

CAPTURING VALUE

REPORT SUMMARY

The world is seeking two things which are NZ's strength areas: food production & agriculture expertise.

NZ has a goal to increase the value of exports 50% by 2025 but is hitting production capacity.

For decades NZ's exports of expertise has been ad hoc & uncoordinated, leaving money on the table.

An integrated framework for trade negotiations, market access & exports of expertise = value capture.

Robust strategies & management plans to commercialise intellectual property need implementing.

Utilising its strengths to capture value, exports of expertise enables NZ Agriculture to transcend borders.

Developing nations will meet the production gap – they have the scope for growth.

Farmers and the primary industry need to get feet on the ground and seats at the tables of influence.



NUFFIELD
NEW ZEALAND

*'Global Vision,
Leadership
and Innovation
in Agriculture'*

CAPTURING VALUE

Building a sweet spot between trade negotiations, market access and the exports of expertise (New Zealand agriculture know-how, information, tools and technology)

A Nuffield scholarship study tour learning about global agriculture, trade and geopolitics. Tour included visits to Chile, Uruguay, Brazil, Colombia, USA, England, Wales, Belgium, Ireland, Israel, Italy, Switzerland, and New Zealand.

M. Poulton
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EXECUTIVE SUMMARY

This qualitative report takes a 'big picture' view, exploring the question 'How does New Zealand capture value?' This study focuses the question on New Zealand agriculture and the primary industry. The relationship between trade negotiations, market access and exports of expertise provides the context. At the end of sections 2-4, questions are asked to help start discussion and debate amongst farmers and the wider primary industry. Key findings of the report are outlined below:

- The problem defined: 'New Zealand agricultural expertise is being exported without a framework to capture full value potential.'
- Value capture occurs two ways: First is to sell product (tangible), second, to share ideas, information, tools and technology (intangible). The primary industry has been exporting Agritech products and agriculture expertise for decades.

Starting with a request for help from Colombia to help build a sheep industry, section two focussed on the 'global operating context'.

- The interconnectedness of the global village in which New Zealand operates transcends borders.
- The global opportunities for agriculture and food value chains are significant. The world has changed and the New Zealand primary industry has an opportunity to do business differently.
- The new platforms created by technology has revolutionised the speed at which the global village interacts.
- Pressure on food production and value chains is eroding the social licence to operate. Farmers and the primary industry largely remain disengaged and silent.
- By 2050, 70% of the world populations will be urban. To feed the world in 2050, cereal production needs to lift from 2.1 to 3.0 billion tonnes, and meat production from 200million tonnes to 470 million tonnes per year.
- There is significant scope to increase food production in nations with developing agriculture sectors, and it is these nations who will fill the food production gap.

Ireland's model 'Origin Green' illustrates a primary industry thinking differently, and working together, setting the scene for section three: 'The New Zealand operating context':

- New Zealand is hitting production capacity. Constraints of soil, water and nutrient resources, downward regulatory pressure and financial constraints are restricting the New Zealand primary industry to be able to significantly lift production - the law of diminishing returns is taking effect.
- Trade negotiations have created 'first mover' advantages for New Zealand.
- Value capture requires international negotiating skills in the business sector.
- Some of the attitudes and behaviours that have enabled success for New Zealand may now be an achilles heel in the global operating environment today.
- The strengths of Agritech, know-how, information tools and technology in the primary industry position New Zealand well to capture value internationally.

Liete Verde a New Zealand farming investment in Brazil is an example of how to successfully adapt and implement exports of expertise. This story starts section four which explores how New Zealand can 'capture value':

- The relationship between the spheres of 'trade negotiations' (TN) and 'market access' (MA) is strong, but the links to the sphere 'exporting of expertise' (EE) is weak.
- A framework is proposed: By pulling the three spheres (TN, MA, EE) closer together the intersecting overlap, called the 'sweet spot' is where New Zealand can create and capture more value.
- The world seeking two things which happen to be New Zealand's key strength areas: Food production and agriculture expertise.
- When exporting expertise, the focus must be on adaptation
- People are the key to successful offshore investment – raising capability, and utilising the networks of foreigners who have graduated from New Zealand Universities or returned foreign workers.

