest declines in score

The largest decline in ranking this year was ‘developing New Zealand-wide integrity mark systems’, which fell 12 places to be ranked 35. (This

would appear to contradict the boost in priority being given to developing national provenance brands). There has previously been a view that a national integrity standard might add some value to our products; but this is becoming harder to envisage. It is likely that emerging technologies, such as blockchain, will supersede the one-size-fits-all model of a national standard. Other significant declines included ‘investment in irrigation and water storage’, as previously noted; and ‘effective extension of innovation to farmers’ (which fell 10 places to 24th equal). The scale of this latter fall surprised us, given the amount of change producers will be expected to incorporate into their production systems over the coming decade.



▲ MOST SIGNIFICANT INCREASES IN PRIORITY RANKING

Practical steps to minimise food waste	6.81	Up 13 places
Lift commercial collaboration	7.64	Up 11 places
Food solutions for dominant demographics	7.33	Up 8 places
GIA collaboration/ cost sharing	7.67	Up 7 places
Penalties for those that don't protect animals	7.91	Up 6 places
Delivering R&D incentives	7.89	Up 6 places
Incentivising students into agri careers	7.47	Up 6 places
Mandating minimum H&S practices	7.08	Up 6 places

▼ MOST SIGNIFICANT DECREASES IN PRIORITY RANKING

Developing NZ wide integrity mark system	6.25	Down 12 places
Invest in irrigation/ water storage	7.28	Down 10 places
Effective extension	7.05	Down 10 places
Engaging with communities	5.75	Down 8 places
Schemes to regenerate native ecosystems	7.44	Down 6 places
Tracking synthetic and alternative protein	7.19	Down 6 places

METHODOLOGY OF THE SURVEY

We once again used an online survey tool to obtain industry leaders’ views on the most pressing priorities for New Zealand’s primary sector. We asked contributors to rank a range of priority items on a scale of 1 to 10; with 1 being an item they consider to be of no priority for the industry, and 10 requiring immediate attention and action. We used exactly the same set of priorities in 2019 as in the last two years. We received responses from around 70 industry leaders. As in previous years, the full survey results will be made available on the KPMG Agribusiness Agenda 2019 page on our website (kpmg.co.nz).

THEME 1



ROUNDTABLES

Clarity supports confidence



A recurring theme through our conversations was attempts to explain the inconsistency between the prices producers are receiving for their products – which are generally at good levels – and the low confidence levels that industry leaders are observing among farmers.

Recent Agendas have reported on the pressures producers are feeling from regulatory change, and a growing perception that the public no longer trusts them to look after the land. During our Roundtables this year, industry leaders pointed to a broader range of issues that they believe are making producers feel uncomfortable. This would explain the breakdown in the traditional correlation between returns and confidence levels.

Firstly, leaders suggested that many producers were concerned about the value of their land. This was in the context of banks restricting the availability of debt (which is addressed specifically on page 51 of this Agenda); the removal of foreign buyers from the market as a result of changes in the overseas investment regime; and the impact that a comprehensive capital gains tax could have on land values (although this risk has since receded, with the Government taking the proposal off the table).

Producers are recognising the industry is undergoing unprecedented change. They are constantly hearing about the emergence of novel foods; which some commentators have been too quick to claim will render irrelevant our traditional competitive advantages in the production of animal proteins. At the same time, the calls to regulate how farmers, growers and fisherman look after the environment are growing ever-louder; driven by social media movements and organised action such as the School Strike 4 Climate movement. They also recognise new regulation is coming, particularly in relation to carbon, but are unclear on what costs

this will have or the timeframes for implementation. Combined with the challenges of securing labour, new reporting requirements, biosecurity concerns, weather vagaries and other daily pressures; leaders are concerned that many producers are feeling like their problems are mounting and they have less ability to control their own futures.

When shifts in confidence occur, there is often a tendency to write them off as cyclical. However in this case, many of the issues impacting confidence relate to structural changes that are reshaping the future of the agri-food sector globally. These pressures are not going to be relieved by the rain finally arriving, or prices recovering, as has been the case in the past. The point was made that the decline in confidence could become a mental health epidemic in rural areas, if action is not taken to provide clarity where possible (and support when clarity is not possible).

There are practical things that can be done to provide clarity across the industry. Firstly, it is important the Government delivers on its commitment to consider the impact each piece of new legislation will have on rural communities. Such reviews can resolve friction points before they become problems or add to a narrative of unreasonable regulation or cost.

It was also suggested that supercharging the central role that women play in rural communities will enhance the resilience of these communities. Providing sufficient funding and resource for programmes focused on developing the skills and capability of women – run by organisations like Rural Women New Zealand, the Agri Women's Development Trust and the Dairy Women's Network – will assist in creating a stronger platform to enable the industry to handle change into the future.

Processors and marketers also have a role to play. They can provide real-world insights to producers on the future of the agri-food system, and changes in markets, to ensure narrative on these issues is balanced. For instance, taking

producers into market and exposing them to consumers helps build understanding of how markets are evolving; and provides confidence about making investments that will assist in growing and capturing value. The industry is slowly recognising that social media is apt to hijack communication, prioritising emotion over science and facts. Taking more control of the narrative around agri-food is critical, but it needs to be done in a way that engages the emotions and intellect of both industry participants and the wider community.

Another point was raised around the importance of clear communication. It is more important than ever that leaders – whether in national or local government, or within the industry – are consistent in their messaging about key issues like regulatory change. Giving tailored messages to different stakeholder groups has always been part of life, but in a connected world where these messages are shared instantly, and often without the nuance, such an approach contributes to uncertainty.

There are big challenges ahead. We have always believed a big challenge is a big opportunity, when it is approached with the right lens. As we move into a period of rapid change, delivering clarity when possible and helping the wider community understand the big picture underwrites confidence. We believe an industry vision is critical to achieving this, and we are hopeful the Primary Sector Council will deliver a compelling vision later this year. This must provide the foundation stone on which we can build clarity and lift confidence for all in the industry.

The UN Sustainable Development Goals provide a framework for considering issues such as policy impact on rural communities and female empowerment. Raising the level of understanding and use of SDG's and their associated tools would enable us to refine and amplify the impact of our policy settings.

THEME 2



ROUNDTABLES

Consumer-centric futures



Export success has historically been measured in terms of volumes sold or the number of stores a product is listed in, rather than the value returned to New Zealand. As one contributor pointed out, this would be like the All Blacks assessing their performance based on the number of games they start, rather than their results.

As new channels to market open and market expectations develop, there is a need to rethink every aspect of the consumer experience to optimise it for the target niche. Our Roundtables covered a wide range of issues in relation to how our agri-food organisations are engaging with markets and consumers. These have been summarised as:

Trade beyond transactional

Contributors acknowledged the Coalition Government for assessing the benefits of the Comprehensive and Progressive Trans-Pacific Partnership Agreement (CPTPPA) and ratifying the deal, despite being staunchly against it while in opposition. While contributors suggested that CPTPPA is a high-quality deal that offers a template for future negotiations, they noted that the complexity of each deal is increasing. As more people view trade as a driver of inequality rather than an enabler of inclusiveness, New Zealand Inc must be prepared to invest in market access in the same way that we invest in other assets of national significance, like infrastructure or intellectual property. Our view of trade needs to extend beyond the transactional; recognising that each market access arrangement is a strategic partnership between two countries. The agri-food sector needs to work with government to demonstrate that we want these partnerships to be mutually beneficial, particularly as many governments appear to be favouring protectionism. The work the apple sector is doing collaboratively to support

the development of the Indian pipfruit industry, well in advance of any market access agreement, is a great example of the message we want to be sending about trade with New Zealand.

Our competitors are evolving too

While New Zealand has a long-established reputation for premium quality, this should be no cause for complacency. During our discussions, it was noted that we cannot afford to continue underestimate the quality of competitor product. Other countries have observed the same market signals as us; and responded by investing in their product quality and value chains to secure a share of the premium space. Our competitors are not static – they are telling their story effectively and collaborating when it creates value. For example, Chile's investment in horticulture is very obvious when they present a single face to global customers at the global fruit shows. Consistently monitoring what is happening around the world is important, but it's not enough. We need to do more than simply respond reactively to competitors; we need to anticipate their actions in order to move faster and further in bringing our premium products to the world.

Becoming brand-centric

Brands are used by agri-food companies around the world to secure shelf space and consumer loyalty. Many global food companies are essentially portfolio businesses that are consistently fine-tuning how they deploy their brands to maximise return. With a few exceptions, we have been largely weak brand owners in New Zealand; with our brand stories often representing a confused mixture of national and product attributes. Whether an organisation is focused on e-commerce, retail or foodservice channels; a well-told brand story can assist through the many choices in front of consumers. While there is a

cost to branding a product properly, it was suggested that the real cost of 'half branding' our products (such as putting a logo on the pack but not delivering a true experience) was significantly greater.

Engaging with new value channels

Digital platforms such as Amazon, Ebay and Alibaba offer the ability for New Zealand brands to connect directly with global customers. While technology overcomes the tyranny of distance, it also challenges companies to think strategically about how they invest to reach their target consumer. In the retail space, these platforms offer a plethora of choice to consumers, making it difficult to stand out. The opportunity inherent in foodservice – which now accounts for over 50% of the market in some countries – was highlighted by a number of contributors. By marketing to chefs and restaurant owners, this channel provides an alternative way to reach the right consumers.

Delivering insight at point-of-sale

Historically, consumers have trusted the retailer to ensure their food is safe, or to provide information on the product's provenance. As more organisations are choosing other pathways to market, such as selling direct, it is now up to them to fulfil this role. They need to provide the necessary insight consumers need to make their purchasing decisions. Utilising digital tools that enable consumers to understand product attributes and provenance at the point-of-sale is becoming critical to securing a fair return for a product. The risk of leaving consumers unsure about what they are buying, and where it comes from, will see many reverting solely to price to make their purchasing decision.



“Trust in the process”

With food frauds being regularly reported in the media, it’s little wonder that consumers are growing more suspicious of what’s on their supermarket shelves. The Centre of Food Integrity (CFI) reports that the “trust gap” between consumers and food/beverage companies has grown wider in recent years.

As consumers start to actively challenge the information they’re given, brand owners are being motivated to verify their supply chains, one data point at a time.

Kiwi-grown company Trust Codes is helping brand-owners to do just that.

The Auckland-based company has developed Matrex®, a blockchain solution that was born out of its original anti-counterfeit technology. By placing a Trust Codes® cryptographically unique QR code on product packaging, it gives consumers in global markets real-time intelligence on their shopping choices.

“Consumers are starting to ask questions around their food – and all aspects of it,” says Paul Ryan, Trust Codes CEO.

“These consumers are motivated to do their research on the spot... they want real-time intelligence they know they can trust. This includes everything from verifying the product is what it says it is, through to the way it is produced. For example, the use of plastics in the food industry has become a hot topic and there’s a strong focus on regeneration of food production practices.”

As well as food safety and provenance, the strong correlation between food and health is driving the call for greater transparency.

“We’ve become highly-attuned to the health effects of food, and consumers are using this lens to look more closely at the brands they choose to align with.”

While Trust Codes does not publicly list its customers, the technology is being used by brand owners throughout the dairy, infant milk formula, honey, beverage and meat sectors. In 2016, Australian infant formula producer Camperdown announced they were implementing codes on their tins as a means to reassure their Chinese customers.

The Cloud-based platform works with any modern smartphone camera or WeChat – there’s no dedicated app to download. It provides a digital fingerprint for each and every product; using proprietary algorithmic technology to validate the contents of each packet, tin or box.

In addition, it gives manufacturers the chance to interact with their consumers. They can also use the platform to share key product information with consumers;

such as tasting notes, product matches, gate-to-plate tracking, or information about the primary producer.

As Paul Ryan explains, the Blockchain capability of Matrex® combined with Trust Codes® provides additional assurance when working within “informal supply chains” – or in countries where consumers are justifiably wary of non-authentic products.

“The current state of Blockchain is much like the early days of the internet... it is still an emerging tech, but it is going to be BAU soon. It will be woven into all processes – not as a standalone product as some are marketing it – but as an integrated part of brand transparency solutions.”



evaluate

accelerate

THEME 3



ROUNDTABLES

New environmental expectations



While few leaders we talked to foresee an animal-free future for the New Zealand agri-food sector, there was little disagreement that the sector must respond to the environmental expectations of Government and the wider community. There is simply no choice in the matter, if the sector wants to preserve its license to operate.

We had numerous conversations around: how land use should be determined; the priority that should be given to regenerating the environment back towards its natural state; the impact the Zero Carbon Bill will have on the industry; and whether the shift towards these new expectations should be incentivised or enforced. The role that water plays in the industry's future featured in some conversations, but was not raised to the same extent as it had been in previous years.

It is clear that no individual or single organisation will solve these environmental challenges on their own – the only way forward is through co-ordinated action. A number of contributors suggested the pending transformation is the most significant change to the industry since subsidies were dropped in 1984. It should not be overlooked that every person starts this journey from a different place, both in respect of their personal beliefs and the measures that they have already taken in their business.

One contributor suggested that New Zealand is lagging behind many countries on community recognition, understanding and openness to change. Strong leadership will be needed to guide the industry through what will be a challenging decade or more. Past transformation has been steered by industry titans; leaders that were prepared to publicly stand up

and take action, whether it was in their interests or not. Now is the time for the next generation of titans to step forward and identify themselves, and begin leading the challenge.

The Zero Carbon challenge

The Prime Minister announced the Government's plans for climate change action on 8 May, after we had completed our Roundtable conversations. While the intention of the package is broadly supported, a specific proposal to require a reduction in biological methane of between 24% and 47% by 2050 has been negatively received by the industry; particularly as the thresholds are greater than targets suggested by the Parliamentary Commissioner on the Environment. Before the details were known, industry leaders were signalling that adapting to the new climate regime is going to be both challenging and confronting for many around the country. It will change land use, and force farmers to sacrifice part of the commercial value of their land to enhance its environmental value, without any prospect of short-term financial return.

The key concern around a mandated carbon reduction strategy focused on the costs associated with transition. Little consideration was given to the opportunities that it could unlock. Many believe that while net carbon zero is a realistic target for the industry, planting more trees is not the pathway to achieve this. While the One Billion Trees Programme has created new economic opportunities in the forestry sector, there is no desire for this to become the Three Billion Trees Programme to deliver carbon neutrality, given the significant adverse impact this would have on our rural communities. It was clear that the industry is looking to the government and international partners for technology that reduces agricultural emissions, while

acknowledging that achieving the targets will likely require land use change. It was pleasing to note new funding in Budget 2019 directed towards delivering tools to producers to assist in this transition.

Enhanced management of land use

A feature of this year's Roundtable conversations was an increased willingness among industry leaders to think differently about how land is used, in order to ensure it delivers better environmental and economic outcomes. Over the last decade, the debate around land use has become polarised around dairy, as the availability of irrigation water saw many farmers convert their farms. This has led to a flawed conventional wisdom that making water available somehow causes land use intensification and adverse environmental outcomes. Water does not cause pollution, of course. It is poor farming practices or the use of the wrong system that have damaged the environment and polluted the waterways; and leaders suggested this should be the focus of land-use change conversations.

The reality is that our devolved system for managing land use is not delivering optimal outcomes for anyone. The system is inconsistent, slow and has limited teeth to address non-performance. It is not resourced to keep pace with changes in scientific knowledge, technical innovation and social expectations. To date, processing companies have been light-handed in prescribing how their suppliers operate, and rarely provide premiums for higher care production systems.

A range of options for managing land use were suggested – from introducing a national management system, and providing more comprehensive guidelines to councils, through to placing obligations on banks and processing businesses to influence



the behaviour of their customers and suppliers. It was agreed that any solution needs to be powered by the best available analytical tools, so the decisions made are fully informed. The bottom line is that we must seek to move towards optimal land use for the environment, the community and individual land owners; and provide farmers with the time and tools they need to transition when change makes sense.

One contributor talked about his experience of land use decisions within Māori organisations. Groups of land owners are actively pooling land holdings as they make conscious decisions about how their land is used in the future. The owners recognise that collaborating with other owners provides the scale necessary to support investment in higher-value product opportunities. Many Māori organisations are leading the way in proactive land use management, as they seek to balance their commercial returns against their community purpose.

Regenerating Aotearoa

A number of conversations pointed to the critical role our natural environment plays in New Zealand's two largest industries, agri-food and tourism. While there has been significant change in many farming systems over the last five years, these have enhanced existing systems rather than driving a fundamental shift in the systems being used. A number of conversations highlighted that the sector may need to face up to a reality that existing systems will never be able to deliver the environmental benefit being sought. Some contributors noted that, in future, land owners will likely be required to use regenerative practices on their land to generate better environmental outcomes.

Regenerative agriculture is not about planting billions of trees or taking productive land out of production. Rather it is about farming in a way that enhances biodiversity, enriches soils, improves the cleanliness and quality of waterways and streams, and strengthens ecosystems. It also helps to capture more carbon within the farming system. Providing land owners and producers with tools to help them explore opportunities – and enhance their systems in sustainable ways that reduce environmental impact – can only benefit both our agri-food and tourism sectors. This will be of great value in selling the Aotearoa New Zealand story to the world.

Incentivising change

If we are serious about securing our environment in New Zealand, it is critical that we use the right mechanisms used to guide change. There is no doubt that many in the agri-food sector will be asked to face confronting choices; and they need appropriate pathways to facilitate these difficult decisions. While there are many calls from activists to use penalties and taxes to enforce change, industry leaders would prefer to see a mixed framework, which includes carrots to incentivise people towards the right decisions. There is no doubt that more will be achieved, and the pace of change accelerated, with the right incentives and rewards. This means helping people to understand how investing in the environment can deliver economic return; supporting them with the costs of making these investments (potentially through a Green Bank, referred to the 2017 Agenda); and rewarding trail-blazers for their positive leadership.

Industry leaders recognise that paying for greenhouse gas emissions and the use of other elements of natural capital will become a reality for the industry. The design of the charging mechanisms should be focused on lowering emissions rather than raising revenue. Placing agriculture in the Emissions Trading Scheme (ETS), even an enhanced ETS, will not achieve this. However a system that baselines emissions on each farm, and rewards farmers that reduce their emissions at a faster pace than national targets, would drive change. It has taken decades to make progress on water, due to the confrontational approaches that have been adopted to the issue. We simply do not have the luxury of time to make progress on climate change. Learning from the mistakes of the past, and designing a system that delivers progress rather than retribution, is critical to securing our environment for future generations.

As New Zealand embarks on its transition towards a low-carbon future, it is critical that we ensure all the costs and externalities are reflected in the prices we seek to charge customers for our products.

In our view, it is critical for New Zealand to become the first agri-food sector to achieve an attribute premium for producing net carbon zero food products. This also makes it imperative for the industry to seek a fast transition, rather than targeting 2050. It will also require other sectors to appropriately price the products and services they deliver. In particular, this applies to tourism. Our rural economy cannot be expected to continue to subsidise the economic and environmental cost of the deluge of low-value tourists we have attracted to the country in the push to grow visitor numbers.

THEME 4



ROUNDTABLES

Collaboration, leadership, trust



The 2015 Future Leaders Agenda showed the importance that cohort placed on collaboration, leadership and trust. It was interesting to hear those three words come up time and again during our Roundtable conversations.

Within our contributor group this year, we had a number of people that had joined or returned to industry in the last year, which made their observations highly relevant. To an outsider, silo-like behaviours appear to be more enshrined in the agri-food industry than in other sectors (partly due to funding structures such as commodity levies and competitive research funding). They also noted the sector's tendency to keep government 'outside the tent' as long as possible, despite its ability to enable actions and align investment for impact.

As we noted in the Acknowledge section, significant progress has been made over the last decade in building bridges and trust between leaders across the industry. This is driven by initiatives such as Te Hono, which has created relationships between leaders via the Stanford Bootcamps. Our companies are also seeking to work together in offshore markets. A good example is Primary Collaboration New Zealand in Shanghai, featured in the 2017 Agenda, which has companies joining to benefit from an established market entry point. The EAT New Zealand initiative, showcased on page 46, is another example of positive collaborative activity.

While we have made a good start, the challenge now is to scale-up the collaborative activity so that it has a transformational impact. Both commercial and industry good organisations have effectively collaborated with government at an individual sector level, but there is little happening at an industry level. Critically, there is no representative organisation for the Government to partner with on the macro challenges.

While the need for an umbrella organisation still ranks lowly in our Priorities Survey, it appears that a top sector body looks increasingly necessary. This would provide a single, strong and viable partner to the Government; rather than having to stitch together collaborations with 20 to 30 different sector bodies, each with their own agenda.

It was suggested that capital availability will accelerate collaborative activity. It is expensive to be consistently successful in international food and fibre markets, and few New Zealand companies have the scale to make a transformational investment using their own resources. By way of comparison, Zespri spends more than \$150 million each year promoting its story in key global markets. For many organisations, the ability to share costs on elements that are generic or non-competitive will enable them to accelerate market growth strategies until such time they can make the investment themselves.

One of the constraints on collaborative behaviour is historic. Our future leaders had a clear message on this (i.e. "get over it"), but for many leaders, the frustrations of failed collaborations remain raw. Past initiatives have often under-delivered because they have been inflexible, over-governed, and ultimately unworkable constructs. Too often, they have been designed by committee in an attempt to get buy-in. In a fast-moving world, the aim should be to partner with a coalition of the willing, rather than waiting for everybody to get on the bus. It was suggested that organisations will be more successful if they take risks and experiment together with a common purpose and passion.

The willingness of governors to take risks is a theme that featured prominently this year. In a small market like New Zealand, where personal brands are tended carefully, the fear of career-limiting failure remains. This limits the risks that leaders

are prepared to take – even when the rewards may be huge. As one contributor noted, the role of an outstanding governor is to recognise when current strategies are no longer fit-for-purpose, critically assess proposals put in front of them, challenge 'group think' around the board table, and take some calculated risks.

We all instinctively assess ideas through the lens of our own social and economic background. This makes it critical to bring diversity of thought to conversations at leadership level. At times, it will mean discussions take longer; but the quality of those discussions will be higher and the outcomes richer. These deeper conversations can also lead to Boards making the brave decisions that will have the biggest impact. Our contributors believe we have a right to expect more leadership from our boards and their executive teams.

We could do worse than learning from Singapore, a country with massive aspirations in agri-food. When the Singaporeans look to achieve a strategically important economic transformation, the Government and industry collaborate closely. They work to identify and resolve skill shortages, jointly underwrite the investment necessary to share the risk, and direct the best available capabilities at solving the key problems. This shows the kind of big-picture, collaborative perspective that New Zealand would benefit greatly from.



As two of the biggest contributors to the New Zealand economy – it makes perfect sense to create a global marketing tool at the intersection of food and tourism.

Eat New Zealand, launched in March 2018, is a collaborative platform that's designed to put New Zealand cuisine on the international traveller's map.

The not-for-profit food movement has attracted a passionate cohort of chefs, restaurateurs, producers, media, tourism and event operators – all keen to champion the unique gastro-tourism New Zealand has to offer.

CEO Angela Clifford explains the value of this pan-industry approach:

"One of the biggest problems we face as a nation is that food is siloed across different industries – tourism, agriculture, manufacturing and so on. But once you knock the tops off the silos and work together, the alignment becomes very clear... and there's an organic opportunity to collaborate. Instead of creating a hierarchy of information, you create a web."

Angela says the vision is people connected to New Zealand through our food and the ultimate goal of the movement is to place New Zealand cuisine firmly on the world map – in a similar way that 'New Nordic cuisine' has re-energised Scandinavia's food and tourism sectors.

"Our country is ripe for this type of gastrationalism. It's a wonderful lens through which to understand New Zealanders. Our home-grown food is absolutely world class, and we have incredible ingredients being enjoyed around the world. But we've not always been strong at connecting those with people's experiences when they visit the country... and that is precisely what Eat New Zealand is designed to do."

More than two thousand food businesses, searchable by region, are listed on eatnewzealand.nz. They include a wide range of eating establishments, farmers markets, events, food tourism venues, operators and producers throughout the country.

It also includes an 'itinerary' function, which allows visitors to keep a wish-list of places they'd like to visit or remember.

Social media plays a large role in their storytelling; particularly from those keen to educate people about how our food is grown, and how we can move New Zealand toward a sustainable future.

"Seeding an idea through social media brings everybody into the conversation, and creates an open forum for discussion," says Angela.

Eat New Zealand promotes events held around the country which aim to highlight our best food makers and growers. The collective has just announced New Zealand's first national food celebration, Feast Matariki, which comprises more than 100 events and regional activations during June - July.

"Throughout the country, we're encouraging people to reconnect with where our food comes from, and to recognise the truly incredible ingredients we grow, catch and make here. It's also a time to acknowledge the manaakitanga or hospitality that is an intrinsic part of who we are as Kiwis."



THEME 5



ROUNDTABLES

No one solution to labour shortages



Some contributors believe labour and skills shortages are the biggest challenges facing the industry. If the agri-food sector was the only sector of the economy grappling with this issue, it would probably be a solvable problem. However with other sectors also facing severe labour shortages – construction, hospitality, healthcare, and education, among others – the competition for talent has become a war. There is no single easy solution to ensure the sector has the people it needs to support its growth.

Contributors also highlighted an additional risk: that labour issues could impact the ability of the industry to secure a premium for its products. If the labour resource is not available to undertake the extra handling required for the processing of premium products, the easiest option for producers is to put more of their product through commodity channels.

We heard comments from a number of leaders that the Government is doing little to mitigate the sector's labour challenges. A number of policy decisions – such as winding back inbound migration, limiting the Recognised Seasonal Employer (RSE) schemes, and allowing critical industry training establishments to fail – have all made the challenge of finding skilled employees more difficult.

When industry raises these issues, the standard response given is that labour challenges would be solved by paying people more. This is simplifying the issue. Labour is a significant cost element for many agri-food businesses; and particularly after rises in the minimum wage, margin pressures mean employers cannot both pay more and remain sustainable. Furthermore, evidence suggests that even when more is paid, it can be a struggle to find workers who will commit to regularly attending a physical

job, drug and alcohol-free. The bottom line is drawn by simple market economics. While New Zealand-grown product can potentially secure a premium, in the light of labour cost increases, this premium is not always sufficient to justify the additional cost of labour.

Having heard about these challenges at many Roundtables, it appeared labour issues have become a millstone around the industry's neck; and a constraint on the contribution it makes to the country's economic prosperity. Thankfully, there are also examples of organisations seeking to utilise a range of innovative solutions to the problem. The case study on page 48 highlights the cadetships that Parininihi ki Waitotara have introduced, creating a relevant pathway to introduce young people to opportunities in the sector.

- We heard about the partnership between T&G Global and the Ministry for Social Development (MSD). Together they have implemented an innovative buddy-based support structure around MSD clients that have struggled to hold down a job. The buddy ensures that the client gets up on time, arrives at work with everything they need, and are supported through the working day. The programme effectively teaches people how to work; and ensures workers who would previously have been overlooked can be productively employed in the sector.
- As we have highlighted in previous Agendas, it is important that the sector delivers employees the jobs as promised. Good employers are taking steps to ensure that this is the case, by investing in all aspects of the workplace experience. We heard examples of upgrading working and living conditions, offering flexible work scheduling, supporting team members to take active roles in the community, and investment in training and development.

- Leaders in the kiwifruit sector reported that recruiting key skills into their sector has been less difficult in recent years. They suggested it had become a more attractive sector for young people to join; with the industry demonstrating innovation, growth and financial profitability. While not every sector enjoys the success that the kiwifruit sector is currently experiencing, there may be other means to the same end. To assist in attracting key talent, the public face of the industry could be focused on technological innovation and the impact the industry has on local and global communities.
- It was suggested that the RSE scheme should be recognised for what it achieves. It could be described as New Zealand's largest non-governmental aid programme, and one that transfers significant value to communities across the Pacific each year. Changing how the scheme is perceived will increase political understanding, and hopefully enable the scheme to grow sustainably.
- When it comes to robotics and automation, and how they will reshape future labour requirements, the impact on agri-food will be no different to any other industry. While this may provide a long-term solution to some labour challenges the sector faces, it is important that investment is made into these technologies today – so the solutions are available tomorrow to protect competitiveness. Solutions are often going to be bespoke to New Zealand's environment meaning we can't rely on the world solving our problems.



PARININIHI KI WAITOTARA

He Whenua He Tangata He Oranga



With a long and complex history as a Māori Incorporation, Parininihi ki Waitotara (PKW) is re-defining what it means to be a truly modern farming business.

Their wide portfolio now includes a comprehensive agribusiness company, forestry interests, horticulture, aquaculture (including live crayfish exports to China), commercial properties, and a Māori co-investment fund.

Underpinning their diversification strategy is an unwavering focus on sustainability, and creating value for future generations.

According to PKW's Chief Executive, Warwick Tauwhare-George, embracing opportunities outside of dairy is a natural progression for the organisation, which was first incorporated in 1976.

"We have been entrusted with over 20,000 hectares of some of the most productive land in New Zealand. Historically, we have been dairy farmers because dairy farms have been located on our whenua... but we are continuing to diversify, thinning our risk, and attracting new investment."

In 2019, seeking out alternatives to the traditional dairy farming reflects PKW's core mission "to be a successfully diversified and sustainable Taranaki Māori-owned and operated business providing meaningful opportunity to our people."

This also means keeping a continuous close eye on emerging commercial opportunities including the likes of Industrial Hemp, honey and sheep's milk – but always through the lens of kaitiakitanga (guardianship of the environment).

"We're not only looking at different farming systems, but also ensuring our activities are environmentally sustainable, creating wealth for our shareholders and for the future generations," says Warwick.

This social imperative is also being driven by PKW's 10,000+ shareholders. The Board and executive maintain an ongoing dialogue with shareholders, which helps inform their strategic mandate for the future.

"We kicked off the process by talking to all of our stakeholders – shareholders, staff and user groups – to put the question to them: 'what should kaitiakitanga look like, and how should we be operating as kaitiaki?'"

"We now have a strong set of pillars to operate by, so we really walk the talk, and deliver to our word."

Building a pipeline of talent is another key pillar of success for PKW. The organisation has developed a Cadetship programme, which it believes is a proven and successful pathway for Māori career development.

"As a significant Māori-owned business that's active across a range of industries, we have a wealth of experience and opportunities we can provide our cadets," says Warwick.

Two farming cadetships – which are 12-month full-time paid positions – expose the cadets to different options within farming, as they rotate through PKW's diverse business operations. They will also earn nationally-recognised qualifications in dairy farming.

A further two cadetships, for students of agribusiness and finance support, are based within PKW's New Plymouth head office.

And while the emphasis is on offering valuable career experience, it's also an opportunity for PKW to develop its future leaders – by immersing them in the business and its kaupapa.

"Younger generations have a clear sense of purpose, and we need to ensure they're attracted to the industry if we want to retain and revitalize the industry's licence to operate," says Warwick.

"By allowing them to live and breathe our kaupapa, we can positively influence those who will sit in our chair one day."

20,000+
HECTARES



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most productive
land in New Zealand

OTHER THEMES



ROUNDTABLES

Also on the agenda

During the Roundtable conversations, a number of other issues were raised that demonstrate what else is currently on the minds of industry leaders.



Biosecurity

Risk growing annually

Despite again securing the top slot in the Priority Survey, there was less talk about biosecurity this year. It was suggested that while the likelihood of the Brown Marmorated Stink Bug establishing in New Zealand appears to increase each year, investment in minimising this risk has been cursory in comparison to the costs of the destruction it would cause (which would be to horticulture equivalent of foot-and-mouth). The incursion risk grows with more ports of entry into New Zealand. It is therefore critical that we have co-investment by government and industry into proactive risk reduction and response strategies.

It was suggested that one simple strategy would be to require the national airline to relay video information to inbound passengers; ensuring that visitors and New Zealanders understand the risks facing our country from a major incursion.

Mycoplasma bovis has again highlighted how an incursion can quickly shift from being a national, governmental issue into a localised and personal one – for those who have the misfortune to be impacted. Biosecurity is an issue that should be a priority on their risk register of every organisation; yet most are prepared to discount the risk until they find themselves at the centre of an incursion.



Biotechnology

Future-proofing the industry

In this year's conversations, industry leaders talked about the opportunities inherent in emerging biotechnologies; as well as the potential future impact of choosing not to use these technologies. Some contributors believed that unless we are open to using existing and emerging technologies, New Zealand cannot be a low carbon leader, a sustainable food producer, and a contributor to feeding the world. The ability to grow plants has always been our competitive advantage, however technology is transforming how plants are grown; and we stand to lose both expertise in plant science and our competitive advantage if we are not open to this discussion.

It was highlighted that we have political leaders from all parties that are listening and acting on the advice of scientists in relation to climate change – but are unwilling to trust the same scientists on biotechnology. The world continuously moves forward on biotechnology (our unscientific KPMG team survey suggests opinions have shifted), but New Zealand's capability remains stalled. Investing in research in these areas ensures we have the capability if and when a decision is made to permit their use. In the meantime, learnings from research will accelerate traditional plant breeding programmes. The message from industry leaders was clear: now is the time for a comprehensive conversation on this issue. We cannot afford to keep kicking it for touch.



China

Continuing to ride the Dragon

China has boosted New Zealand's economic prosperity over the last decade. While some remain concerned about over-exposure to China, we cannot overlook the stability of the market and its ability to pay good prices. It is unlikely the 2020s will see exports triple again, as Chinese growth slows; but that certainly does not mean the opportunities for New Zealand companies have been exhausted. One contributor noted that the food and hospitality sector is not slowing anywhere near as quickly as the wider economy. The government in China is focused on growing domestic production to provide food security to the wider population, leaving valuable opportunities for exporters to develop and extend markets targeting affluent consumers.

The key to success is being selective about the pathways used to access the Chinese market. The advice we have given in previous Agendas still applies: be selective about your partners; do due diligence into alignment of values, and do not consummate a deal with the first partner to come along. Market positions in China need to be constantly invested in. In particular, the extensive use of social media and e-commerce allows a challenger brand to become market leader incredibly quickly; so being on the right platforms and active in social conversation is critical. It was also noted that as the Chinese market matures, the failings they have forgiven in the past will not be so easily forgiven in the future. Getting it right every time is more critical than ever.



Two years into their partnership with Shanghai Maling, Silver Fern Farms are on a journey to navigate the complexity of China, their priority market.

Having a partner on the ground is proving particularly valuable as the company continues to apply its Plate to Pasture strategy – and placing the consumer front-and-centre of all strategic decisions.

The game-changing partnership with Shanghai Maling was completed in late 2016. Aside from the financial resources provided by the \$261m cash injection, the deal was noted for delivering the co-operative a “connected partner in the fastest-growing red meat market in the world.”

“Strategic alignment is so much more powerful than pure financial objectives,” says Chief Executive, Simon Limmer.

“We’re working on a long-term approach to develop the market – with our consumers as the focus.”

Limmer already had intimate knowledge of the Chinese market from his previous tenure with Zespri, which included a stint as GM of China. Since taking over the helm at Silver Fern Farms in March 2018, he has continued to visit China every two to three months.

“The pace, growth and value of China makes it an obvious market,” he says.

“It is part of the company’s DNA to become intimate with the market and our consumers...and this partnership helps us to find a way to understand the Chinese market more deeply.”

In-market partners also have the ability to amplify the New Zealand provenance story, he says, in a way that resonates with local Chinese consumers.

The key to navigating such a fast-changing and intricate market has been for both partners to align their respective objectives and vision. As 50/50 shareholders, both interests need to be respected and understood.

“It’s an iterative process, and we have a continuing dialogue to make sure both sides are represented,” says Limmer.

“This makes for a challenging debate, but it’s more valuable at the end of the day.”

Meanwhile staying competitive in the global market is also taking place set against another backdrop – namely the exponential global rise of alternative animal proteins. But Limmer says Silver Fern Farms is more than up for the challenge. In fact, it simply reinforces their strategy, which had long made the shift from being supply-driven to market-led.

“The way we see it, alternative proteins are serving to amplify the whole protein market. The debate has sparked the urgency to tell our story, so it’s also very exciting.”

With a rebalancing of protein in the global food system, new choices are flooding the market, and understanding the red meat brand in a competitive landscape has become critical to success.

“New Zealand has – in abundance – those attributes that consumer’s desire. These include qualities such as sustainability, health, taste, and food safety.”





Debt availability

Significant risk of deep disruption

While this is an issue that was touched on by some contributors, it is not in the mainstream consciousness across the sector. Some are concerned about the impact that proposed changes by the Reserve Bank of New Zealand (RBNZ) will have on the availability of debt to farming businesses and the cost of that debt. The RBNZ proposes to require large banks to hold more capital to back certain lending that is systematically important to New Zealand's banking system. Our analysis suggests that this could see banks motivated to reduce rural lending books by between 10 and 15 billion, as well as increasing the cost of remaining debt.

No surprisingly, this is a big issue in the banking sector; and it should be an issue that farmers are discussing with their bank to understand how it may impact on their facilities at renewal time. We have three prime concerns about these changes. Firstly, they have the potential to drive banks to terminate facilities, which may require farms to be sold quickly with the risk that these sales collapse land prices. Secondly, the proposal comes at a time when farming businesses need to invest in reducing their environmental footprint and technology to meet the growing demands of consumers. Without access to debt, this investment will not be made; which will impact on the economy. Thirdly, restricting credit will further restrict the number of buyers for farms at a time when tightening of international investment rules has largely excluded foreign buyers from the land market, and many farmers are seeking to exit their business at retirement. We believe there has been insufficient detailed cost/benefit information provided so far by the RBNZ to support their proposals.



A one-stop shop for academia and research?

With a number of contributors having recently visited Wageningen University and Research in the Netherlands, there was discussion around whether a similar institution could be explored here. This is best described as a one-stop-shop model that consolidates capability in primary sector postgraduate education, along with pure and applied research, into a single institution. The barriers inherent in New Zealand's current system – which is spread across at least six universities and four crown research institutes – are significant. Collaboration is constrained by physical and funding barriers; institutes compete for funding rather than projects being prioritised based on impact; and much of the investment in the system is consumed in overhead.

When compared to the Wageningen model, contributors noted that our system appears to lack the co-ordination and critical mass observed in the Netherlands. The integration of commercial entities into the ecosystem around Wageningen is also missing in New Zealand, meaning activity is not always directed to the opportunities that will create most value. Many in the sector are emotionally attached to our current system, despite the fact they recognise it spreads resource too thin. As the Primary Sector Council develops its vision for the industry, it is critical that government and industry resources are directed towards a fit-for-purpose model. It may be that a more cohesive Wageningen-style model is right for enabling the future we aspire to.



Future organics

Hope from a legal definition

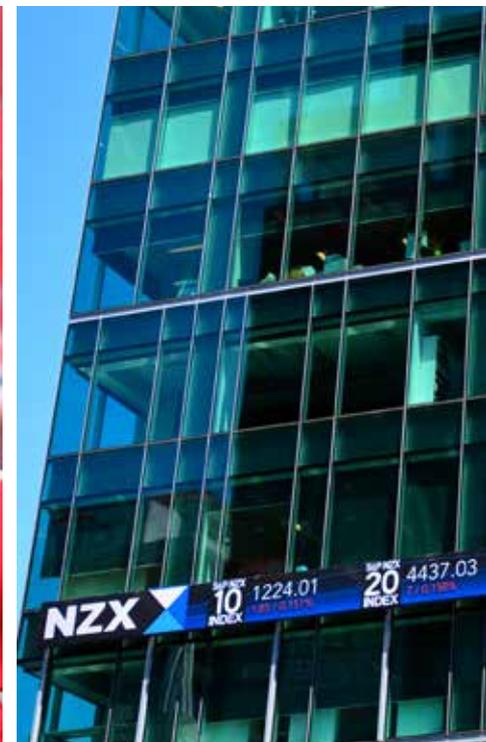
The role of the organics sector in New Zealand has been a subject that we have touched on a number of Agendas over the decade. The sector has consistently bemoaned the lack of a regulated definition of 'organic' in New Zealand, and the damage this has done to true organic producers, at home and internationally. Their products have been forced to compete with conventional products that have been misleadingly labelled organic, because there was nothing to stop more unscrupulous growers doing this. The good news for the sector is that work is progressing towards establishing a legal definition for organic products; which should assist the industry to enhance its reputation and access new opportunities to export products into international markets. The biggest challenge to organics remains the low cost of conventional food in comparison to the higher-priced organic alternative. Until all food prices reflect the true costs of producing food, including fully reflecting the environmental impacts a product has in the price, the differential will continue to make organics a more volatile, higher risk part of the food system for commercial producers.