- Focussing on comparative advantages, and increasing productivity through cooperating with developing countries, and leveraging through the WTO and other bilateral trade agreements, will enable the increase of market access, and deal with subsidies.
- The farming community and the primary industry need to prioritise the investment of feet on the ground and seats at the tables of influence to create and capture value for New Zealand, in the market place and political space.
- People intimately connected to farming, and politically appointed people need to work together to influence global agendas, regulation and policy that impact New Zealand behind and beyond the farm gate.

In answering the problem it is proposed that:

- Work needs to be done to determine how we can measure what is termed 'intangible value' from the exports of expertise.
- New Zealand needs to implement a robust and flexible framework for the integration of trade negotiations, market access and exports of expertise.
- Through improved communication, collaboration and coordination, New Zealand can create a 'sweet spot' within the new framework from which to capture value.
- Robust strategies and management plans around the commercialisation of intellectual property and trade secrets, need to be implemented at a national policy level and integrated within businesses, academic and science institutions, and government.

It is recommended that farmers and the primary industry start discussion and debate with the questions listed at the ends of sections 2, 3, and 4. There is an opportunity for focus groups to form and move the debate for each section into action: planning and implementation.

Don't agree on any variable until the industry can agree on all of them.

FOREWORD

There is a general unease amongst many in the New Zealand farming community and the wider primary industry concerning New Zealand's approach to exporting agriculture information, tools and technology, our 'know-how' (described in this report as 'exports of expertise'). These people ask 'Are we selling our soul for quick short term gain at the expense of long term success?'

Is this concern a world view that limits the growth of the New Zealand economy? Has the New Zealand Government, scientists, academics and entrepreneurs anticipated the opportunities provided by this new dynamic, fast moving, global operating environment we find ourselves in, as an exporting nation? Is 'exporting expertise' a smart strategic move to build the platform for the New Zealand primary industry and nation to thrive to 2050 and beyond?

If 'exporting expertise' is part of the national strategy for the New Zealand primary industry going forward to 2050 and beyond, how are the exports of our expertise linked with trade negotiations, and market access?

Do farmers, the primary industry and New Zealanders in general have to start thinking outside the box? Does New Zealand understand how it can thrive in the interconnected nature of the global operating environment?

By utilising the observations, learnings and experiences of the Nuffield Scholarship, the purpose this study and report is to help contribute to informed, objective discussion and debate.

This is about New Zealand developing an 'abundance mentality' working together better for the long term benefit of New Zealand the Primary industry, the sectors involved and farmers vs. 'Scarcity mentality' where individuals, businesses or others sell or give away what we've got now, for short term gain. (Pickering, 2015)

The author has met with scientists, academics, farmers, processors, farm service companies, entrepreneurs, restaurateurs, food markets, supermarkets, importers, lobby groups, farmers' organisations, policy people, trade negotiators, trade attaches, government advisors, politicians, trade commissioners, ambassadors, and sat in on Agriculture focussed meetings at the United Nations Food and Agriculture Organisation, and the World Trade Organisation.

Countries visited included Chile, Uruguay, Brazil, Colombia, United States of America, United Kingdom, Ireland, Israel, Italy, Switzerland, and Belgium. The study tour would not be complete without visits to learn from some of the actors and stakeholders of the primary industry here in New Zealand.

INTRODUCTION

New Zealand has been considered a leading light in pastoral agriculture systems for decades amongst the international farming community. During this time, the world has changed.