Technology uptake

The crunch comes in the spring

Every aspect of the value web is being reshaped by technology... whether it's an AI-driven support system that augments the intuition of farmers and growers, a data-driven sales and operations planning system that matches products to markets for maximum value, or a social media platform that connects a business to its consumers. We have been consistent in our calls that there can be only one standard of broadband connectivity across New Zealand; and anything else would be an injustice to the most productive sector of our economy. New Zealand is currently ranked 18th globally for use of technology in business, and a contributor suggested that infrastructure issues continue to plague the adoption of digital solutions in the agri-food sector. It was also noted that despite the Government committing \$150 million to RBI2, the rollout has been slow to date. The 2019 Rugby World Cup looms as a make-or-break event for technology adoption in rural areas. If the streaming platform works and delivers a great experience, it could be the tipping point for the uptake of digital technology in many aspects of rural life. If it is beset by buffering, it will demonstrate the failure of over a decade of policy and investment to connect our rural communities.



evaluate

accelerate

What needs to be done to supercharge the 2020s?

At the end of each Roundtable conversation, we asked our contributors their view on the single most important action that could set the agri-food industry on a course to amplify its success in the coming decade. Here are some of the highlights:

"Develop education and training programmes for farmers so they understand the reasons they are being advised to invest in evolving their farming systems, and can better understand the consumers they are producing food for."

"Carefully capitalise on the alignment that traditional Māori values have with the values of many premium consumers around the world, while preserving the cultural and spiritual significance of these values."

"Aggregate academic and infrastructure to secure critical mass, eliminate duplication and provide a platform for the industry to lead in innovation globally."

"Activate underused Māori land by making the necessary changes to the Māori Land Act rather than undertaking further rounds of consultation."

"Focus on our competitive advantage – growing natural grass – and sell the benefits of our farming systems to the world."

"Be prepared to make long-term investments in young people to build the capability that the industry will need in the future."

"Change the conversation for 'me or I' to 'us' to drive a focus on scaling game-changing initiatives to make them globally relevant through business-to-business collaboration."

"Get more scientific about the value of our products from a psychological perspective, so we better understand how consumers value products and ensure pricing is aligned to the perceived high value attributes."

"Everything done in the industry [should have] an ethical sourcing overlay so that we are able to demonstrate everything in our value chains is being done as ethically as possible. It may cost in the short term but will ultimately deliver better outcomes."

"Co-ordinate research efforts to deliver solutions that enable producers to regenerate their land in an meaningful way, while ensuring that they retain a sustainable business."

"We need to be clear about where we want Aotearoa NZ to go in the future so that as an industry and community we move in a consistent direction, while retaining and celebrating that unique sense of kiwi individualism everybody brings to the table."

"Be transparent on the Sustainable Development Goals that you want to have impact on, tell the world, and then keep telling them how you are doing."

"Provide certainty to the community and the industry – take clear positions on issues like greenhouse gases and commit to taking action over a longer term horizon."

"Ensure high quality food is available to all New Zealanders, so we become a global exemplar of a healthy society powered by world class nutrition."

"Shift the dial on leadership to maintain the vibrancy of the industry by focusing on people, skills, confidence and belief. Leaders can't contract out of responsibility, and need to be visible."

"Don't leave land use to chance, deploy advanced data and analytical tools to make better and more rational decisions on how land is used and support farmers when farms make sense."

"Welcome government into the tent as a partner and engage them in design in key programmes so they are comfortable to commit secure long-term funding to key transformation initiatives."

"Restore pride in what we do – profile the fact the industry is complex, data-driven and good for the world and New Zealand – focus on telling the stories of the industry's rockstars so they recognised as being the Teslas of the global food system."

"When possible, adopt a circular mentality to processes and value chains to ensure we focus ruthlessly on eliminating waste, to minimise environmental impact and maximise economic value."





Accelerate

Playing an infinite game...and thriving through wellness



Change is constant and it always will be. We instinctively search for new knowledge and use this information to look for better, more efficient ways to do things. As already discussed in this Agenda, the agri-food industry in New Zealand has changed significantly over the last decade; in what it produces, how it interacts with consumers and how it uses natural resources.

Industry leaders recognise that the pressure to change is unrelenting and likely to accelerate for the foreseeable future. As a consequence, the need to continue the transformation of organisations to become more collaborative, agile and resilient is an ongoing and significant focus for many of the leaders we talked to.

Recognising the extent of disruption

It is hard to comprehend the extent of disruption the agri-food system is facing globally. The reality is that much of what is considered usual agricultural practice today would not be that alien to the Vikings or the Romans. While we have introduced new equipment, in some parts of the world, and improved the genetic qualities of the plants grown or animals raised, the fundamentals remain largely the same - tend the land, feed the animals, add sun and water and wait for a product to grow. As a consequence, the industry has been ripe for disruption

for decades. Significant money is now flowing into the technologies that have the potential to reshape every aspect of the agri-food value chain, from what a farm is and how things are grown, through to new products, and to the way products are processed, distributed and ultimately consumed.

In our view, the world has not only entered the fourth industrial revolution, it has also entered the first global agrarian revolution. The basic premise of both revolutions is the same; the fusion of biological, digital and physical technologies to create exponential solutions that have the potential to transform industries and the way that we live our lives.

We see the agri-food sector as being at the centre of the fourth industrial revolution as combining the biological (a plant or animal), with the physical (a tractor or a hoe) and digital (knowledge and insight) has been what the industry has always done to grow food and fibre products. We do, however, distinguish the revolution in the agri-food sector from the wider revolution because the sector effectively missed the first three industrial revolutions, and is consequently facing more significant disruption over the next decade or so than any other sector of the global economy.

The agri-food market of the future

While food and fibre producers are facing dramatic change within their own farming operations, the wider transformation of society will have

a material impact on the markets producers ultimately sell their products into around the world. We often hear people talk about the market as if it is a single, uniform construction. Maybe in the past this was a reasonable approximation of reality, when channels to the consumer and the range of product options available were limited.

However, the technologies of the fourth industrial revolution are fragmenting markets into an infinite number of niches, aligned to the specific wants and needs of consumers around the world. As we note later in this report, the one size fits all solution has gone, to be replaced by a model that is trending towards mass personalisation and, eventually, solutions that deliver one size fits one products.

The global market in the next decade will be comprised of millions of niches. We expect that each of these niches will align with one of a number of key food system streams that reflect the ability of an individual consumer to make choices in respect of the food they eat and the way it is integrated into their daily lives. Given that markets are evolving rapidly it is hard to predict with accuracy what these food system streams will ultimately end up being, but we foresee seven primary streams which are likely to encompass the bulk of consumers around the world; subsistence, sustenance, first choice, flexible, integrated, ethical and premium.

Recognising that the expectations on producers are different for consumers in each of these streams is critical to determining where the products an organisation grows are targeted. It is important for producers to recognise that they are very unlikely to be able to feed the world, by developing markets across each of these seven streams, but in most cases maximising the value of their product will require them to target consumers in niches in more than one stream, recognising that each requires a tailored strategy and approach.

The challenge for organisations is that they are being required to make decisions on the niches they should target based on their expectations about how the system may evolve, and the assumptions they have formed about which of the 45 trends shaping the food system, discussed on the following pages, will have the most dominant impact on consumer behaviour and demand.

While we make predictions about the future of the food system, the speed and extent of disruption the sector is facing mean that the past does not provide a reliable predictor of what will happen in the future. The adoption of technology over the last decade has illustrated that the world is not linear, with many technologies

following exponential adoption curves that start slowly. However, as adoption accelerates it can't be overlooked that each doubling adds 100% more users. It is difficult to move beyond models that are built on historic data and trends, but it is critical that organisations do take this step to stand a better chance of capturing the opportunities in front of their organisation.

Recognising that you are playing an infinite game

In an environment of dramatic and continuous disruption, the biggest risk facing organisations is maintaining relevance. In the past, organisations developed strategies which used language like winning, beating the competition or leaving nothing on the table. The focus today is on long term sustainability and earning the right to serve customers and partners. This change in language is reflective of a change in the ground rules surrounding markets that the pace of innovation and disruption is imposing.

Well known business commentator, Simon Sinek, suggests that what we are observing is a fundamental shift in how business works, from a finite game (with rules, a start, a finish and result) to an infinite game; a game with changeable rules, where players

come and go and no endpoint. The organisational objective is to build the capacity and resilience to stay in the game, and thrive in an ever-changing world while competitors fail or exit the market. The problem for many traditional businesses, is that if you try to play an infinite game with a finite mind set you will struggle to match your competitors for innovation, effort, morale and performance.

Surviving in an infinite game requires organisations to enhance existing, and develop new, capabilities to enable them to retain a sustainable position in the markets that they choose to play in.

Internationally, we observe many companies using the UN Sustainable Development Goals to define the impact they seek to have and reporting their progress.

Our conversations during the year have assisted us in identifying a range of organisational capabilities that have not always been a priority in agri-food companies, but which need to be developed in response to the substantive changes that are occurring in how markets are function. We have summarised the attributes we believe will help organisations to thrive in their infinite game on page 60.

The seven primary food system streams

SUBSISTENCE:

Food availability is not assured and consequently these consumers will eat whatever food is available when it becomes available, often as a result of their own farming activities, with little concern about the nutritional composition or safety of the product.

SUSTENANCE:

This consumer has sufficient economic capability to buy the food they need for them and their family. Their focus is on sourcing enough nutrients to enable them to function in daily life and continue to generate income to buy more food in future.

FIRST CHOICE:

Greater economic capacity provides some ability to make choices about the food eaten which sees consumers start to seek out animal proteins (or equivalents) as an alternative to plant based foods. Priority is given to providing safe, nutritious food to children.

FLEXIBLE:

Consumer has the financial capability to choose from a wider range of food options and the attributes of the product start to inform the choices that are made. There is the capability to eat out on occasion and to invest in more expensive foods for special events.

INTEGRATED:

Food is fully integrated into lifestyle, the consumer can afford foods that provide functional and nutraceutical properties when necessary and regularly invest in premium food products and eating at 'experience' restaurants when they are spending time with family and friends.

ETHICAL:

Consumers which put the provenance of the product central to their buying decisions. They generally do not have financial constraints on their purchasing decisions, likely to be open to purchasing organic products, novel foods and experimenting with vegan and flexitarian diets.

PREMIUM:

Consumers where the cost of food presents no financial constraint and their focus is entirely on the experience that a product delivers. They wish to engage in novel food trends quickly. They focus on the attributes of a product and how expensive it is in making purchasing decisions.



The bottom lines in a fragmented, disrupted agri-food sector

Having explained why we believe the agri-food sector is now experiencing the first global agrarian revolution, our view that markets are fragmenting into millions of niches, highlighted that there are 45 identifiable global disruption trends, and explained that the fundamental rules underpinning markets have shifted. **We only see opportunity in the agri-food sector if you are prepared to approach your future with the right mind-set.**

The speed and extent of change can be viewed as a challenge or an opportunity. The only person that is able to determine the lens you choose to use is you. We have argued for years that the only practical choice is to view disruption as an opportunity, to understand the key bottom-lines shaping the industry and then to buckle in for what will be an exhilarating ride - one with the opportunity to double or treble the contribution the industry makes to New Zealand's prosperity.

We believe there are three bottom-lines shaping the future of the agri-food sector:

Sustainability is a non-negotiable:

To maintain social license the reality is that it is no longer appropriate to just do enough; there is a need to listen to all relevant voices, including those from minority communities, and do the right things for the organisation, stakeholders and the wider community. While conversations often focus on climate, land and water, achieving true sustainability requires an organisation to think far more holistically about the systems they interact with. This requires thinking beyond financial metrics and environmental consequences to include analysis of human, social, intellectual and technological dimensions in decision frameworks. It is becoming apparent, that as more organisations think about the wider impact they have on a value chain, circular thinking is being designed into business models, with greater effort being made to find partners to extend the life of non-renewable resources.

Food is central to future of the health system:

The connection between what people eat and health outcomes is irrefutable. As the social impact and costs of curative healthcare systems place an increasing burden on government and society, there is no doubt that policy settings will shift towards preventative care models. This places food at the centre of the health system of the future and increases focus on a food's nutritional density, functionality and impacts on health outcomes (both positive and negative). Recognising this shift presents a myriad new opportunities for food producers able to verify the therapeutic outcomes their products contribute to, but also flags risk for products that contain ingredients that are perceived to be bad for health. It also suggests the space that has traditionally existed between the food and pharmaceutical sectors will become increasingly blurred, as businesses from both sectors explore opportunities in functional and nutraceutical foods.

Diets will transition as consumers personalise experiences:

The last decade has seen the protein wave wash through the food system, with consumers placing significant focus on the protein they eat. However, we believe this central focus will evolve in the coming decade. We expect a second wave to come through the sector, shifting the focus of consumers from purely protein towards the complete nutritional density of their food as recognition grows that there are many other nutrients, oils, fats and minerals that are important to health. Secondly, consumers are thinking far more about the foods they eat and where they come from; we have heard many times in recent months that there is place for 'good food', whether it is produced from plants or animals, but no place for 'bad food', any food produced without awareness of the impact it has on health or the environment. We also believe consumers are taking more control of their diet. In seeking personalised experiences, they are transitioning from conventional food to nutrition arrangements that align with their lifestyle, world view and ethics.

Volume to...value, values or wellness?

The mantra over the last five years or so in the New Zealand agri-food sector in response to markets becoming more complex and disrupted, has been that we need to accelerate the shift of our products from 'volume to value'. While this is easy to say it is not nearly as easy to deliver on, as many organisations have found. The Coalition Government has recently been talking about making a shift from 'volume to values' which makes a lot of sense. While activities adding value to a product can be replicated or superseded by a competitor, underpinning a product with a set of values, that reflect the ethics and morals of New Zealand and the producer is significantly harder for a competitor to replicate or displace.

From the journey we have taken in preparing this Agenda, we think that there is an opportunity to take this position one further step. **We suggest that we should aspire to transition from 'volume to wellness'.**

We believe 'volume to wellness' encapsulates growing products that have attributes consumers aspire to inherent within them, and that are unpinned by a clearly articulated set of ethics and morals. However it goes further, and says our focus is on producing products that promote wellness; wellness for the consumer that eats the product and also wellness for our communities and environment in New Zealand.

Thriving in the infinite games requires organisations to make bold commitments to secure a sustainable place in the game and derive fair value from what they create. We believe as we move into the 2020s, a decade that will be dominated by health and wellness themes, now is the time to place wellness front and centre in our agri-food story if we really want to secure our share of the value we grow.

Organisational capabilities to thrive in the infinite game

Long term focus

A goal for any organisation playing an infinite game is to earn the right to continue to play. Looking to extract the last dollar at the expense of a relationship does not make sense if you are wanting to continue playing. Balancing an immediate return with the need to leave something on the table to build trust requires continuous and careful focus.

Own your own problems

When faced with challenges, too many organisations look to a third party, often the government, to provide solutions to their problems. The reality is nobody else has an incentive to solve a problem as quickly the organisation itself. Owning your own problems and actively seeking to find solutions is critical if you want to secure your position in an infinite game.

Hire ahead of the curve

The quality of people that an organisation employs shapes its culture. People are critical to creating successful businesses that can thrive and grow in disruptive environments. Organisations should make every effort to over-hire in advance of growth to provide the capacity to innovate faster and respond to unexpected disruption.

Seek good advice

In a sector that is experiencing significant change, such as agri-food, there will be a wide spectrum of opinions about how any market is likely to evolve. Being open to a range of opinions by encouraging internal discourse and seeking external advice will build a better understanding of the opportunities in front of an organisation and provide it with the courage to do the right thing.

Ensure financial resilience

Playing an infinite game requires ongoing investment in innovation to respond to threats as they arise. Organisations need to have the capability to make investments when required. This means they have to balance a desire for growth with prudent financial management to guarantee their balance sheet has the resilience to withstand an unexpected shock or support an opportunity to be grasped.

Address points of friction first

Too often organisations seek to build consensus around the points of agreement and in doing so overlook the (often critical) matter over which there is no agreement. While it is uncomfortable to focus on the points of friction, ultimately addressing these issues will drive better outcomes and enhance the likelihood of building long term, sustainable relationships.

Report on the right metrics

Historically the only metrics that mattered were those calculated from the profit and loss account. If you are looking to make a sustainable contribution to an industry this will require an organisation to report on a wider range of metrics which reflect the impact that the organisation has on its customers, business partners, community and environment. Using the UN SDG's as a framework to achieve this is an option for every organisation.

Keep an eye on the extremities

A business looking to survive in the infinite game should not ignore what is happening on the extremities of their organisation. If a small fraction of customers are unhappy and the organisation is not listening, there are now channels for the marginalised to be heard and this can quickly undermine an organisation. There can be no tolerance for non-performance.

Innovation comes from anywhere

We have learnt over recent decades that innovation does not come from boardrooms or brainstorming sessions. It comes from somebody saying "what if we did this?" Organisations need mechanisms that encourage their teams to bring forward innovative ideas. They also need to sense global business model innovation to identify seeds of ideas that could deliver a step forward if applied to the agri-food sector.

Stocktaking the global mega-forces

The mega-forces shaping the world's future are evolving as scientific discovery and knowledge become available.

The Agenda in 2014 highlighted 14 trends across economics, politics, demographics, social infrastructure, technology and the environment that our research suggested were shaping the multipolar world in which we live; a world where a disruptive externality can come from anywhere at anytime. The report highlighted the rapid impact that the Ebola outbreak in West Africa had on people all over the world during 2014.

We reviewed the mega-forces in 2016 and unsurprisingly concluded there was little change. We did highlight that given the breadth of applications being developed using fusion technologies, that it had become clear these products are going to have a more fundamental and transformational impact on society than we had previously envisaged. Rolling forward to 2019, we have identified the fusion revolution as one of two mega mega-forces, the other being the transition to a net zero carbon position given the consequences of doing nothing.

In addition to identifying these two overarching themes, we concluded three new mega-forces need to be incorporated into the analysis based on our research. Awareness of the fundamental impacts these new forces (Generation Voice will fight for its future, inequality can no longer be overlooked and we must be able to do that with plants) are having has become apparent recently in response to concerns over climate change and the political consequences of large groups in communities feeling excluded or left behind by economic growth. Some of the other forces have been renamed to sharpen their focus but the overall conclusion is that our world has only become more complex, or more multipolaral, in the last five years.

The 'mega' mega-forces



Transitioning to a low carbon future is unstoppable

Higher incidences of extreme weather events together with increasing scientific consensus that human activity is contributing to an increase in global temperatures has resulted in governments, companies and civil society all making commitments to take actions to transition to a lower carbon future in an attempt to restrict the increase in temperatures to as close to 1.5 degrees celsius as possible.



Fusion technologies accelerate exponential change in daily lives

The increasing ability to fuse biological, digital and physical technologies reshapes all aspects of day to day life, creates opportunities for new business models that redefine how businesses work across many sectors of the economy and delivers the ability to transform agriculture given that fusing a biological product with knowledge and physical tools is the fundamental core of the sector's activities.



Challenging the global status quo



Geopolitical instability is a fact of life

The increased ability to consume and share information using digital channels creates an environment that can rapidly accelerate groundswell political movements. This is seeing unexpected political leaders coming into power, often based on the positions that they take on a single critical issue for disenfranchised groups with the community.



Economic influence will continue to shift as wealth grows in emerging economies

For most of recorded time, the world's largest economies were Asian. The shift of the balance of wealth to Europe and, ultimately, North America is a relatively recent phenomenon driven by the rapid industrialisation of these countries from the late 1700s. The first three industrial revolutions largely bypassed other economies and their influence declined. The growth emerging economies delivered as the west struggled to recover from the GFC demonstrated the wealth pendulum is swinging towards emerging economies and returning east towards Asia, disrupting the perspectives we have held for centuries on economic influence.



Leading in a integrated and instantly informed world requires new capabilities

While physical distances remain the same and national borders rarely move, technology has eliminated the time delays that were inherent in most cross border transactions 25 years ago. A faster, technology enabled world is highlighting the constraints of government, legacy international institutions and treaties and the challenges of regulating in a connected world. A new approach to government is required based on greater responsiveness and more collaborative approaches to regulation.



Inequality can no longer be overlooked

The gap between the haves and have nots has grown around the world, largely out of sight of those with influence and power in our communities. The benefits of economic growth have not been shared evenly, with many in the community believing they have received no benefits. Technology gives marginalised communities a voice. There is a need to listen to concerns being expressed and take action to ensure the benefits of growth are shared more evenly, to ensure the long term stability of society.