In attempting to take a 'big picture' 40,000 foot perspective with a long term planning horizon, this qualitative report is written by a farmer for farmers and asks 'How does the New Zealand Primary Industry capture value?' Three components were investigated as illustrated (Fig 1):

- The export of information, tools and technology
- Trade negotiations
- Market Access

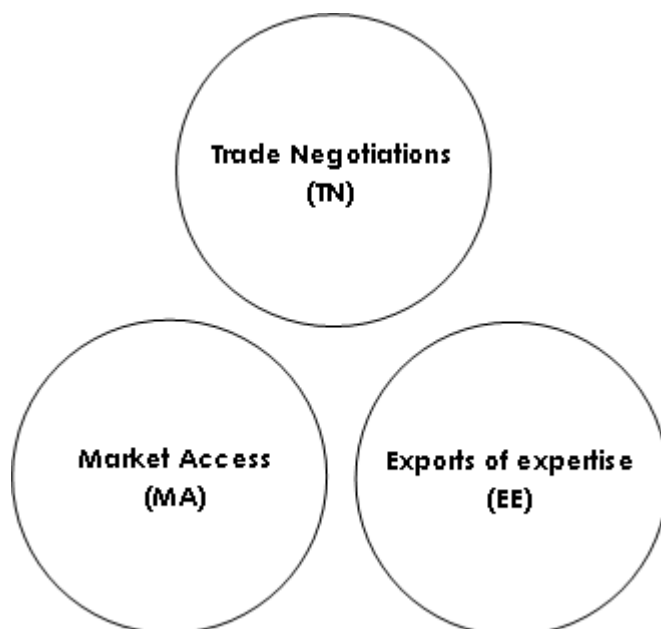


Figure 1: The three spheres: What are the links between trade negotiation, market access & exports of expertise?

The report assumes that market access refers to the enabling of exports for food and beverages, timber and other products not encapsulated in the exports of expertise (Ref 1.2). The report does not focus on value capture through food service, or commercial brand value.

Key observations and learnings from the conversations, interviews and on site tours of those organisations, institutes, farms and businesses visited are outlined. A significant proportion of interviews and visits were held with a confidentiality clause and on that basis, there is a lot that has shaped the thinking of the author but cannot be quoted or used as case studies to enforce the point.

New Zealand has a population of 4.5 million people and a productive land base of 14.4million Ha. New Zealand exports 80-90% of the agriculture product we produce. We rank first in the world for sheep meat and dairy product exports. The New Zealand primary industry has a total debt of \$52.7 billion dollars of which the New Zealand dairy industry accounted for 65%. Of New Zealand's total exports, the agriculture sector contributes over 50% valued at about NZD \$30 billion. The agritech sector earned New Zealand approximately NZD\$1.2 billion in 2013. New Zealand has an export goal to double primary industry exports in real terms from \$32 billion in June 2012 to \$64 billion by 2025. To achieve this, New Zealand's primary industry must grow at a rate of 5.5% per year through to 2025.

ABBREVIATIONS:

TN: Trade Negotiations

MA: Market Access

EE: Exports of Expertise

FTA: Free Trade Agreements

LDN: Least developed nation(s)

DN: Developing nation(s)

UNFAO United Nations Food and Agriculture organisation

COAG Committee on Agriculture

WFO World Farmers Organisation

WTO World Trade Organisation

WFP World Food Programme

NGO Non-Government organisation

NZD New Zealand Dollar

USD United States Dollar

SPS Sanitary and Phyto-sanitary

MFAT Ministry of foreign affairs and trade

MPI Ministry of Primary industries

DSL Dairy Solutionz Ltd

1.0 CAPTURING VALUE DEFINED

1.1 VALUE – WHAT IS IT?

'Value' in the context of this report is tangible value, financial return which is quantified. It is money that is going to enable the building of new ways for lifting productivity and profitability in the agriculture sector, primary industry and national economy in order for people to thrive.

More than money, 'value' can be captured through information, tools, technology, which seed ideas, and innovation – this is difficult to quantify. It is sometimes defined as 'services'. There is more to it than just providing a consultancy or advice and guidance. For example multinational, multidisciplinary collaboration is something scientists, academics and agribusinesses would say is highly valuable – but when pressed for what value it is, or even how value can be quantified, no-one could provide an answer. This describes intangible value.

Measuring what is perceived as intangible value needs urgent attention. As Ireland has done with their Primary Industry Origin Green initiative (Ref 2.1), New Zealand has to find ways to measure and quantify intangible value from engagement and international collaboration.

Value that is measured and quantified can be managed most effectively. With the power of measurable data on both tangible and intangible value a business, sector, industry or country can adjust and front foot new opportunities. With the right quantifiable information the ability to position the nation to capture value in dollar terms, is much more achievable.

1.2 EXPORTS OF EXPERTISE – WHAT DOES THIS MEAN?

The term 'exports of expertise' encompasses a wide range of information, tools technology and services. Some define it as the Agritech sector incorporating eleven categories:

- Breeding & animal genetics
- Seeds and plant genetics
- Animal feed and nutrition
- Animal health products
- Fertiliser
- Agri-chemicals
- Fencing supplies and equipment
- Farm tools & other hardware
- Pumping, water & irrigation
- Machinery & systems, & parts
- Farm vehicles, cultivators

The New Zealand Primary sectors have been sharing, selling, and exporting information tools and technology, for decades.

(Coriolis, 2014)

This report considers the list defined by Coriolis and includes the 'exports of expertise'. This is 'know-how' the information sharing that occurs between academics, scientists, consultants and farmers – the people to people cross pollination of expertise that is being exported from New Zealand. This is the intangible hard to define value which is not currently sold as a product per se. 'Exports of expertise', in this report, incorporates Agritech and know-how.

The references to Agriculture, encompasses both the dairy and sheep and beef sectors.

Capturing value from the exports of our Agricultural expertise (New Zealand know-how, information, tools and technology) occurs two ways: 1. Sell product 2. Share ideas, information, tools and technology.

1.3 NEW ZEALAND'S EXPORTS OF INFORMATION, TOOLS AND TECHNOLOGY

Beyond the export of food and beverages, in all spheres of New Zealand Agriculture has been sharing, selling, and exporting information tools and technology, for many decades (Table 1). At all levels of the primary sector, people have been engaged in either tangible or intangible exports of expertise. New Zealanders also import expertise through labour, visiting experts – including farmers, and through imported information, tools and technology.

Business, Organisation or Institute	Export of Expertise: Who / How
Government and Expo's: Mystery Creek Field days	International delegations, be they political, business or farmer delegations
Education & Science Institutions: Massey, Lincoln, Waikato Universities AgResearch, Abacusbio	Student exchanges, study grants Science conferences, International projects: pastoral greenhouse gas research consortium; developing extension networks in Uruguay. New Zealand's research and science is freely available on the internet to anyone, anywhere.
Farmers, consultants and industry good organisations	Farmer exchanges, Farm Agri-tours, Foreign delegations, foreign labour or short term work visas.
Business to business partnerships: PGG Wrightsons; Agriseeds LIC, PGG Wrightsons and many New Zealand farmers	Developing seed genetics adapted to different climates: Uruguay or Colombia Export of genetics – live animals, semen, embryos.
Product sales Gallagher Trutest, LIC Milking systems	Fencing equipment, monitoring/weighing equipment
Fonterra – Soprole	Demonstration farms, processing facilities, distribution and logistics
Privately funded Foreign Direct Investment Leite Verde, Leitissimo, NZFSU, Kiwiprecuaria, Dairysolutionz, Agribusiness NZ	New Zealand farming system principals adapted offshore.

Table 1: Examples of New Zealand Exports of Expertise

1.4 SO WHAT'S THE PROBLEM?

Problem definition:

'New Zealand agricultural expertise is being exported without a framework to capture full value potential.'