17 GLOBAL MEGATRENDS



LOW CARBON



FUSION TECH



GEOPOLITICS



ECONOMIC BALANCE



NEW GOVERNMENT



INEQUALITY



MILLENNIALS



AGEING POPULATION



URBAN DWELLERS



VOICE FIGHTS



FUTURE HEALTH



EDUCATION



DATA PLATFORMS



ENERGY SECURITY



MORE WITH LESS



IMPACT WHY



BIOECONOMY

Future world citizens



Millennials facilitate the connected, instant access economy

Millennial consumers are leading the adoption of digital solutions that provide instant access to the products and services that they require without the constraints of long term asset ownership. New solutions that increase lifestyle flexibility are rapidly replicated and adopted, globally accelerating the development and growth of increasingly innovative business models. The use of digital solutions means that millennial consumers are no longer confined to the choices available in their physical location.



Anything but 'generation done' exerts their economic muscle

People aged over 65 represent the fastest growing segment of the global population, driven by increased life expectancy and falling birth rates around the world. As the population ages, the proportion of the population available to support the associated health and welfare costs of declines putting pressure on core social services. However, the ageing population are also consumers and in many parts of the world they have spent a lifetime generating wealth which they will use to secure products and experiences that enhance their lives.



Urban survivors are empowered to become urban thrivers

The growth of cities and urban areas around the world continues to accelerate, driven by migration from rural areas and natural growth in the population. The evolution of smart technologies to integrate work, mobility, nutrition and lifestyle elements into day to day life, changing the nature of urban living from one of battling the system to survive to one where life is enhanced by cities that are designed to work with and for their residents.



Generation Voice fights for its future

Generation Voice, those members of the community born after 2000, complete their schooling and enter into full productive economic and political life. This generation, and their children, will live with the consequences of climate change and they are not about to sit back and let their future be sacrificed without a fight. Generation Voice will be the most activist generation the world has seen, using the power of digital technology, to protect what is left of planetary resources for future generations.

Empowering infrastructure



Preventative medical systems enhance human health outcomes

Innovation drives the discovery of new solutions to a growing range of healthcare challenges facing society, however the cost of these solutions make it challenging to provide access to all but the most affluent members of our society. As a consequence, governments around the world focus attention on developing new primary care models that reshape lifestyle fundamentals, with the objective of preventing the illness and creating a fundamentally more healthy society.



Education delivered beyond the classroom multiplies impact

A high performing education system underpins aspirations for growth and development in any society. The impact of an education system depends heavily on the quality of its teachers and the effectiveness of the channels used to deliver knowledge and enhance learning. As technology evolves the constraints of traditional educational relationships built in a classroom dissolve, enabling the best educators to have an amplified impact on global society than has not been possible in the past.



Democratising data unleashes its potential for all of society

A world with billions of connected devices will see data lakes continuing to grow exponentially. Data is only valuable if insights can be extracted from the lake that create benefits for organisations or for society in general. The more relevant data that can be targeted towards answering a question, the better the quality of the answer. This is best achieved if organisations recognising the value of data is maximised, by sharing it with others to help find the solutions to the biggest questions facing society.

Seeking indefinite sustainable living



Energy security is now everybody's responsibility

Concern society is consuming finite energy resources too quickly, at the expense of the environment, has driven investment into renewable energy technologies but has also made it economic to recover fossil fuel reserves that were uneconomical to utilise. The need to transition to a lower carbon future while meeting increased energy needs, driven by economic growth, will require individuals to take ownership for their energy security in respect of both generation and usage, through solutions scaled to be embedded into day to day lifestyles.



Infinite search for ways to do substantially more with a declining resource base

A larger population and the emerging wealth of communities globally is fuelling a growth in demand for consumers products. These goods utilise natural resources in their production. The wave of demand is increasing stress on already limited resources, increasing prices and putting more focus on how products are used. Sustainable resource management becomes an increasing focus for governments and societies who will seek to influence how resources are utilised to generate more output from less input.



Impact rather than profit becomes the core of many organisations' why

Historically, the profit motive has been the primary driver underlying business. While some businesses, particularly co-operatives and mutual societies, have operated for the benefit of their members, the majority have measured their success based solely on the profit they create. Driven by the challenges facing society, a new breed of businesses are emerging that have a primary focus on addressing a social failing that too many in society overlook rather than reporting a profit. Having a positive impact increasingly dominates the why in society.



We must be able to do that with plants

Modern lifestyles rely on access to a vast array of consumer products many of which are made from non-renewable resources. As their availability becomes tighter and costs increase the search for alternative, more sustainable alternatives accelerates. Utilising the properties inherent within plants through the application of modern bio-technologies will unlock sustainable solutions that will supersede products made from plastics, metals and other non-renewable sources.



Alexandros Michailidis © Shutterstock

"I don't want you to be hopeful. I want you to panic. I want you to feel the fear I feel every day. And then I want you to act."

Greta Thunberg



By Liv Oelan © Shutterstock



Liv Oelan © Shutterstock

accelerate

Social platform

Global population growth is predominately occurring in some of the poorest, most environmentally-challenged, water-stressed regions of the world; areas where sufficient nutritious food is often difficult to find. With over 800 million of the world's population regularly malnourished, the food system is clearly not delivering effectively for everybody. The UN has sought to highlight the scale of the challenge through the Sustainable Development Goals (SDG's).

Yet the food system is expected to deliver more every day. Food issues however are not confined to emerging economies, many developed countries have significant levels of nutritional deficiency across their populations which is creating significant social and economic costs that governments are having to deal with. These are big issues that impact every member of society and as a consequence they should not be left entirely to governments to resolve; as they require broad community responses. Sustainability, in its widest sense, lies at the core of the food system. Communities need to produce sufficient food within the confines of the productivity capacity of the environment. Technologies such as genetic modification need to be explored, even though the long-term effects are not fully understood. Governments need to develop food systems that extend beyond their borders to achieve food security, and ensure their communities are responsibly educated on what constitutes healthy food. It is unlikely we will ever have a truly sustainable food system unless we collectively take responsibility to implement substantive solutions. **Leaving food issues unaddressed increases the risk of social imbalances destabilising society. In history, food inequality has resulted in social unrest, economic migration war and terrorism.**

Modern slavery becomes a growing issue in the agri-food sector

Society expects all employers to treat their employees fairly. This includes factors such as paying a fair wage, providing safe and sanitary conditions for workers and families to live and work and providing them with opportunities to develop useful skills and experience. The agri-food sector globally has often been viewed as a poor employer, providing

tough, unskilled physical work, often in harsh weather conditions, with anti-social hours and low pay; hardly a great story to tell the world. The reality has generally not been so bleak and in employment across the sector is increasingly demanding more skills to respond to new technology and consumer expectations. If producers fail to meet employment standards that are acceptable to consumers, they may find themselves being considered modern slave masters and having the market access of their products restricted, as more countries introduce Modern Slavery legislation. The ability for stories to go viral through digital platforms shows the power of society setting standards, and amplifies the impact for those that chose to ignore the rules. There is a threat to the image of an organisation and its ability to recruit and retain top employees, as well as to the sustainability of their supply chain, if employees are reported to be mistreated in any form. **Corporate responsibility groups are calling on organisations to imbed transparent reporting into their strategy. In 2017 Nestle and Unilever implemented best practice on slavery reporting, with Nestle reporting on 11 key human rights risks relating to its businesses as a way to increase transparency.**

Governments pivot towards preventative healthcare to address fundamental health issues

The World Health Organization has reported that non-communicable diseases (NCDs) cause more than 70% of deaths worldwide every year - with food being strongly connected to these illnesses as one of the top four behaviour risks. NCDs include lifestyle illnesses such as diabetes, metabolic syndromes and heart disease. The cost of treating these diseases is unsustainable for many governments, resulting in them adopting

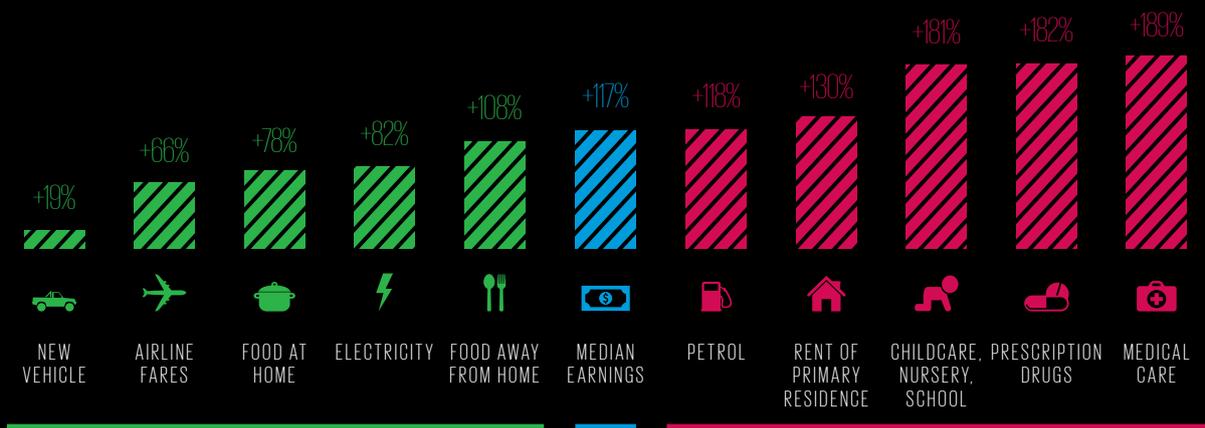
preventative healthcare strategies which have a strong focus on educating communities on dietary matters. The role that 'food as medicine' will play in the future of the healthcare system as well as the agri-food system should not be underestimated. The impact that health and wellness will have on the global agri-food system in the coming decade is explored in more detail from page 69. **Several countries are implementing legislation to combat food-related illnesses; with the UK, Ireland and Spain introducing sugar taxes. In the US, the 2018 Farm Bill proposes a Produce Prescription Program, to encourage the prescription of food as medicine.**

Food production costs will increasingly reflect the true costs of consuming natural capital

Food spend as a percentage of income has consistently fallen in recent decades (the analysis on page 66 comparing the increase in median income in the US to movements in the prices of a range of products and services over the last 30 years, demonstrates this clearly). At the same time production costs have reduced, due to productivity improvements and an increase in the scale of many producers, however the reduction in cost has not been sufficient to enable producers to hold their margins. Some argue that the costs of producing food are currently materially understated as farmers, growers and fisherman have historically not paid for the natural capital they have consumed in growing products; most producers do not pay for the soil nutrients or ecosystem benefits that the plants they grow utilise, some are charged for water but for many this remains an asset that they can access freely. An analysis performed by KPMG in 2010 suggested that charging the food production sector for the natural

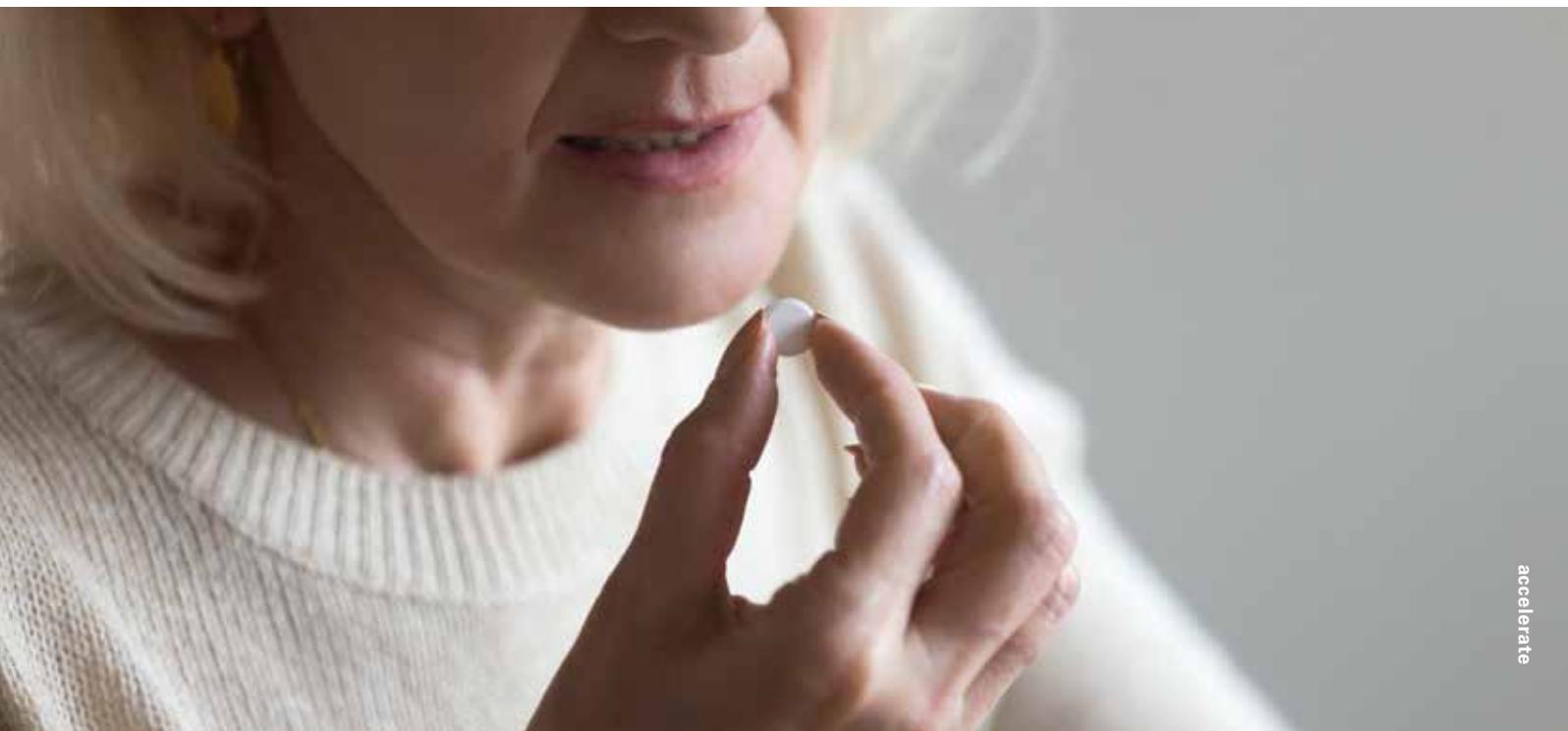


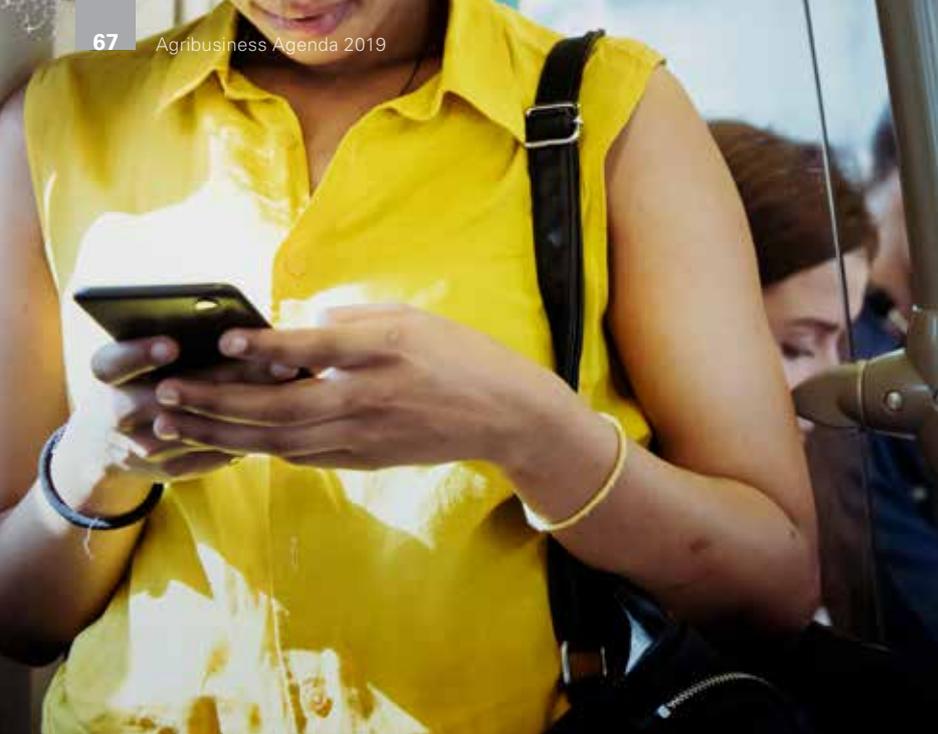
GROWTH IN PRICES COMPARED WITH EARNINGS (USA) 1990-2018



Prices grew slower than earnings

Prices grew faster than earnings





assets it consumes directly and indirectly would result in a charge that amount to 224% of the industry's EBITDA. Given the focus from retailers to keep prices down, it is clear that food prices around the world currently do not reflect the true costs of production, in particular the costs of natural capital consumed. **We expect there will be moves made by governments around the world, as part of the response of individual countries to climate change, to charge farmers for the natural capital they consume. This would overtime result in food prices increasing to better reflect the true costs of the inputs into the food production process.**



Philanthropy and social impact-centred business models to proliferate

With over 800 million people being failed by the global agri-food system, the industry offers huge scope for entrepreneurs and philanthropists to have life-changing impacts on the global community. Many start-up businesses are being formed with either a dual purpose (profit and impact) or a purpose beyond profit, particularly to reduce the number of people suffering from under-nutrition. We have observed that many of these start-up enterprises are receiving funding from a range of high net wealth individuals as they direct their philanthropic activities towards some of the biggest challenges facing the global community. For example the Bill and Melinda Gates Foundation is collaborating with private sector enterprises, NGOs and governments with the goal of preventing 1.8 million malnourishment related deaths by 2020. Corporate social responsibility (CSR) is also evolving. It no longer being sufficient to sponsor the local football team, organisations are investing in impact projects that align with the articulated purpose that the organisation has adopted (be that empowering women in rural communities, investing in skills for young people or promoting nutritional improvement). Consumers are expecting companies to be taking an active role in supporting the vulnerable in the global community. Demonstrating a strong commitment to purpose is a also key platform for attracting the best talent to an organisation. **The social enterprise One Acre Fund supports over 135,000 farmers in East Africa through a market bundle approach; providing local farmer groups with agricultural education, loans for planting materials, market training and crop insurance.**



Environmental regulation crystallises a step change in agri-food technology and investment

Governments have committed to address levels of greenhouse gas emissions from

economic activities in their respective countries. The Paris Agreement saw most countries commit to keeping the increase in global temperatures well below 2°C with an ambition to keep it close to 1.5°C. Delivering on the commitments that have been made is likely to result in most governments introducing regulations that target activities that generate emissions. Given that the farming of livestock is a significant creator of methane gas, one of the key greenhouse gas, we expect these regulations will ultimately have impact across the agri-food value web. Responding to new regulatory requirements will likely attract ethical investors to the industry, will spark innovation that will benefit all farming systems, and increases the amount of technology being deployed across the industry. Companies are already taking matters into their own hands in line with consumer expectations, proactively implementing systems to ensure carbon use is captured and actionable steps are taken to reduce emissions. We expect to see companies and regions pushing hard to achieve zero carbon status for their products as this is an attribute that ethical consumers are prepared to pay a premium for. **Arla Foods, a Danish dairy co-operative announced in March 2019 that it will target a 30% reduction of greenhouse gas emissions by 2030 and will work towards zero carbon by 2050, noting that setting the target focuses each of the co-op's dairy farmers on what they can do to improve their businesses.**



Food security and affordability remain a key priority for almost every government in the world

For many governments the availability and affordability of food is a top priority, as failures to deliver sufficient food to their population can lead to social unrest and ultimately could result in leaders being changed (via the ballot box or other means). Governments are taking different approaches to setting up resilient and secure national food systems. Some countries lack the ability to produce all the food they need to feed their populations and as a consequence governments, either directly or through sovereign wealth funds, are making international investments designed to secure access to sufficient supplies of product to meet domestic demand. Other countries are making significant investments to develop domestic production, including securing access to novel growing practices and new technologies. There are also initiatives to diversify diets to reduce reliance on products that are more susceptible to supply issues. Enhancing food handling practices and encouraging agri-food companies to minimise waste are also a

focus in an attempt to ensure that more of the national food supply is eaten. **The World Economic Forum initiated a five action initiative bringing together farmers, government, civil society and the private sector, facilitating partnerships at regional and country levels, and encouraging the exchange of knowledge around food security.**



The challenge of feeding the world attracts talented young people into the agri-food sector

The young people that are now coming into the workforce have grown up in a technology-enabled world; they expect instant access to knowledge and insight, they have a strong value system and a voice that they are willing to use when they see activity that is not aligned to their values. It is predicted that Millennials will comprise 75% of the workforce by 2025, and they will likely have the greatest spending power of any generation in history. Evidence indicates that the millennial generation reacts positively to companies and organisations that can clearly articulate their purpose and values and is prepared to take steps to bring these commitments to life. This means that they are attracted to a workplace or industry that is contributing to society, rather than operating solely for financial benefits. Roles that enable them to use skills to improve society are of particular interest – and opportunities in the agri-food sector to mitigate malnutrition and environmental degradation will be appealing to many. **We consequently expect to see companies across the agri-food sector recruiting employees into a wide range of roles with a commitment to let them use the skills and experience that they develop during a sabbatical period to make a contribution to helping the world to feed itself.**



Finance arrangements increasingly take account of how a borrower manages ESG in their organisation

To date, the investment that organisations have made into addressing environmental and social risks they face have predominately been seen as a cost. However, this is changing rapidly as investors and lenders around the world start to place more focus on the activities of the companies they are providing capital to and the impact that these activities have on the environment and the wider community. The consequence of this is a growing amount of green financing arrangements being entered into around the world, which is forcing those raising capital to link their Environmental, Social and Governance (ESG) performance

to the cost of the capital to they are able to secure. To secure green funding arrangements there are expectations being placed on organisations to report on their ESG performance using a recognised framework, such as Integrated Reporting, and provide an assessment of the impact they are having on society. As a consequence, there are opportunities for organisations that have adopted clear strategies to manage and reduce their impact on the environment and to actively support their community, to translate their actions into cost reductions. Lenders are finding creative ways to reward those that are proactive in addressing critical issues. In addition, the growing power of the consumer voice on social and ethical issues is benefiting the financial performance of organisations that have taken steps to enhance the sustainability of their business practices. The Financial Times reported an analysis of more than 300 of the world's largest companies across a range of sectors found that those with more ethical operations make bigger profits.



Bringing activist campaigners to the table to become part of the solution

The agri-food sector has always been subject to challenge by activists; perhaps more so than any other sector of the global economy (with the possible exception of the energy sector at certain points in history). However there is a unique paradox involved in the nature of the challenge that is placed on the sector. Organisations are coming under scrutiny as one of the largest users of natural and human resources (be that land, water, the oceans or soil or as a major employer globally of people) which has a range of positive and negative benefits on the community and society. It cannot be overlooked that the collective purpose in using these resources, to provide people with sufficient food, is undeniably positive. The very reason the sector exists is to feed the world. This provides a solid framework for working with those who may oppose various activities within the sector. When setting policies and operating practices, more organisations are inviting a diverse range of perspectives to the table. This helps them to design robust frameworks that enhance rather than detract from their social license to operate. Companies need to ensure they listen to every voice so communities are assured the sector is working with them, not against them, to maintain their social licence to operate.

The Health and Wellness decade

Like all other industries, the agri-food sector is being disrupted through innovation and technological transformation, with consumer needs and demands underpinning the pace of change.



Emma Wheeler
Senior Manager, Agri-food
Co-Author, KPMG

The growing focus on food-as-medicine is driving massive change within the agri-food industry. Traditional big food companies, agricultural producers, pharmaceutical businesses and start-ups are all being attracted to opportunities in food for health and wellness purposes. For agri-food companies, this means a shift away from commodity models where producers decided what to produce and what would be offered to consumers, towards the creation of highly specialised and enabled food that is designed with specific nutritional profiles.

As consumers become more educated about what they eat and attentive to the impact that food and lifestyle has on health, this is resulting in a health and wellness trend sweeping across parts of the community. This trend is shaping an evolution of not just food products, but the way in which we grow, consume and market our food. **The health and wellness food market was valued at USD769 billion for 2019.**

Our view, however, is that consumer focus on the impact that food has on health is still nascent and we will see the trend accelerate exponentially in the coming decade. As a result we consider it is likely that the 2020s will be a decade where health and wellness dominates the food system. This will drive change across the entire supply chain. From ensuring soil health is optimal to focusing on the growth of nutrient dense produce, through to the how food is presented to consumers (such as composition of the packaging used) and the way food is cooked and waste products re-purposed.

We have all been told many times that **prevention is better than cure**. In a traditionally reactive environment, or cure focused approach to health, consumers are awakening to the power of a proactive, preventative approach, with food as medicine as a core foundation.

It is notable that it is not just consumers awakening to the power of a preventative system; governments across the world are constantly challenged to meet the spiralling costs of curative care systems and are prepared to explore preventative care models with the expectation that a healthier population will reduce the long term costs of health.

It is significant that millennials, who have now taken on the role as the largest consumer group, are the biggest supporters of the health and wellness ideal. **It was reported that 53% of millennials place health and wellness as the most valued area of their life.**



The problem

Health researchers have long been aware of the far-reaching consequences of poor diet and lifestyle. The rapid expansion of non-communicable diseases (NCDs) is due largely to lifestyle-related illnesses; including obesity, cardiovascular diseases and diabetes. Over time, the burden of these diseases is rising disproportionately among lower-income countries and populations. **The World Health Organisation reported that of the 56.9 million global deaths in 2016, 71% were due to non-communicable diseases (NCDs).**

One in five adults in OECD countries, and one in six children, are obese. The global paradox, however, is that one in five children under the age of five exhibit stunted growth due to malnourishment.

Many of the risk factors associated with NCDs are modifiable with behavioural change associated with diet. The cost of the global healthcare system is no longer attainable – 64% of Americans want to lower their healthcare costs, but don't know how to. It is estimated that malnutrition in all its forms could cost society up to USD3.5 trillion per year, with overweight and obesity alone costing USD500 billion per year. The global economic impact from obesity is roughly USD2 trillion, or 2.8% of global GDP.

There is a direct correlation between diet and health outcomes. The impact of people not having access to enough food, the right nutrients or eating too much of the wrong types of food are massive on the health of the global community. The direct financial costs of this trend are significant but the social and emotional toll that the impacts of inadequate nutrition have on our community should not be underestimated.



The potential cure

Many consumers have become aware of the strong link between diet and health and are now seeking out options that support their personal health requirements and provide broad-spectrum nutritional density. To date much of the education has come through public health campaigns and



\$769 Billion 

USD BILLION 2019
Health and Wellness food market value

\$3.5 trillion

USD TRILLION ESTIMATE
Malnutrition could cost society up to USD3.5 trillion/year, with overweight and obesity alone costing USD500 billion/year



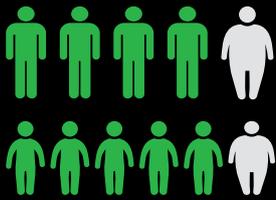
PEOPLE
One in five children are stunted



\$2 trillion

USD TRILLION ESTIMATE
Global economic impact from obesity is roughly USD2 trillion, or 2.8% of global GDP

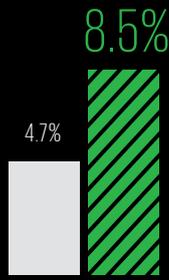




PEOPLE
One in five adults, and one in six children, are obese in OECD countries



GLOBAL PEOPLE 2016
WHO estimate 56.9m deaths, 40.5m (71%) due to non communicable diseases (NCDs)



PEOPLE, 18 YEARS +
Global prevalence of diabetes in adults rose from 4.7% in 1980 to 8.5% in 2014, with a major contributor being diet



% HEALTHCARE SPENDING
Between 2-7% of all healthcare spending in developed economies is on obesity





Health is no longer just the absence of disease, but the focus on wellness.

individual consumers doing their own research to understand more about their diet. There is a need to amplify the availability of easily accessible, reliable and unbiased information to enable people to make the best dietary choices for their specific lifestyle and economic circumstances.

Many of the risk factors associated with NCDs can be mitigated with dietary behavioural changes. At a broader level, consumers are increasingly turning to food – rather than a pill – as a longer-term health solution. They are actively seeking out options that support their personal health requirements, and this has spawned a growing market for food-as-medicine. We have noted that some food companies are now viewing the Business to Doctor channel (B2D) as a key channel for them to support doctors in learning about how food can be used as an effective non-pharmaceutical prescription.

Health is no longer just the absence of disease, but the focus on wellness.

An eruption of products that have functional ingredients have reinforced the role of food as medicine, which has been around for centuries. Foods that specifically address personal health concerns have skyrocketed in popularity as have foods that contain specific functions; anti-inflammatory properties, or potent nutrient dense ingredients that support immune function, or improve gut health. Whole foods, in their most natural state with wide spectrum of nutrients, are recognised as premium products, and consumers are willing to pay more for them.

The organic food segment alone is worth EUR85b and is growing at 10.5% a year.

Less is more, with free-from foods gaining popularity, with products that are as close to their natural state as possible.



And the market impact

Agri-food organisations around the world are aligning themselves with health and wellness trends. They are looking for ways to leverage the opportunities through product re-formulation, new product streams, or partnering with smaller agile innovators.

Agri-technology is helping facilitate the food-as-medicine movement in a number of ways. **Technology** is assisting right from the seed, with the ability to implement plant genetics, and tools to assist with cultivars. It is facilitating the expression of certain features of a product, over less desirable attributes, such as specific nutrient content, flavours or texture, colour and shape or elements such as higher yield, pest and disease resistance, seasonality and storage potential. For example the use of **CRISPR-cas-9** to edit the genome of a banana when a virus was discovered that threatened food security in Africa. Or to edit crops, inserting omega-3s to promote anti-inflammatory responses.

With a massive 75% reduction in kitchen-prepared food between 1985 and 2015, **convenience foods** are being re-invented for the health-based era meaning there is a need for **convenient, on-the-go** options. The next generation of modern convenience food is emerging as a response to the rise in health eating.

Convenience in terms of packaging such as edible packaging from **water.io**, or single serving size ready-made salads from **Whole Foods**, and the ability to have personal vitamin delivery through **Vitality**.

Traditional big food companies are also alive to the potential of the health and wellness trend. It has been a key driver of acquisitions and partnerships activity across the sector in recent years: recent examples include **PepsiCo** acquiring **HealthWarrior** and **KeVita**; **General Mills** investing in **Purely Elizabeth**, **No Cow**, **Farmhouse Culture** and **Kite Hill**; **Mars** investing in **Kind**, the list goes on.

The food giants are not only bringing in smaller more agile start-ups under their umbrella; they are also tweaking their own ingredients to align with consumer demands. **Nestle** has set out to cut sugar in its confectionery by 40 per cent; while **Kraft** is reducing artificial preservatives and colours in favour of natural spices like turmeric.

As health and wellness increasingly becomes a driving factor for consumer purchasing choices, all those in the agri-food ecosystem must consider product attributes and adjust systems and formulations accordingly to position themselves for the decade of health and wellness.

Nature of a farm

Many in the developed world still imagine 'the farm' as the stereotype they knew from childhood; a farmer driving his tractor with dogs in tow, and a plethora of different animals living happily in harmony. This has never reflected the reality of the majority of farms around the world; which largely exist to provide subsistence living for a family unit or small communities.

Yet even those with a more sophisticated understanding of modern agriculture are needing to review their definition of a farm. Agriculture is undergoing massive transformation, driven by the need to produce significantly more food to supply a growing and increasingly hungry global population. The challenge is not just in producing more, but doing so in a sustainable and ethical way that provides nutrient-dense foods to support health for all populations. The sustainability of intensive farming systems is increasingly being challenged by consumers and regulators from a variety of perspectives – environmental impact and water quality, through the welfare of animals and people to the quality and nutritional density of the food being produced. To meet the demand for food, the search is on for new farming models, focused on meeting the nutritional needs of the population while better utilising natural resources and embedding food production closer to the ultimate consumers.



Cellular farming sees more food being grown from cells rather than growing an animal

The ability to create food that replicates meat, fish and dairy products – with a lower greenhouse gas footprint and without the need to slaughter animals – is likely to become a commercially-viable option in the next decade. Products are now being grown in controlled environments using cell cultures, rather than growing the entire animal. Techniques will be developed and scaled so this becomes a cost-effective way of supplying 'real' animal protein to consumers around the world. Consumers are already being educated on the techniques of cellular

agriculture; and the lower impact on land, water and the atmosphere means the products are being described by their developers as 'clean food'.

Organisations such as Perfect Day, Memphis Meats and Finless Fish are high-profile alternative food brands leading the way in this space. Perfect Day use microflora and fermentation to replicate the protein found in cow's milk.



Optimising the contribution of the 'blue larder' to global food and fibre resources

With greater volumes of food being required for both human consumption and animal feed, access to prime agricultural land will become increasingly competitive. The ocean represents a viable and productive option; not only in creating more aquaculture farmed seafood, but also in providing space for innovative farming systems. While we may eat more seafood protein in future (much of which is likely to be grown in aquaculture farming systems rather than being wild caught), ocean farming will be increasingly focused on plants that can grow in and around the ocean, and that can make a significant contribution to global protein and nutrient supplies. Algae, seaweed, and water lentils are rich in nutrients and provide plant-based marine food options that will enable us to better utilise the 'blue larder' on a global basis. Organisations are quick to understand the potent power of bioactive marine-derived sources, and pharmaceutical companies are creating supplements harnessing these. **Parabel have created a protein rich plant protein from water lentils, with the protein structure similar to that of animal proteins; containing levels of essential amino acids and**

branched chain amino acids (BCAAs) that are comparable to whey, higher than other plant proteins including soy and has a protein digestibility-corrected amino acid score.



Vertical farming and covered cropping innovation redefines economics for plant-based agriculture

With consumers being willing to pay a premium for fresh and local produce, producers are incentivised to explore different systems to provide this. Businesses are creating closed loop systems (sometimes referred to as 'plant factories') that utilise resources in a circular fashion through the application vertical farming and covered cropping technologies around the world. Core to these technologies is innovation in the use of lighting systems which enable plants to grow quickly and with enhanced nutritional properties. Vertical farming is especially valuable in urban areas where land is scarce and expensive. The range of crops that can be economically grown in these systems is increasing, while the costs associated with developing a facility are decreasing – making them increasingly commonplace in many cities around the world. **In Shanghai, the district of Sunqiao represents a new urban approach to agriculture, showcasing what can be achieved with vertical food factories. VertiCrop and Plantagon are space-saving vertical farming systems designed to promote the farming of healthy crops in controlled and closed-loop environments. Emirates, the airline of Dubai, has recently announced an investment in covered cropping systems to enhance the supply chain for its flight catering business.**







Regenerative farming systems support a drive to achieve zero-carbon food

The quest for increased agricultural production, and the use of intensive farming practices, has over time depleted the natural capacity of land in many parts of the world and in some of the more extreme cases has left the land unable to be farmed. Regenerative agriculture recognises that agricultural land is part of a larger ecosystem, and that it is no longer acceptable for farming activities to simply make withdrawals from this system. They must also invest in the soil management techniques they use, the approach to cropping the land and activities undertaken to support the redevelopment of the natural ecosystem (including the setting aside of land from production, the promotion of native flora and fauna and the protection of wetlands). The ability to capture carbon in soil and aboveground biomass will contribute to reversing current global trends of atmospheric accumulation of carbon. As more producers aspire to grow zero carbon food, starting with a reduction in their carbon footprint, regenerative agricultural practices will help to not only ensure no more damage is done to the land but to restore its natural capacity. Institutes are forming to educate farmers and help subsidise their shift to regenerative practices. **For example, the Rodale Institute offers research, education and outreach; and is home to the longest-running comparative study of organic and chemical agriculture.**



Competition for prime agricultural land intensifies placing greater focus on returns being generated

Land is always in demand, however supply is largely fixed. Globally 40% of the usable land area is currently being farmed, with much of the land being used to grow commodity food products and stock feed for animals. Historically, food and fibre production has utilised prime land because there was no

alternative uses for this land, however as cities, energy and resource demand has grown viable alternative uses for the land have emerged. Prime agricultural land has often surrounded cities thus as urban regions grow it is not surprising that farmers are being approached to sell their land to developers to allow for further urban expansion. In mineral rich regions, such as the east coast of Australia, there has always been a tension between farmers and mining companies over how competing land uses can effectively co-exist. While the production of food is critical to the long term health and prosperity of our society the quest for low price food has meant the return farmers have generated on their investment has often been significantly below other land use options. **It is likely governments with a focus on food security will protect some high attribute agricultural land for continued food production, however for farming to be able to continue to utilise all its current space, farmers will need to place much greater focus on the returns their farming system is generating.**



Production of insects expands exponentially to deliver sustainable animal feed solutions

Insects are a natural diet for many animals, offering high levels of protein to promote growth. The United Nations Food and Agriculture Organisation (FAO) estimates that commercial animal feed production will need to increase by 70% by 2050. At the same time, the use of productive land to grow feed for animals will come under increasing pressure, as more focus is placed on the carbon footprint of food production. The opportunity for insects to convert waste biomass into protein and other important nutrients is second to none – making them a viable and valuable future source of stock feed. As a consequence, we expect to see the farming of insects at scale becoming increasingly common around the world in the next decade. Insects already

form part of the diet for many people around the world. We do expect to see more insect products finding their way into the human food chain, particularly as a replacement for commodity uses of some animal proteins, but do not envisage a time where they will become a preferred alternative to traditional animal based meat proteins in the foreseeable future. **Companies such as Ynsect and Enterra Feed are emerging as processors of insects into protein-rich food for animals.**



Circular production systems are developed to utilise co-products and by-products created by agricultural production

As part of their social license to operate, producers will need to demonstrate they are effectively managing inputs – and utilising outputs – from their production systems. A 'circular production system' is aimed at minimising waste and emissions, and making the most of any resources present in the system. Organisations will increasingly look for creative ways to build circular production systems; with the ultimate goal of using all by-products and co-products in a productive or socially relevant manner. For the agri-food system this includes looking at alternative packaging models and specifically designing uses for waste streams that are generated from the production of food and fibre products, including effluent, excess bio-matter and under grade production. The reliance placed on imports and exports across the global food system does challenge how effectively a circular systems can be implemented as exports, for example, represent an inherent leakage from a circular system. **Research from Europe shows that applying a circular solution could reduce fertiliser, pesticide and water use by 45–50% in 2050; while at the same time lowering land-use, greenhouse gas emissions, fuel and electricity by 10–20%.**

How we farm

For centuries, the essence of farming has not changed substantively. Producers have always cultivated plants, raised animals, planted trees or harvested the oceans; in order to provide food, fibre or fuel. Being naturally innovative, they have always made enhancements that deliver year-on-year incremental improvements in yields. Recently, however, the level of investment made into new agri-food technologies has sky-rocketed.

The fundamentals of 'how, where and when' we grow food are changing; and waves of investment are sweeping into innovative agri-food organisations. The sector is alive to the many opportunities available to disrupt traditional industry practices. We're seeing integrated digital solutions that augment the intuition of farmers and producers; precision agriculture tools that increase output while minimising the environmental impact of farming; and water capture technologies that enable unproductive regions to contribute more. Technology like robotics and animal and plant genetics are delivering solutions that address issues facing farmers, growers and fishermen.