2.0 A GLOBAL PICTURE

2.1 STORY: BUILDING A COLOMBIAN SHEEP INDUSTRY

In Colombia, I met a very articulate farmer who wanted to start a sheep industry there. Currently in Colombia, their national sheep flock is about 100,000; they are all housed. He's buying in rams for up to \$40,000USD from all over the world, including South Africa and Mexico. And this one business is planning to put 25,000 sheep on 700 acres.

Observation: Compared to NZ, they haven't got much of a sheep industry, they haven't got much infrastructure for a sheep industry; But! He has got fantastic vision, passion and is prepared to put skin in the game and invest in it. Many in New Zealand would question if this was possible in a tropical environment. He sounds like a smart guy who is an entrepreneurial businessman.

Questions: So how are they going to get their lambs from a USD \$40K ram to somebody's mouth? Where's the system it's going to operate in?

Response: "Don't worry about that" – he pulled out the plans – "this is the meat processing plant we're going to build and this is how we're going to build it; We've got the government building the roads, and they've put money in to this meat company, so we've got all that; And we've got markets right on our doorstep both domestically also in the Caribbean and Central America; the market for sheep meat is strong."

Question: "So how are you going to get farmers to be able to do what they need to do, where's the science, where's the education system, where's the farm service support? From what you say, it doesn't look like it exists to an extent that serves the needs of a sheep sector."

Response: "Oh, don't worry about that, we've got the vision and we are going to build it."

Observation: They've just got so much belief and vision and passion, and they've got so many challenges but they really believe that they will overcome it. And they're bringing in expertise from all over the world to make it happen.

His question was: "Can and will New Zealand help?

You are the best sheep farmers in the world; we want to learn from you!"

Observation: This demonstrates how technology has created a global village, and the opportunities for New Zealand internationally to export agricultural expertise. The challenge is to create the way for New Zealand to capture value.

2.2 THE GLOBAL OPERATING CONTEXT

A new operating environment provided by the interwoven interdependencies of a global village which is data noisy and disruptive on many fronts

A GLOBAL VILLAGE TRANSCENDING BORDERS

The global environment has changed so much since World War Two. We are now inextricably interlinked globally on multifaceted levels, through trade, finance, politics, science, academia, sport, military security, finance, medicine, education, data, social media, global food systems, travel and the media.

What was a big wide world, is now a global village; A community where everyone is 'in it together'. This is the new operating environment provided by the interwoven interdependencies of a global village that transcends borders, is data noisy and disruptive.

INTERNATIONAL POWER SHIFTS APPLYING PRESSURE TO GLOBAL SYSTEM

The power shifts that are occurring from the west back to the east are applying pressure to the global operating system. "The centre of gravity for economic power is coming close to us [NZ] ...for once we are aligned with the region that wants to buy what we have to sell." (Jacobi, 2014)

China with its territory claims in the South China Sea being a risk area that its neighbour's and other nations are concerned with. (Economist, 2014) Given that 1/3rd of world oil trade passes through that trade route "41,000 ships – over 50% of shipping tonnage sail through the sea each year" (Snyder, 2001) and 'each year [USD] \$5.3 trillion of trade passes through the South China Sea' (Glaser, 2012).

"China is now a big geopolitical player and their role as a major importer and exporter determines a lot of global outcomes. The increasing assertiveness of Brazil and India also means that for global outcomes the USA and Europe are no longer the ones that can largely determine outcomes."
(Harvey, 2014)

"Global megatrends shaping the global economy today: Demographic change; Urbanisation; Technological change... Three enormous drivers... completely turning everything we do on its head." (Ballingall, 2014)

TECHNOLOGY CREATES POSSIBILITIES

Technology such as mobile technology, web/internet based tools and services, and social media have revolutionised the way people, business, industries and nations engage at all levels of society – from the poor to the mega rich. "I think that is the biggest thing that has changed and will create the greatest change – the access to information and the new development of knowledge of farmers in remote areas." (Schuler, 2014)

Least developed nations (LDN) and developing nations (DN) are generation jumping iterations of decades of technology development – systems, tools, and infrastructure. LDN's and DN's are establishing the infrastructure for their telecommunications

and wireless technology from a base that is brand new. Examples of this would be the remote management of regional surface and subsurface water in Mexico using wireless telecommunications infrastructure; or the mobile phone banking system called M-Pesa, in parts of Africa such as Kenya and Tanzania.