Communication technologies enable data-augmented activity across the agri-food value web

The uptake of digital technologies and the IoT (Internet of Things) has been constrained by inadequate access to connectivity, especially in rural areas. However with investment in many countries into rural communication networks and the transformational potential of 5G technologies and other low-powered network solutions, digitalisation of the sector is becoming more feasible for many producers in remote rural areas. Having access to multiple data sets enables aggregation of data; which can enhance productivity, minimise waste, and improve traceability and product quality. New communication networks unlock the ability to collect, analyse and utilise data across the complete agri-food web. Adopting data-based farming solutions will become the norm on farms, as farmers understand the technologies available and experience the benefits

to productivity, sustainability and accountability that data augmented farming can provide. Ultimately, the technologies will deliver improved financial and social outcomes for rural communities. **Leading the way in data utilisation, the Netherlands was the first country in the world to have a national low-power, long-range, wide-area network (LoRa Network). Dutch telecommunications giant KPN implemented LoRa Network ensuring the Internet of Things applications were available across the Netherlands.**



Robots and drones reshape labour requirements for many aspects of farming

As the amount of food required to feed a growing and more prosperous population continues to increase, production systems are becoming increasingly complex, with the breadth of skills needed to operate a farming business continuing to expand. The skills, experience, education and business acumen required to undertake jobs within the agricultural sector extends not only to on-farm workers, but to rural support businesses, processors and the entire value web. With a shortfall of skilled labour in the industry already, and continued migration of young and skilled people from rural to urban regions across the world, the agri-food sector is facing a workforce crisis. The application of technologies, such as drones and robots, provides the ability to monitor farm production remotely, safely and cheaply, and enables available people to be deployed to roles that enable them to develop and utilise a wider range of skills and add more value. As the adoption of these technologies grows, it supports agri-food businesses

in producing more while using less resource as they also enable precision farming techniques to be applied in respecting of pollinating, spraying and harvesting. Farmbot is being promoted as the world's first open-source CNC (computer numeric control) farming machine. **Farmbot uses hardware that can move with precision to do activities such as plant seeds, water crops, measure the moisture content of the soil, and destroy weeds.**



Satellite-enabled systems improve farming practice, environmental management, resource allocation

Precision agriculture utilising satellite enabled farming is becoming more available as the cost and capability to regularly collect large-scale imagery of land areas from orbits of small and relatively low cost satellite systems increases. This imagery is then analysed using analytical tools, including biological algorithms, to observe, measure, understand and respond to inter and intra-field variability in crops. The emergence of these big data lakes being sourced from satellite imaging has the potential to transform farm production and risk management, in turn assisting governments and insurers to also understand farm dynamics for the purpose of better regulating environmental management practices and underwriting agricultural risks respectively. As the uptake of technology increases, the cost of implementing satellite-based technologies will make it feasible for smaller producers to utilise these tools on smaller parcels of land. Regular imaging will allow them to assess the effectiveness of production systems and enhance environmental decision-





making. **Aggregated images can create contour maps that allow the user to see where water flows, create yield maps of productive land areas, or determine variable-rate seeding. Use of this technology will also inform regulatory decision-making, including decisions around optimal land use for particular tracts of land.**



Digital agri-marketplaces evolve to facilitate transactions across the value web

Agri-food slowly morphs into a fully-digitised industry, online marketplaces are enabling the exchange of goods, services and capital equipment. Digital exchange services are common across the global economy but are only starting to emerge in the agri-food sector (with the exception of food delivery services which have grown significantly over the last five years). The challenge historically for many producers has been finding information on products and services relevant to their specific needs in an environment where there is a plethora of solutions from suppliers all claiming to deliver significant production benefits, but no tools to enable an easy comparison of attributes being claimed. Digital marketplace platforms facilitate the easy comparison of products and then make it simple for direct lines of communication to be opened up. Connecting producers to the suppliers of technology and farm system inputs, food companies to producers, and, in some cases, consumers directly with the producers their food will assist in ensuring value is spread across the value web based on the attributes an organisation brings to a product. **Indigo Marketplace is an example of an organisation that has built a more transparent and efficient supply chain, by directly connecting buyers and growers through their digital platform.**



Water scarcity promotes farming systems that maximise the benefit of every last drop

In the many agricultural regions facing water scarcity, access to water and rights to draw water from bores or aquifers are often the most valuable asset of a farming business. Currently 70% of the world's population experience water scarcity for at least one month a year and it is forecast to get worse over the next decade. Agriculture is the largest user of water worldwide, with the United Nations reporting it consumes nearly 70% of the world's fresh water. Water scarcity affects social and economic stability as well undermining the sustainability of natural environments and ecosystems. For the agri-food sector, enhancing water productivity is critical, if the industry is to make a significant

contribution to alleviating water scarcity. The mechanisms used to allocate water rights contribute significantly to land values and focus producers on farming systems that maximise the value extracted from all water available to a particular land holding. However, reducing the footprint will need innovation in water forecasting and precision irrigation technologies as well as serious consideration of using cultivars which have been modified to enhance their resistance to drought. **Digital solutions and innovative irrigation technology on farm offer techniques that can monitor water usage and encourage precision agriculture so no drop of water goes wasted.**



Bio-control technologies become prevalent as focus placed on minimising food residues

The emergence of analytical tools that enable laboratories to measure the constituent parts of a food product to the nearest part per billion means that it is now easier than ever to identify unwanted chemical residues in food products. Although the majority of these trace elements present no risk to human health they do create concern for consumers about the safety of their food and as a consequence they attract regulatory response. The impact of these analytical technologies mean that on farm practices that have been widely adopted in the past, for instance spray protocols, become commercially unacceptable as they create the risk that the resulting product could be rejected by customers or fail a phytosanitary inspection at a border. The focus has consequently moved to finding alternatives to traditional chemical pesticides, animal health remedies and crop protection products that have more natural composition and consequently do not give rise to trace residues that can be perceived as high risk. **There is much work being done by the large players in the crop protection space, as well as many innovative start-ups, to develop microbial based biological control agents that protect against disease through the use of natural enemies of plant diseases.**



Technology enables every producer to become a local producer for the world

The local food movement has been growing strongly over the past decade, as more and more consumers embrace the farmer's market model. For consumers, particularly those at the premium end of the market, seeking to connect directly with the producers of their food not only offers a sense of understanding the provenance of the products and ethics of the person that has produced it, but it can also shorten

the supply chain and alleviate food safety issues. Virtual reality, social media, and digital market platforms provide any producer with the opportunity to become a local food producer to the world as the technology provides the opportunity to interact in a deep and engaging manner with consumers around the world. Virtual reality can put a consumer in the centre of any farm, social media provides the opportunity for conversation and a website can be used to tell the product's story and provide all relevant data to confirm the products provenance. Every producer now has the ability to set up a 'digital farmers market stand' and to be successful if they are able to articulate their story in a compelling and engaging way. FarmVR offer education through immersive technology as a way to enhance agricultural learning as a way to bring together individuals, businesses and communities so they can collaborate, share knowledge and build skills. **FamAR is another solution, an augmented reality app supported by an advanced back-end of an artificial intelligence software implemented in fully automated cloud computing system.**



Public Private Partnership deliver infrastructure to unlock the full potential of land around the world

One of the significant constraints on the productivity that is able to be obtained from any piece of land is the access it has to necessary infrastructure, in particular water, transport networks, energy and communication. The challenge for the agri-food sector is while this infrastructure is critical to maximising the value that can be extracted from a piece of land, the investment associated with building out these facilities in remote areas rarely makes economic sense. The cost of investing in rural infrastructure and the relatively small number of people that it benefits means that government is more likely to prioritise urban investment. Securing the necessary facilities to maximise the productive capacity of land is critical to utilising land effectively, and will require the design of creative funding models that could bring the infrastructure to life. One option for this investment is public private partnership structures, particularly given the long term nature of the assets involved. **It is likely that producers, processors and exporters may need to be investors in these partnerships and, as the direct beneficiaries of the assets, this could be facilitated through a co-operative vehicle.**

Products grown

As the world's population grows in size and wealth, producers will be required to continuously re-imagine the products that they grow, catch or harvest. What we eat in 2019 is significantly different from the food that was eaten just a generation ago and will be different to what we eat in 20 years time.

The increased multiculturalism of society, together with fast food, has fundamentally changed prevailing diets in many countries around the world, and brought diversity to others. Technological evolution has also had a major impact in shaping demand for products. Exponential change and new technologies will see food products continue to evolve in significant and dramatic ways. With powerful forces shaping global agri-food systems – including the practical implications of climate change, natural resource constraints, growing health concerns, new technologies, and the evolution of fashion and lifestyle trends – producers will need strategies that allow them to remain relevant. Understanding and predicting how a product will be used into the future is critical to making long-term strategic planning and investment decisions today, about the technology deployed on farm and the highest priorities for innovation.



Creation and optimisation of plants for food and fibre purposes using genetic biotechnologies

Biotechnologies, including the use of gene modification and editing, has the potential to create new, or manipulate existing cultivars, that meet the community's need for functional food and fibre products. Biotechnologists have the ability to optimise plants and create crops that have functional benefits, such as increasing certain vitamins or minerals beneficial for health, such as omega 3 fatty acids. Additional to functional capability, the ability to alter the genomes of plants to enhance the speed of growth, for example, will assist in diversification of land use and the management of climate change. Technologies also have the potential to manipulate resistance to weather conditions and diseases

meaning less chemical intervention, reducing environmental impact. There is still not a globally consistent view on the social and ethical acceptability of these technologies. It does appear that they have the potential to assist in providing the food system with greater resilience and mitigating the impact of extreme climate change on agricultural production around the world. **Tools such as CRISPR/Cas9 systems have been researched and proven as an efficient tool used for genome editing in a variety of organisms. Much research has been done into the developments in agricultural biotechnology, proving it is possible to generate food crops, such as Biofortified rice, which are nutritionally enhanced to improve the content and bioavailability of essential nutrients, such as iron and vitamin A.**



Unleashing the potential of the world's native flora for the benefit of global society

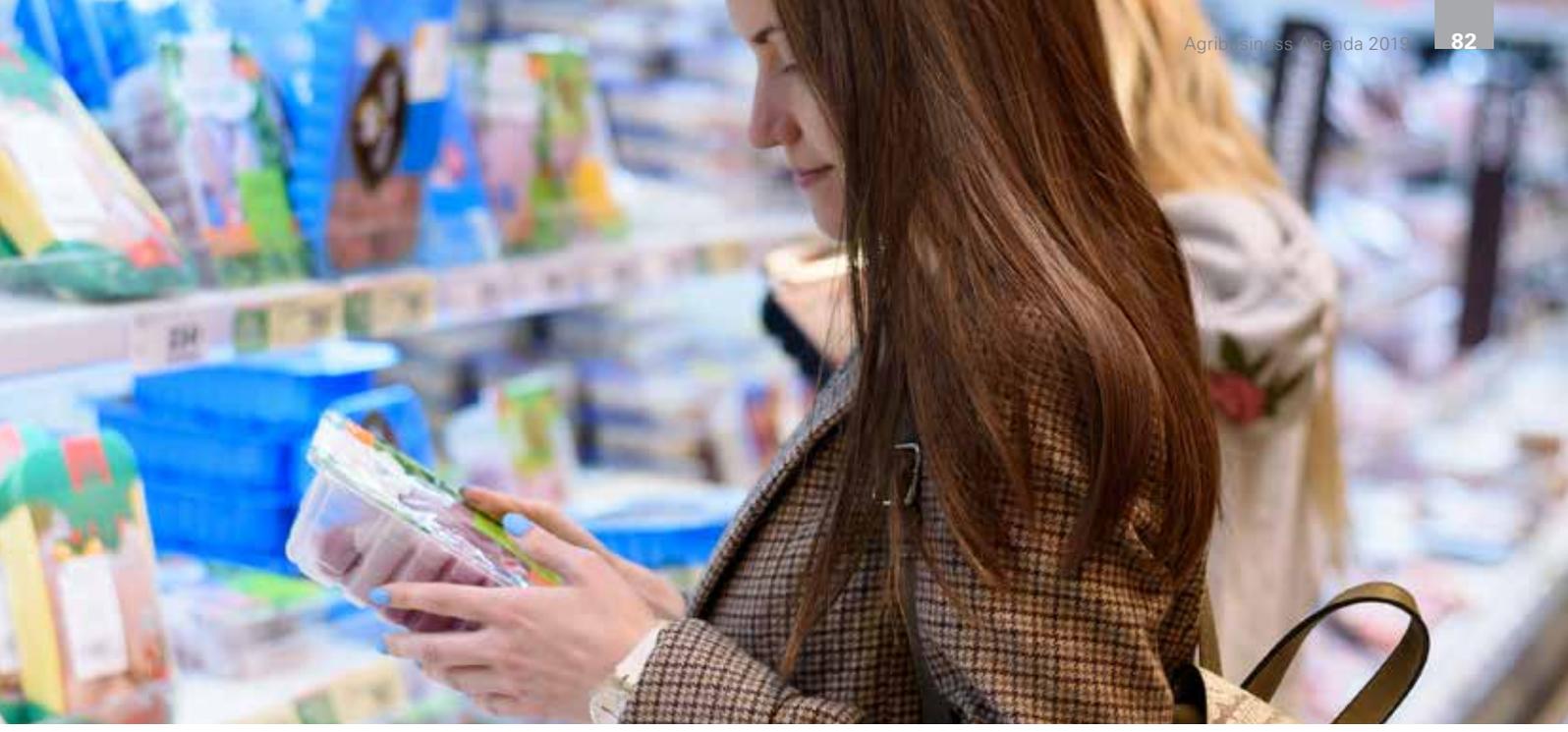
The global food system is based on very few key plant cultivars, with the Food and Agriculture Organization of the United Nations (FAO) estimating 75% of the world's food is generated from only 12 plants and five animal species. There is huge potential to discover and assess the full range of plant species that exist globally; and unleash more of the planet's native flora for the long-term benefit of society. Some of this has been used by indigenous communities around the world for food and medical purposes since ancient times. Identifying the natural properties inherent in these products could contribute to feeding the world, improving health outcomes, and supporting the economy. There is huge potential in medicinal purpose of plants, for example, with an estimated 45% of prescriptions in the United

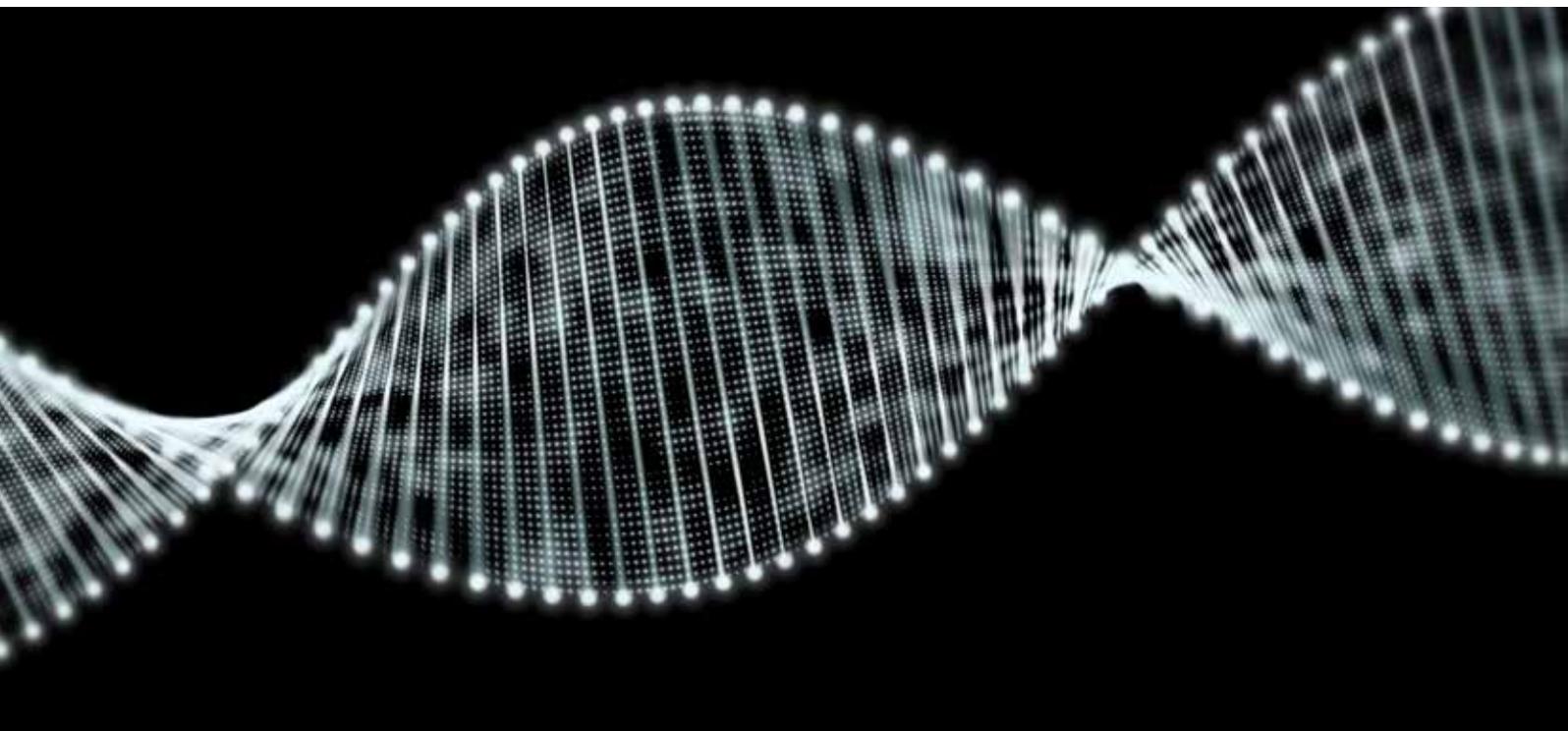
States containing at least one drug originally derived from plants. Exploring the potential inherent in native flora also provides the opportunity to work with indigenous communities, that often exist economical and socially on the fringe of society, and provide them with options to increase their economic empowerment. **It is expected that medicinal marijuana will exceed a global market worth of USD55 billion by 2024.**



Reintroducing biological diversity returns interest and de-risks the global food system

Monoculture production has delivered lower-cost food for the wider population, but the downside is that it has increased the risk of crop failure through disease incursion or adverse climate events. Re-use of the same soil, rather than rotation of several crops, leads to higher incidences of plant pathogens and diseases and can ultimately deplete the soil to point where it becomes uneconomic to farm. Utilising multiple crop varieties can reduce the risk of full crop failure, and introduce greater biodiversity into a farming system. There is growing recognition that systems with greater biodiversity will deliver improved environmental outcomes; while demand for more nutritionally-dense and specialised food choices are also expanding. Increasing the range of products grown does increase the cost of production and there are challenges passing these costs through to consumers. As a consequence, new or reintroduced heritage cultivars do need to deliver attributes to consumer that they perceive to be valuable so that they are willing to pay a premium for the product.