New Zealand is trying to re-create similar technology, working with the legacy of old systems and infrastructure – particularly around internet and mobile technology. An analogy for New Zealand is that it's like we're trying to retrofit Ferrari technology into a Morris 1300.

These LDN's and DN's may never have had a Cessna or a Morris, they are going straight to the latest technology and implementing it (with no legacy infrastructure), but from a blank page.

It is acknowledged that the New Zealand government is attempting to address telecommunications issues in New Zealand. It is the author's view that the solutions implemented must reach all New Zealand homes, must be affordable and most importantly have capacity for significant growth of data usage. Technology – mobile technology has created a whole new platform for value capture (App 1). New Zealand has to utilise this technology to be able to better capture tangible and intangible value to increase value and achieve its goal of doubling exports.

BIG DATA -

Big data is changing the nature of consumer engagement – there are companies around the world utilising big data (analysing a large data set) to enable strategic and tactical positioning of a business to respond to consumer behaviour. An old agricultural example of this is utilising crop data from GPS systems and various other cropping technology tools from inside the tractor cab for seed companies, the commodity market and government to make decisions.

"Leaders in every sector will have to grapple with the implications of big data, not just a few data-oriented managers..."

(Manyika J., 2011)

"Leaders in every sector will have to grapple with the implications of big data, not just a few data-oriented managers. The increasing volume and detail of information captured by enterprises, the rise of multimedia, social media, and the Internet of Things will fuel exponential growth in data for the foreseeable future... For example, a retailer using big data to the full could increase its operating margin by more than 60 percent." (Manyika J., 2011)
Creating value from information previously intangible and capturing tangible value in real dollar terms.

Multinational, multidisciplinary collaboration is becoming paramount in many different sectors; it is the way the world operates.

MULTINATIONAL MULTIDISCIPLINARY COLLABORATION

Multinational, multidisciplinary collaboration is becoming paramount in many different sectors; it is the way the world operates. There are examples where medicine, engineering, agriculture and military sectors from different countries are working together in reconstructing war zones. Across the globe, geneticists, climatologists, soil scientists and social researchers from different countries work together on projects. It is now a common way to solve problems, and create new more robust solutions, strengthening the global village with transcending borders.

Fabio Montossi, INIA (National Institute of Agricultural Research) in Uruguay discussed a range of examples he and his institute are engaged in. A number of countries are participating with their various scientists, business people and academics and working together to adapt technologies to create solutions to some of the problems Uruguay has. 'We now have a special agreement with Massey University - a number of their academic staff have visited Uruguay and specifically to INIA. Subjects included meat quality, ultrasound regarding ewe reproduction, and heifer mating. We're working with others in plant breeding – and have a special agreement with PGG Wrightsons looking at how to improve fescues, ryegrass, and clover which is research that will benefit Argentina and Brazil as well as Uruguay. We are trying to introduce New Zealand developed endophytes into Uruguayan grasses. Rissington Breedline invited Fabio to have a look at what they were doing; now they have two satellite breeding flocks in Uruguay with Primera and Highlander sheep.' (Montossi, 2014)

The opportunity for capturing value by better utilising and managing the networks of foreigners who have graduated from New Zealand Universities or completed a work permit on farms in New Zealand is

huge. "These people are New Zealand's greatest advocates they understand our culture, farming systems and are a great network of people that New Zealand should continue to work with." (Morris, 2013)