Reimagining a future for animal health based on lower antibiotic intensity

Anti-microbial resistance (AMR) is a serious challenge facing society, and the use of antibiotics in food production has come under increasing scrutiny. The use of antibiotic drugs and cleaning products has increased dramatically in many societies. It is suggested that these products have been misused in a number of agri-food sectors: for the treatment and prevention of diseases in livestock, in aquaculture, and in crop production. However, it should be noted that around 80% of antibiotic prescriptions are written for the treatment of human health issues. The result of collective overuse is a heightened risk of the emergence and spread of antimicrobial resistant microorganisms. Anti-microbial resistance is a concern for both animal and human health; if food has been inappropriately produced with antibiotics, there is a risk that this could contribute to AMR and result in long term and potentially significant health issues. Future production systems will need to support efforts to maintain efficacy of antibiotics; with new and proactive ways of managing animal health. There are also significant opportunities for businesses to develop natural alternative remedies to maintain animal health in a sustainable manner. **Supermarkets and retail outlets such as Waitrose, Marks & Spencer, Tesco and Sainsbury's in the UK, have taken action to measure and limit the use of antibiotics in farming systems. Waitrose has publicly stated it has banned the use of the last-resort antibiotic, colistin, and is the only supermarket that has committed to publishing antibiotic-use data from its suppliers.**



Enhancing the nutritional density of human food supplies becomes a priority

The drive to scale-up food production has often come at the expense of nutritional quality. But as consumers learn more about the therapeutic value of food, they are demanding more in terms of functionality and quality nutrition. Given that nutrient-dense food can make a significant contribution to a population's health, and thus reduce the cost of healthcare, communities are actively seeking ways they can better produce foods that align with this. In turn, producers are looking to ways they can evolve their production systems in order to supply products with proven and desired health benefits. Sustainable land management that encompass a holistic approach to natural resources promote soil health and have been shown to create more nutrient-dense produce. **Medical providers and education institutes, including the likes of Harvard and Healthline.com, are working to educate communities on nutrient-dense foods that are easy to adopt.**



Shrinking the number of people with nutritional deficits by closing the food waste gap

Despite the fact that more than 800 million people experience under-nutrition and malnourishment every day, around 40% of the food produced globally is wasted. This misalignment of resources has placed the spotlight on underlying failings in the food system. In developed countries, consumers discard at least 20-30% of the food they buy, largely because they buy too much or the product expires before consumption. Retailers often overstock, or discard food that is not aesthetically pleasing. Additional problems such as harvesting practices, unnecessarily high quality standards, poor storage and handling practices, and shipping timeframes all create food waste, particularly in emerging economies. With a combination of government regulation and societal pressure, greater effort is

being made to lessen food waste via supply chain improvements, recovery of out-of-date food, and investment in new innovations. Solutions to food waste have attracted significant investment in recent years as it is seen as an area with many opportunities to both mitigate malnutrition issues and enhance the sustainability of the global food system. **Australia was first country to set a target to reduce the amount of food waste it generates by 50% by 2030. To help achieve this target, the Australian Government invested to support food rescue organisations such as Second Bite, FareShare, OzHarvest, and Food Bank Australia.**



Molecular science is used to recreate exclusive food experiences

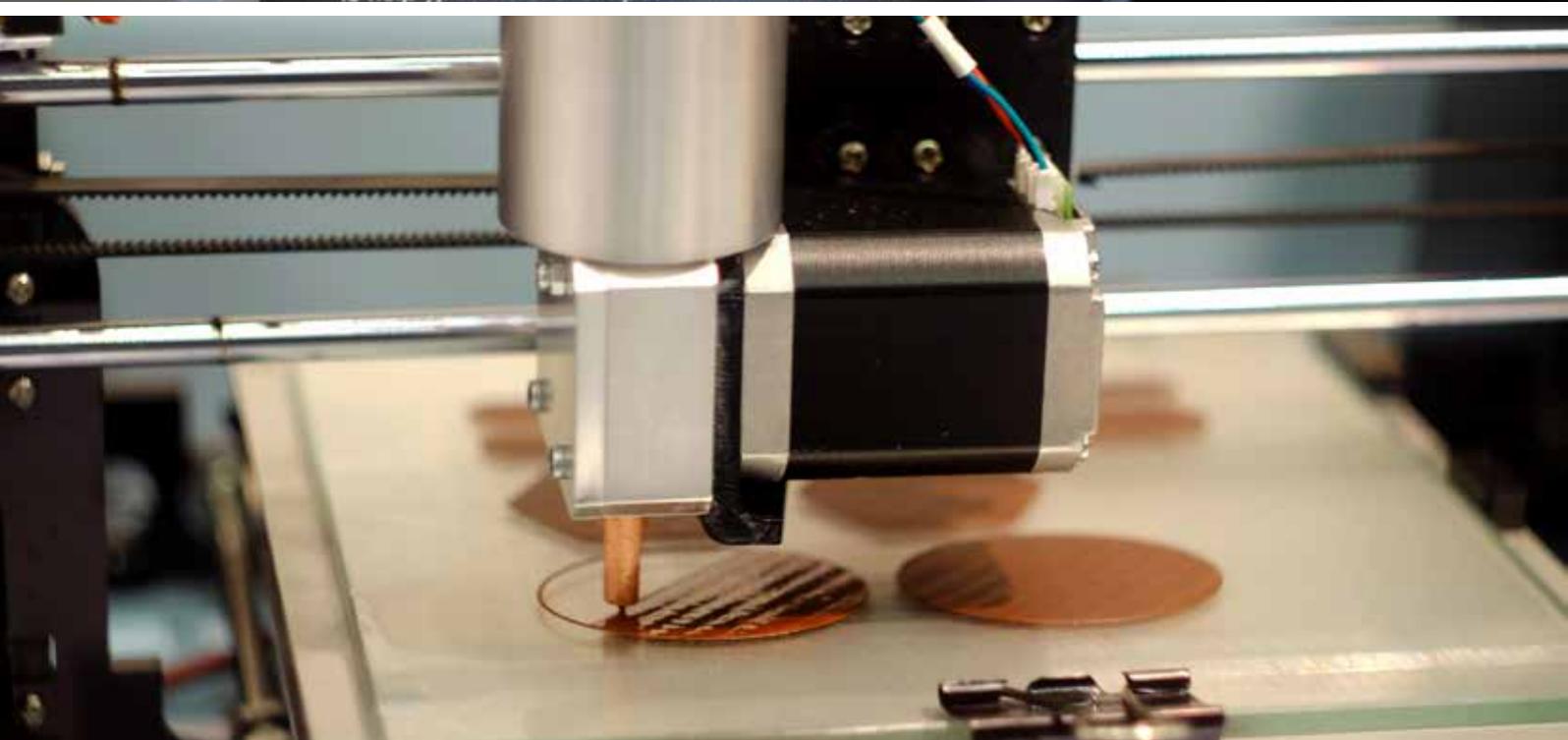
Some novel food producers argue that food and beverage products are nothing more in substance than a combination of acids, fats, proteins and other chemicals. They are using this perspective to analyse the composition of products, particularly products like wine and spirits, with the goal of reproducing them through blending the composite chemicals. They argue that molecular designed food offers the opportunity to recreate storied products at scale for the benefit of all consumers, using the great wines of the world, aged whiskeys or classic ports as examples of the products they could supply. The question about this innovation is whether consumers will accept the disconnection of the product from its historical terroir, in favour of a more affordable option that is being produced through a chemical engineering process (although they argue that the process of distilling spirits or making wine is fundamentally an industrial scale, chemical manufacturing process). **The US company, Endless West, is an example of a start-up business focused on producing molecular spirits, it notes that it believes in the creative capacity of science to develop products where others see boundaries.**



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Processing and distribution

There is much discussion in this report about disruptive technologies and the impact they will have on how we grow, process, distribute and experience food in the future. More than ever before, purchasing decisions are driven by information. This ranges from technical information on product functionality and authenticity provided by the product manufacturer or a traceability solution, to reviews written by users and social media commentary on the product and its competitors.

Highly-informed consumers are steering innovation in agri-products, to ensure the products they purchase meet their expectations and fit within their lifestyles. Many factors come into play here. Some consumers want products with strong functionality at discount price points, while others are looking for unique and highly curated experiences.

When it comes to distribution, digitisation has totally transformed the sector. Entirely new distribution models have emerged that connect consumers more directly to the producer – thus shifting where margin is captured along the value chain. Models are reflecting the time and convenience pressures consumers are under, and allow them to filter for specific attributes (be that price, nutrition, provenance, reviews or any other criteria). The challenge for retailers is remaining relevant in a world of unlimited choice online, and where delivery moves ever-closer to instantaneous.



Integrated urban food systems increase the food resilience of cities

Historically food was grown in the country and consumed in a largely subsistence manner. As cities have expanded over the last century, the disconnect between people and the sources of their food has increased; markets and supermarkets have become the prime source of food for many people. City authorities have taken a relatively passive position in respect of the food security of their cities however we have observed that more cities are looking to develop food resilience strategies. There are a number of reasons for this; the risk to social stability if significant and

sustained food shortages occur, the impact on the environment and roading networks from having food distributed around the city each day and the health consequences that are being observed in cities from poor diet and lifestyle choices that residents are making. As a consequence, city governments are looking to develop integrated strategies to ensure that sufficient, nutritious food is available to their residents while also looking to gain enhanced environmental outcomes by integrating food production areas into the design of urban areas and tourism benefits from building the profile of a city as delivering distinct food experiences. Strategies being used include integrating food production into cities to grow crops closer to citizens (through the use of urban farms, vertical farming technologies and green veins along arterial routes), creation of farmers markets so consumers can engage with growers and investing in city food stories and promotions to attract visitors to a city. **Singapore, an island state with a population of around 6 million people, has recently created the Singapore Food Agency (SFA) to connect all aspects of the city's food strategy into a single agency. The SFA is responsible for diversifying sources of food imports, promoting grow local initiatives and ensuring the safety and security of the city's food supply.**



Plant derived technologies replace products sourced from fossil fuels and other non-renewable commodities

Modern lifestyles increasingly rely on access to a wide range of consumer products which are made from non-

renewable resources. Many products that are used in day to day life including food packaging, toys, clothes, homewares and household cleaning products are created with the intention of being used once and disposed of. There are often no options available for these products to be recycled. Advances in materials science means that new opportunities are becoming available to utilise the properties inherent within plants, including waste biomass, to unlock sustainable product solutions that could potentially supersede products made from plastics, metals, fossil fuels and other non-renewable sources. The obvious indicator of this trend is the emergence of takeaway food packaging made from bamboo fibre and drink bottles made from bioplastics, which are replacing products that have historically been made from plastics. The more transformational opportunities emerge when focus is placed on converting renewable biological resources using green chemistry techniques and biotransformation to create renewable plastics, adhesives, coatings, pulp and biofuels. **Scion, the New Zealand Crown Research Institute that works with forest products, is developing new bio-products that have specific function properties than traditional products, including lighter weight, heat and water resistant, greater strength and higher levels of flame retardancy.**



Personalising nutrition to the individual disrupts traditional agri-food value chains

Historically, food products have been produced at scale, with a single offering developed to meet the needs of millions of customers. As health



and wellness becomes top of mind for many consumers, and they seek products that fit their specific requirements, meaning traditional one-size-fits-all production methodologies are increasingly becoming less relevant. Consumers can now purchase kits to test their DNA and other genetic markers to gain insight to what they should eat to maximise health outcomes. This has enabled unique food prescriptions to be designed for an individual addressing their requirements. Traditional value chains will need to evolve so they have the ability to deliver dietary solutions in a world where the market for a particular product spec may not be a million people, but one person. This approach to personalisation will require investment to be meet the expectations of consumers. It is no longer good enough to define the pack size or flavour options for a particular product, these choices are ones the consumer wants to make and with a world of infinite flexibility they expect to be able to specify the format that fits their needs online. We are also observing retailers respond to this trend with their offerings, a good example being quick service restaurants (QSR) no longer defining the flavours of drinks you can buy but giving the consumer the option to personalise their unique flavour mix. **23andMe.com and DNAFit are solutions that tune individual diets, exercise regimes and lifestyle choices based on medical DNA test.**



Printing technologies offer game-changing foodservice solutions

Food printing offers a wide range of benefits including the ability to deliver tailored product options to consumers and the ability for restaurant operators to tailor their product experience in a way traditional foodservice products do not allow them to do. Alternative ingredients such as proteins from algae, beet leaves, or insects can be utilised in the ink and converted into nutritious products. Printing technology means that by-products and waste that would historically have been thrown away can be converted into food inks that can then be printed into edible food. Foodservice operators, who now account for over 50% of food sales in some markets, have been able to develop their business by supporting restaurant operators to deliver experiences by selling replicable products at low cost. The evolution of food printing technologies frees restaurant operators from standard specs and provides them with a chance to use printing technologies to create unique food offerings for their outlets, which could even be 4D in nature, so that the product could mature after printing. We expect to see foodservice operators evolve their business models in the coming decade to focus on supplying printers and food inks. These types of technologies can also boost the

visual appeal of food products as they enable new shapes and combinations to be introduced to the market. **BeeHex, a company which specialises in creating intricate bakery items, was founded following a NASA project to automate personalised meals for astronauts on deep-space missions. Foodini is currently selling their smart kitchen appliance online for USD400.**



Incorporating 'mobile meals' into busy lifestyles drives food innovation

As cities continue to grow and expand, people are spending more time travelling to and from work, school and other activities than ever before. Commute time has overridden time traditionally spent on food preparation, with meal times often spent in transit; thus driving the need for convenient and nutritious food options. Dietary habits are also evolving – with many consumers adopting daytime fasting, multiple small meals, or other alternatives to three meals a day to enable them to maximise their productivity or achieve health and wellness goals. Increased understanding of the nutrition requirements of the human body will drive innovation in product formulation, packaging, and distribution to supply sustenance solutions that fit seamlessly into modern lifestyles. These products will be designed to fit within a specific lifestyle niche and distributed in such a way that makes them easy to access by people wanting to use the products. Significant innovation will occur in packaging so that food solutions are able to be consumed more effectively and tidily on the go; for instance the processing of fresh fruit may extend from chopped fruit in a pot to the supply of gels or purees that contain whole fruit but are cleaner and easier to consume. **A new era of 'food shortcut' innovations will emerge; responding to how and when consumers find it more convenient or nutritionally optimal to eat.**



International trade thrives when the benefits are shared amongst participating countries

With consumers expecting that food will be available all year round rather than only being on the shelves when it is in season, international trade underpins food availability around the world. At the same time, the international trading environment is becoming more complex as World Trade Organisation rules have increasingly been superseded by countries entering

into direct agreements with each other (or multilateral agreements between groupings of countries such as the Comprehensive and Progressive Trans Pacific Partnership Agreement (CPTPPA). The importance of trade and the impact that it has on the economic fortunes of countries means governments are taking strong positions to protect their trading positions. Some commentators suggest rather than being mutually beneficial, trade is contributing to inequality with parts of a community winning and some seeing no benefit and often being left in a worse position. It is becoming increasingly apparent that future trade arrangements will be about significantly more than the movement of goods between countries; they will signal the political relationship the countries wish to have and will need to clearly demonstrate that benefits are distributed widely across the economy. **As a consequence an agreement, although notionally between governments, is actually an arrangement between economies and agri-food exporters need to be actively engaged in the negotiations as the arrangements around food are usually sensitive, given the focus most governments place on ensuring food security.**



Big Food seeks to partner with disruptive innovators to maintain consumer relevance

Traditional food companies are finding it increasingly difficult to maintain organic sales growth in their traditional brands and product categories, as consumers seek out novel new foods and experiences. Historically, the food companies and supermarkets have curated the product ranges that are being offered to the market however technology now enables consumers to seek out options that they are interested in and curate their own product ranges. By their nature, traditional food companies are heavily invested in infrastructure, which makes it challenging to pivot quickly in response to market signals. The companies tend to tie innovation activities to their existing brands and manufacturing capabilities as a consequence they find it difficult to respond to challenger brands that are often asset light and consumer led. Big food companies are using a number of strategies to respond to this challenge, including internal incubators, partnering with accelerators, or investing in disruptive start-ups to access novel products, innovators and their pipeline of ideas. Partnering or investing with nimble start-ups present win-win

opportunities for both parties. It allows large companies to create disruptive solutions outside of their traditional portfolios; while small organisations secure investment to scale their products faster. **Big Food giants such as General Mills, Kellogg's and Campbell Soup have all been investing into start-ups, or created venture capital funds, to gain access to innovative solutions in food.**



Concern about the environmental impacts of plastic waste accelerates packaging innovation

The increasing evidence that recycling systems for single-use plastics are ineffective has come under the spotlight recently. For decades, policymakers have focused on increasing the collection of recyclables and raising the diversion rate, rather than making a systemic change to the nature of packaging materials used. The weakness in the system has been highlighted globally when China closed its borders to importing recycled materials from around the world. The need to divert the majority of used products from being sent to landfill or ending up in the environment (particularly the oceans) accelerates the need to develop sustainable alternatives in the food system. Organisations are looking to natural products – such as bamboo, stone wool, or mushrooms – as a way to create packaging that is not detrimental to the environment. Bioplastics that are fully compostable and provide food safety protections are evolving, along with reusable packaging systems. It is also opening an opportunity for plastic waste or byproducts to be recycled into new products. **Algae-based alternatives have been developed as a biodegradable alternative to single-use plastic packaging. Mushroom-based packaging has also gained popularity with the likes of Ikea.**

Consumers and consumption

To cope with the increasing pace of life, consumers are seeking products and services that help them to manage the challenges of everyday life; from wearable technologies, artificial intelligence interfaces such as Alexia, self-driving vehicles and personalised operating systems, the list goes on.

The distance that individuals travel to work on a daily basis is a major contributor to busier lifestyles. With limited affordable options to live closer to their place of work as urban areas grow, commute times are increasing meaning traditional meal times are often spent in transit and not in a kitchen. In a time poor world, taking the time to stop for a meal is becoming a luxury few can afford, and as consequence an ever increasing percentage of the food consumed will be eaten on the go. However, when we do stop for food it will be an event to be shared with family, friends or colleagues and, as a consequence, it will take on greater importance. Increased pace of life is also increasing pressure on our bodies, with less time to consciously eat and exercise, recover and sleep. Emerging modern health conditions are exploding and the cost of our curative healthcare systems are out of control. Food is becoming medicine, and an integral part of healthcare regimes as a key tool used in managing the effects of existing health issues and the stresses associated with modern life.



Delivering clarity and confidence to consumers on food provenance

Increasingly, consumers want to know where their food has come and how it has been produced. This is occurring for a range of reasons – from simply enjoying the provenance story behind the product, to ensuring it aligns with a consumers personal values their personal values (such as animal welfare, social justice, or the environment) to gaining confidence about its safety, which is a dominant priority for consumers across Asia. This is being driven by an increased

level of product recalls, food fraud and food sabotage events that are occurring around the world. Ongoing scares will intensify the efforts that organisations need to make to be able to provide consumers with the confidence over the integrity of the products they are offered. This will see the adoption of digital, chemical and bio-technology solutions all designed to provide irrefutable proof of the integrity of the product. Other traceability solutions, such as blockchain, will offer streamlined data access to consumers and provide all the information that they could require in relation to the ingredients used in a product, how it has been produced and shipped to the retailer. Proactive producers are recognising that they will be asked to provide information into blockchain tools and are front-footing this issue, to ensure that they are able to use the data collected to provide a competitive advantage. As these technologies become mainstream, all producers will be held accountable for the integrity of their part of a value chain. **In 2018, an international scientific lab that specialises in honey fraud detection found almost half the samples selected from supermarket shelves was fraudulently marketed as Manuka honey. Organisations such as Midlands Apiaries, manufacturers of Puriti manuka honey, have introduced jars that contain 11 consumer security and anti-counterfeit features, such as invisible ink and laser etching, to combat food fraud.**



Eating for the environment – a rebalancing of protein in the diet

The food system in many countries has evolved with a heavy emphasis

on protein (this is demonstrated in the analysis prepared by the World Resource Institute on page 90, which shows that most of the world eats more protein than they need and in many regions the balance between animal and plant protein is close to 50:50). While protein is a building block for cell growth, over-consumption can have negative health effects – including links to cancer and other serious illnesses, which consumers are becoming increasingly conscious of. There is a growing movement, particularly in Europe, to educate consumers about the impacts of eating too much protein and encouraging them to consider a transition in their diet to reduce animal protein consumption and increase consumption of nutrient dense plant-based foods. Earlier in 2019, the EAT Lancet Commission released a report on the impact that the diet can have on the environment. Based on an analysis of scientific evidence the report concluded that there is a need for consumers to transition their diet from animal proteins to plant based proteins to help mitigate the increase in greenhouse gases. **It was reported that the global average protein consumption was approximately 68 grams per person per day – which is one-third higher than the average daily adult requirement.**



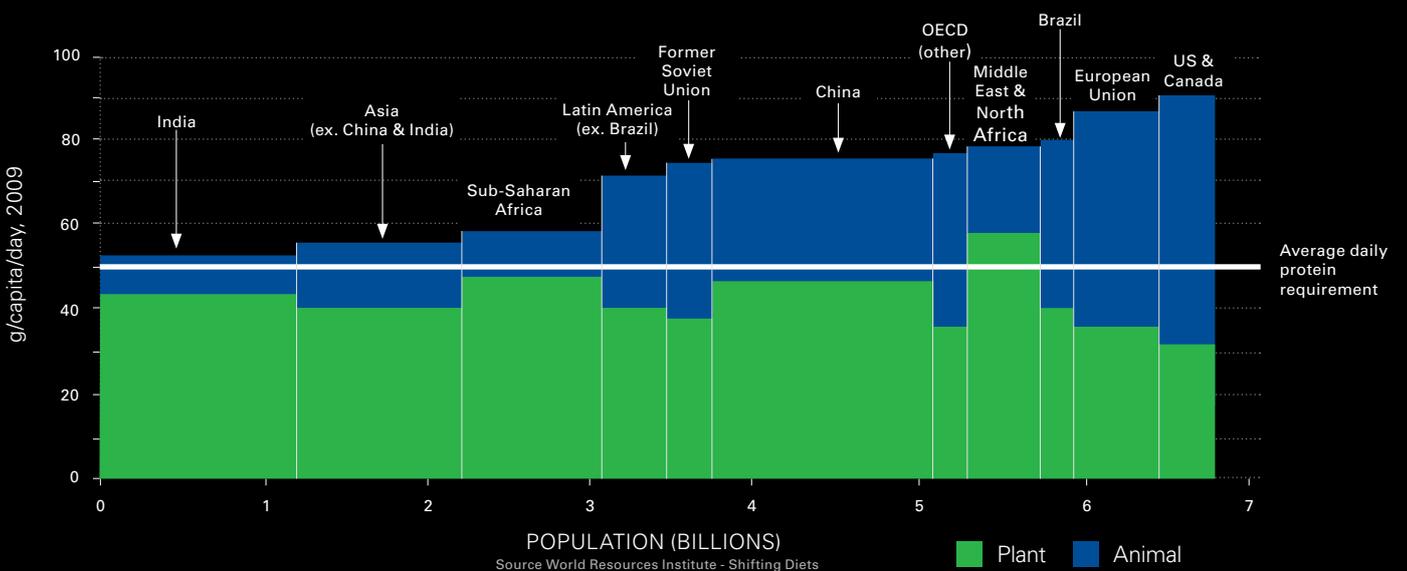
Food is fashion – the desire for new tastes and textures proliferates around the world

As with any other category of consumer goods, food products evolve in response to changes in market preferences. In developed countries, it is an inescapable fact that food is fashion – and producers need to be continually innovating with



Average protein consumption exceeds recommended levels globally

Protein consumption exceeds average estimated daily requirements in all the world's regions, and is highest in developed countries.





new tastes and textures to maintain their relevance to consumers. This offers an opportunity for producers to front-foot the newest taste profiles and food experiences. When it comes to café-sweeping fads such as chia seeds, Kombucha or cold-brewed nitrogen coffee, it certainly pays to be a pioneer. Not only is taste important, but having an Insta-worthy aesthetic is also critical. A current search on Instagram for pictures tagged “food” presents over 400 million searches. Recognising that food is fashion means a food producer can’t expect to cash in on a successful product for decades as they have in the past; a successful product is an indication that it is time to start innovating to find your next market shifting experience. **What may start out as food fashion can quickly become big business. Not too long ago, plant-based meat products were viewed as a passing fad. In 2019, pioneering company Beyond Meat went public with a USD1.5 billion valuation.**



Premium consumers seek out storied, artisan, ultra-fresh products

As the number of affluent consumers grows around the world, there is an increasing number of consumers with the financial capability and desire to seek out and experience highly-specialised choices around the foods they eat. The significant wealth that has been accumulated by the baby boomer generation who have reached or are approaching retirement and still have their health and a strong desire to experience new products, means they are actively seeking out storied, artisan and ultra-fresh products. It should also be noted that some millennial households are high-income with no children and approach life with a “treat myself mentality.” Both of these groups have a willingness to pay a premium for products that are perceived as having health benefits and/or offer superior quality. Market-savvy producers are using story-telling techniques to create

intrigue around their products, and build connections with consumers. They may provide information on their farming practices, the story of care at every point along the production cycle, and the ethics and quality that are embedded into growing the product and bringing it to market. **For around USD9,000, you can order the Very Expensive Pizza from renatoviola.com. The seafood-topped pizza will be cooked by a master pizza chef at your residence (if you live in Italy), and is served with rare cognac and champagne.**



Reimagining food experiences as traditional culinary tours expand in food tourism

For many people, food provides a voyage of discovery through the diverse range of global cultures and lifestyles. As well as exploring ethnic foods in restaurants where they live, more people are being encouraged to travel, with food tourism being a burgeoning sector of the travel market. Culinary tourism is no longer just for the elite – with a full range of local cuisine and indigenous experiences, including Airbnb Experiences that showcase local street foods. Research from the World Food Travel Association reports that 81% of respondents say they learn about food and drink when they visit a destination; while 47% shopped for food at local grocery or gourmet stores. For most travellers, food is not the only reason that they travel but having the opportunity to try the local cuisine is an aspiration for over 90% of travellers. This gives food producers in host countries the opportunity to provide visitors with immersive food experiences while they are travelling and try to send them home as ambassadors who will seek out the food they have experienced and promote it to friends and family. **Organisations are creating food tourism offerings at a range of levels – from individual operators, to regional networks, and national level. Eat New Zealand, launched in 2018,**

is a collaborative platform that’s designed to put Aotearoa cuisine on the international traveller’s map.



The primary focus on protein is progressively superseded by a focus on broad nutritional density

Over the last decade, the food system has focused on the amount of protein being produced and consumed. Whether it is Masterchef or social media, everybody has been focused on the sources of protein on the plate. This has been compounded by many diet and lifestyle plans, especially those related to health and fitness, placing their primary focus on the protein sources and the amounts being consumed each day. It is our view that the focus on protein has been overplayed, while it is undoubtedly an important attribute of food, it is only one element of food and we expect the next decade will see focus move onto a wider range of attributes inherent in the product. This shift in focus will emerge as individuals become more educated on wholefoods and balanced diets and understand protein is only one component of a food product. There is a growing recognition that it is the balance of nutrients, minerals, fats and other elements that determine a food’s long term impact on health and vitality. The focus on broad nutritional density will result in a rebalancing of the protein equation within diets. **Consumers are becoming more educated and doing their own research into understanding the optimal level of macro and micro nutrients to be included in their unique diets through the use of apps and creating tailored diet plans that have broad nutritional density.**

The call to action

Having acknowledged the significant progress that New Zealand's agri-food sector has made over the last decade, evaluated the opportunities and challenges facing the sector today and explored the dynamics of disruption that necessitate organisations to accelerate into the future, the obvious question is what do we need to do now, to set the industry up for a prosperous future. We have concluded on nine actions that we believe have the potential to create a platform that positions New Zealand's food and fibre producers, processors and marketers to play the infinite games ahead in a sustainable and successful way.

**Feeding our
community before
we feed the world**

This call to action is an Agenda that has been a decade in the making. It is an Agenda to fuel the prosperity of New Zealand in 2020s. Whatever form the KPMG Agribusiness Agenda takes moving forward we commit to play our part in realising this Agenda. We also commit to continue to hold the wider agri-food sector to account for the progress it is making in creating a better New Zealand, for all New Zealanders.

New Zealand can't afford to continue to be home to one of the world's most unhealthy communities. As producers of the best natural food and fibre products in the world, every participant in the agri-food sector should recognise the benefits they will derive from working with the government, schools and community organisations to ensure that every Kiwi has access to the food they need to sustainably improve our health outcomes before the first tonne is exported. Inadequately feeding our five million is not an option if we want to tell the world about the natural, healthy, nutritionally dense food we grow in New Zealand.

Creating a vehicle to evolve and enable New Zealand's primary sector vision

The Primary Sector Council is consulting extensively across the agri-food sector on the fundamental elements that need to be captured in a compelling vision that the majority of the industry will commit to realising. Once the vision is launched, there will be much work to be done to align policy settings and investment to enable it to be realised. An adequately resourced organisation, with statutory influence, is required to enable realisation of the vision and to ensure it remains relevant.

Collective investment into a Green Bank to fund the climate transition

The industry faces a massive investment programme into infrastructure, technology and science to transition to zero carbon as quickly as possible. At the same time debt is becoming scarcer and more expensive. Banks, processors, exporters, the Superfund and others should establish a Green Bank to provide sustainable financing, with preferential terms, to accelerate this transition. The Government must exempt the vehicle, which should operate as a not for profit entity, from the tight capital constraints the RBNZ is proposing to impose on banks.



Articulating and amplifying our authentic food story on the global stage

Our goal should be to make a New Zealand meal the dining option people aspire to around the world. There is something unique about the food and fibre we produce, and this must be valued by Kiwis and visitors alike. A concerted effort is needed to position ourselves distinctively on the global food map; restaurateurs, iwi and food producers need to partner to ensure that every visitor to our country enjoys a New Zealand food experience, and similar experiences are delivered around the world.

Establishing a shared platform to unlock the value of data

The desire to hold data close in the hope commercial value can be extracted from it costs the sector and the economy real money every day. The value of data is maximised by aggregating with unrelated information to find the insights that give us a 1 or 2% advantage. The time for hoarding data has passed; the industry and the country will benefit from a coalescing around a single open access data platform, that enables everybody to maximise the commercial value of their data.

Putting our food basket at the centre of a business model that delights global consumers

Opening a new market always takes more time and money than expected. With infinite consumer niches, the cost of securing product recognition is spiralling. We sell our products to similar consumers around the world and they rarely eat only salmon, cheese or kiwifruit; they eat diverse diets. Establishing a go to market model built around our basket of food and fibre products and aligned with diets of consumers will make their purchasing decisions easier, deliver better experiences, spread promotional costs and secure premium market growth for all.

Implement a bold industry blueprint to attract and retain talent

To most people the agri-food sector is not sexy; it never will be. It is not likely to be a top of mind career option for most people, but it does need a wide range of skills to capitalise on the growth opportunities available. In a highly competitive labour market, the industry needs to be more co-ordinated than its competitors for talent. Old recruitment strategies no longer work, it is time to blueprint a bold plan for a 'Year of New Zealand Food and Fibre' that engages and immerse every part of our community, showing them what the sector can offer them.

Listening, responding and reporting on the complete impact of the industry

The industry receives its license to operate from the community. Organisations must respect this and work to strengthen it. This requires deep engagement to really listen to community expectations and then action to deliver on these expectations. Every company must be open about what it does well and where it has challenges. The sooner companies deliver comprehensive reporting on their environmental, social and economic impacts the sooner they demonstrate to the community how they value the license they are granted.

Accessing the disruptive technologies that deliver a point of difference in the market

The scale of New Zealand innovation budgets mean we will never have all of the great ideas to transform the industry ourselves. We need to ensure there are many channels available to access disruptive innovation wherever it occurs globally. There is an opportunity for organisations to pool some of their investment in disruption in a collaborative venture fund. This would take positions in start-ups, that are developing technologies that will benefit producers, processors and marketers, to deliver first mover access to solutions that differentiate our products globally.

Directing actions - Articulating impact

Impact is a word used regularly throughout this Agribusiness Agenda. Consumers increasingly look to buy from businesses that are clear on purpose and articulate the contribution they are making to the wider community.

Maintaining social license to operate requires companies to demonstrate that they are about more than just the bottom line. Young people want to work with organisations that aspire to make the world a better place for everybody.

Globally, the United Nations Sustainable Development Goals (UN SDGs) are being used by many organisations (governmental, civil society and commercial) as a framework to determine how they can maximise their contribution to society and to articulate the impact their actions have on society. KPMG analysis suggests 4 in 10 of the top 250 companies globally are already actively using the SDG's for this purpose.

The 17 SDGs, released in 2015, grew out of the Millennium Development Goals (which lifted a billion people out of poverty) but they have a wider purpose; the development of a sustainable, resilient and peaceful global society. As a consequence their relevance beyond government and development agencies is significantly greater.

Many organisations in New Zealand have associated the SDG's with worthy

goals like eliminating global hunger and providing universal access to sanitation, that while important are not practical goals for their organisation. They have consequently not engaged with the agenda in a substantive manner. On a recent trip to the Netherlands, a key takeaway was that every organisation we visited used the SDG's to direct their social engagement strategy and to articulate their purpose and impact; **we simply do not hear companies in New Zealand talking about their purpose in this way.**

The SDG framework provides a blueprint for strengthening any community and they are as relevant to ensuring our rural communities in New Zealand are vibrant as they are to lifting communities in sub-Saharan Africa out of poverty. The SDG framework provides agri-food organisations with a framework they can use to help guide them in determining where they can have the greatest impact on all the communities they are part of; the towns and villages they source products from, the wider New Zealand community and the global community to which we sell our products.

Not using the globally recognised SDG framework puts NZ organisations at a competitive disadvantage.

When faced with 17 goals, all of which make important contributions to the functioning of society, the tendency is to try and do something for every goal. The reality is that no organisation can address all the challenges the SDG's seek to make progress on themselves. Effective users of the goals recognise their impact is amplified by going deep rather than wide. Focusing actions on two or three goals aligned to organisational capability and working with like-minded partners will deliver greater impact and benefits for communities, for consumers and for organisational stakeholders.

For the agri-food sector, the SDG's provide many opportunities to design programmes to deliver the impact that this Agenda has suggested organisations need to have to ensure they attract talent, maintain their license to operate and develop sustainable positions in the infinite games they are playing.



Five impact opportunities for agri-food organisations

2.4: By 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaption to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

New Zealand can't feed the world but we have a role to play in helping the world to feed itself. The Zero Carbon Bill will require producers to adapt their farming activities as the country transitions towards a zero carbon economy. What we learn during this transition can not only be deployed domestically but shared internationally to help emerging economies develop robust, climate resilient food production systems that help to eliminate hunger by 2030.



3.4: By 2030, reduce by one third premature mortality from non-communicable diseases (NCDs) through prevention and treatment and promote mental health and wellness.

The health impacts of NCDs on the NZ community are significant and are clearly linked to the food that people eat. The need to focus on having a clear plan for ensuring that the five million New Zealanders are able to access and eat the right nutrition in the right way every day is critical to the long term stability of the country and the future prosperity of the agri-food sector. Proactive action to ensure the right food is available and people have the skills to prepare and cook the food in the correct ways must be a priority for every organisation in the sector.



5.5: Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic and public life.

Women are 50% partners in most agri-food production businesses but their influence on the leadership of the sector is limited due in part to history. Organisations should ensure they are taking active steps to diversify the thinking and perspectives that shape their strategies and actions and this means that more women need to be given opportunities to take on leadership roles in organisations across the industry. Given the industry's customers are very often women utilising the knowledge and insight already in the industry just makes sense.



12.3: By 2030, halve per capita food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

Taking practical steps to eliminate wastage across a supply chain presents organisations with a wide range of opportunities to have a material impact on the availability and quality of food supplied to different parts of the market. Taking steps to reduce wastage makes economic and environmental sense. It could be about taking steps to ensure no food is thrown away, that there are commercial opportunities to use recovered or wasted food, that consumers are given tools to only buy what they need and use up left overs or ensuring the quality of product is maintain in supply chains. Small interventions can make major contributions to halving food waste globally.



14.b: Provide access for small-scale artisanal fishers to marine resources and markets.

Consumers are looking for products that have authentic stories attached to them. The opportunity to connect traditional fishers to markets presents opportunities for all in the industry, whether it is the fisherman themselves, indigenous communities that have access to fishing rights or the commercial fishers that have supply chain and marketing capabilities. Looking for new business models that create value for all in the industry through connecting authentic harvesting stories to customers presents opportunities for value to collected and shared across the industry.



KPMG New Zealand Agri-Food team



Ian Proudfoot

Lead Author
Global Head of Agribusiness
National Industry Leader Agri-Food

M +64 21 656 815
T +64 9 367 5882
E iproudfoot@kpmg.co.nz
in [linkedin.com/in/iproudfoot](https://www.linkedin.com/in/iproudfoot)



Emma Wheeler

Co-Author
Senior Manager, Agri-Food
Auckland

M +64 21 806 210
E emmawheeler@kpmg.co.nz



Trevor Newland

Hamilton

M +64 21 586 560
E tnewland@kpmg.co.nz



Glenn Keaney

Tauranga

M +64 27 288 7555
E gkeaney@kpmg.co.nz



Justine Fitzmaurice

Wellington

M +64 21 294 3128
E JFitzmaurice@kpmg.co.nz



Peter Taylor

Christchurch

M +64 21 247 2548
E ptaylor1@kpmg.co.nz



Brent Love

Farm Enterprise, Timaru / Ashburton

M +64 27 5281537
E BLove@kpmg.co.nz



Charles Ehrhart

Sustainable Value

M +64 22 395 1457
E cehrhart@kpmg.co.nz



Andrew Watene

Māori Agribusiness

M +64 27 576 0724
E awatene@kpmg.co.nz



Andrew Simpson

Risk Consulting

M +64 21 569 864
E candrewsimpson1@kpmg.co.nz



Simon Hunter

Prosperity

M +64 27 489 9737
E simonhunter@kpmg.co.nz



Tuhi Isaachsen

Strategy

M +64 21 734688
E TIsaachsen@kpmg.co.nz



Olive Wallis

Tax

M +64 21 535791
E omwallis@kpmg.co.nz



Roger Wilson

Farm Enterprise, Hamilton

M +64 27 281 9575
E rogerwilson@kpmg.co.nz

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Acknowledge

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Our contributors over the last 10 years

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Abby Thompson	Anne Munro	Cathy Brown	Darryn Pegram	Fabian Yukich	Hemi Rolleston
Adrienne Wilcock	Arthur Graves	Champak Mehta	Daryl Johnson	Fatima Imran	Herstall Ulrich
Alan Pollard	Barbara Groundwater	Charles Eason	David Birkett	Fiona Gower	Hilton Collier
Alastair Hulbert	Barbara Kuriger	Charlie Graham	David Carter	Gary Hooper	Hinerangi Edwards
Alastair Macfarlane	Barry Brook	Charmaine O'Shea	David Graham	Geoff Copps	Hinerangi Raumati-Tu'ua
Alastair Nelson	Barry Foster	Chris Black	David Handley	Geoff Taylor	Holger Detje
Alex Ulrich	Barry O'Neil	Chris Clarke	David Hemara	George Gould	Damien O'Connor
Alexandra Allan	Bart Zame	Chris Kelly	David Hughes	Gerard Hickey	David Carter
Alison Carrington	Ben Dalton	Chris Lewis	David Jones	Giles Hailwood	Howie Gardner
Alison Patterson	Ben Russell	Christopher Bourke	David Surveyor	Graeme Harrison	Ian Abercrombie
Anders Crofoot	Bill Baylis	Claire Massey	Dawn Sangster	Graeme Peters	Ian Boyd
Andrew Clayton	Bill Falconer	Colin Glass	Dean Nikora	Graham Smith	Ian Carter
Andrew Coleman	Bill McLeod	Colin Harvey	Debbie Birch	Graham Stuart	Ian Jackson
Andrew Crutis	Blair Hamill	Collier Isaacs	Derek Broadmore	Graham Turley	Ian Macintosh
Andrew Ferrier	Bob Major	Colm Hamrogue	Derek Crombie	Grant Abbott	Ian Palmer
Andrew Hawkings	Brendan Hoare	Conor English	Derek Fairweather	Grant Absolum	Jacqueline Rowarth
Andrew Hill	Brian Cloughley	Craig Greenlees	Dianne Kidd	Grant Cuff	James Allen
Andrew Hoggard	Brian Patchett	Craig Hickson	Dieter Adam	Grant Rosewarne	James Egan
Andrew Morrison	Brian Richards	Craig Norgate	Dion Tuuta	Grant Rowan	James Parsons
Andrew Priest	Bridget Service	Craig Osborne	Don Everitt	Grant Watson	James Ryan
Andrew Warren	Bridgit Hawkins	Craig Young	Don McFarlane	Greg Campbell	James Wallace
Andy Elliot	Bruce Murphy	Cros Spooner	Don Nicolson	Greg Gent	James Wallacee
Andy McFarlane	Bruce Wills	Dacey Balle	Donald McFarlane	Greg Muir	Jamie Falloon
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Angela Clifford	Carl Carrington	Dallen Olson	Donovan Wearing	Hamish McFarlane	Jane Arnott
Angela McLeod	Carly Robinson	Dame Alison Paterson	Doug Ducker	Hamish Midgley	Jane Taylor
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Anna Orbell	Catherine Wilson	Daniel Paul	Eugenie Sage	Haylon Smith	Jason Te Brake
Anne Hindson			Fabian Partigliani	Helen Gear	

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Jennifer Scoular	Kimberly Crewther	Michelle Wilson	Peter Kemp	Sam Robinson	Todd Charteris
Jenny MacDonald	Kirsten Bryant	Mike Burrell	Peter Landon-Lane	Sarah Foote	Todd Muller
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Jim Grennell	Larry Bilodeau	Mike Dunbier	Peter Nation	Sarah Risell	Tom Lambie
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Joe Stanton	Lloyd Downing	Murray Gribben	Phil Everest	Simon Couper	Tony Gibbs
John Barnes	Louise Beard	Murray King	Philip Gregan	Simon Hegarty	Tony Howey
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Joseph Scott-Jones	Mark Steed	Paul Burns	Richard Wyeth	Steven Smith	William Gallagher
Jules Benton	Mark Ward	Paul Grave	Rick Powdrell	Stu Hutchings	William McCook
Julia Jones	Mark Williamson	Paul Green	Ricki Leahy	Stuart Chapman	William Rolleston
Julian Bevis	Mark Wynne	Paul McGilvary	Ricky Larsen	Stuart Gordon	Zahra Champion
Julian Raine	Martyn Dunne	Paul Morgan	Riria Te Kanawa	Stuart Gray	Zelda de Villiers
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Justine Gilliland	Matt Dolan	Penelope England	Rodney Green	Susan O'Regan	
Justine Kidd	Mauray Leyland	Penny Mudford	Roger Bourne	Susan Robinson	
Karen Fistonich	Mavis Mullins	Penny Nelson	Roger Harker	Derus	
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Karen Kos	Melanie Brooks	Peter Beaven	Ross Verry	Terry Copeland	
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Keith Cooper	Michael Brooks	Peter Carr	Rupert Holborow	Thomas Chin	
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