GEOPOLITICAL SYSTEMS NEED TO BE NIMBLE AND FLEXIBLE

The geopolitical environment is changing, and with advances in technology, mobile data, access to information, decision making has to occur at a much faster rate. A lot of global organisations that provide structures for governments to work together, such as the United Nations and World Trade Organisation are struggling to be nimble and flexible enough to respond to the fast rates of change that are occurring internationally. "These trends make the powerful uneasy and apply useful pressure on the United Nations system. They are testing the limits of international institutions and conventions, which are now struggling to find a legal and moral compass to handle these new forces. The issue for our times is that while the global landscape has changed dramatically, the institutions serving the world have not. Leaders face the challenge of managing conflicts and challenges based on the concept of nation-state with global institutions that are not equipped to cope and often immobilised by outmoded procedures." (Moore, 2009)

'The issue for our times is that while the global landscape has changed dramatically, the institutions serving the world have not.'
(Moore, 2009)

Security is on the minds of all global leaders – security of food, land, water, energy, amongst others. This is a key factor in global trade liberalisation and the subsequent rise free trade agreements. Flexibility and nimbleness is what is required to adapt and front foot the opportunities of this global operating context.

Geopolitically, trade deals are more than economics they are also about security and building multinational interdependence to increase global stability.

TRADE AGREEMENTS – MORE THAN TRADE

From a global perspective, trade agreements are about enhancing trade of good for economic growth. Geopolitically, trade deals are more than economics they are also about security and building multinational interdependence to increase global stability. This is driven by the need for military and political security, also food security. When a nation has no food, chaos ensues. Thus agriculture and food production in general, is a very sensitive topic in trade agreements with nations across the globe.

"The international frameworks for trade in agriculture products have also changed. The Uruguay round has made the world safer for Agriculture Trade." (Jacobi, 2014) The rise of Free Trade Agreements (FTA's) is changing the dynamics of trade, and many FTA's now have implemented systems for conflict resolution rather than having to primarily work through the World Trade Organisation (WTO). FTA's are working to provide easier access to markets, with reduction in tariff barriers in the agreements. To capture value the sectors in the primary industry have to work hard at implementation of the trade agreement and the business to business negotiations thereafter.

SEATS AT THE TABLE TO INFLUENCE

Another factor applying pressure is that developing nations that didn't have a voice at the table now do. Adding to this are powerful and outspoken NGO's with clear agendas to pressure food systems (Ref page 8-9) Multinational food companies are ensuring they have a seat at the table too. What is missing from this picture is the voice of the farmer.



Figure 2: We must have a seat at the table to influence the agendas

For a small country like New Zealand, its population, economy and limited resource, we have to pick and choose our fights making a stand on the issues that would have the biggest impact at home and in the international markets we do and potentially could supply to.

On the geopolitical front, New Zealand has been smart, working together with other nations who have similar interest areas. Our voice as a nation is heard, through the collective rather than a stand-alone small island nation. New Zealand has strong agricultural viewpoints on trade liberalisation, subsidies, standards, and the production of food and beverages amongst others. "You have a comparative advantage in agriculture. But this might be undermined by agricultural subsidies, especially in Europe. In this aspect we (Egypt and developing countries) have something in common with New Zealand, because we also demand the abolition of domestic support and harmful agricultural subsidies." (El-Taweel, 2014)

The seat on the United Nations Security Council enables New Zealand to influence, add value to creating solutions, and to

learn in detail about facets of geopolitical struggles we may only be vaguely aware of. Though on its own it's not enough, it is certainly critical intelligence for positioning New Zealand to thrive in the fast changing, dynamic global village we are operating in. It's incredibly difficult to get a seat in a global forum, and harder still to maintain.

The importance of having a seat at the table provides opportunity to build relationships, watch and learn the agendas, alliances and interest areas of other nations. It's like undertaking quiet analysis of all the teams in the Rugby World Cup. With this understanding, New Zealand can ensure that it positions itself with the right people, at the right time, with the right skills, knowledge and experience to get across the advantage line and win.

A seat at the tables of influence is another important component of capturing value to New Zealand. A significant proportion of our population and primary industry community do not comprehend this as creating tangible value. Yet without it, we are worse off. Key information must be utilised at a New Zealand Government level, an international business level, and behind the farm gate, to capture the value potential of having that seat.

Plain language sound-bites on issues, positions and New Zealand strategies have to be communicated better to the people on the ground in New Zealand. This is often a very difficult thing to do given the highly sensitive and confidential nature of some of these meetings. The geo-political positioning of nations, industries and the livelihoods of farmers, their families and communities across the world are at stake.

RISING MIDDLE CLASS

Growth of the middle class population in the Asia Pacific region, largely China and India, is anticipated to rise from 28% to 66% of total middle class population globally by 2030 (Fig 3).

With more disposable income, free access to information, access to different food and new possibilities, the rising middle class are changing their purchasing decisions and creating a different lifestyle for themselves. They are applying more pressure to governments for change, and grappling with the dichotomy of knowledge but within a country or system that isn't able to entirely meet their expectations or demands. This can produce disruptive volatility for those countries.

This creates a number of opportunities for countries like New Zealand who export food and have expertise in pastoral food production systems. It is obvious that countries across the globe are looking to position themselves to capture the opportunities provided by the rising middle class in China particularly. Through the liberalisation of global trade, and trade agreements, nations such as Brazil, are increasing their food exports into the global marketplace to meet the needs of the rising middle class.

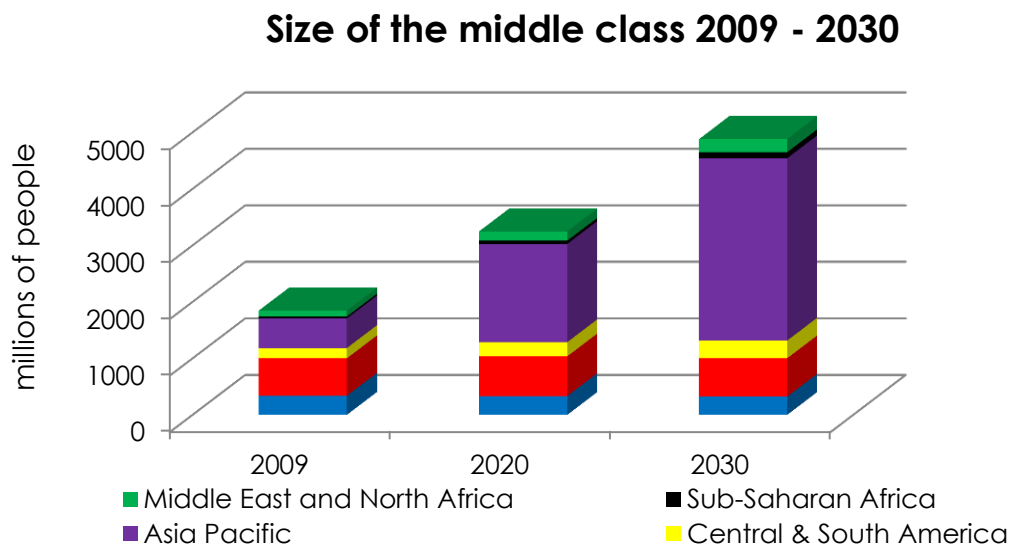


Figure 3: Size of the middle class population 2009-2030.

(Kharas, 2011)

THE RISE OF GLOBAL VALUE CHAINS

"We're seeing the way business is done is changing significantly. We are seeing this in the manufactured space where intermediate goods and the disaggregation of production across multiple jurisdictions is just a fact of life. So people aren't making one thing and selling it, they are making bits of things to sell on before the final product gets made. Around these things global value chains are being created and the same is true for agriculture – because now you're seeing food ingredients move around the world, you're seeing powerful alignments between producers, intermediaries, distributors and New Zealand is playing a role in those value chains. I think one of the key determinants of our future, as an agriculture nation, is going to be the extent that we can participate effectively. We must look at these value chains as trying to capture value for ourselves as much as we possibly can. So the way we participate and develop very complex agribusiness models, from farm to fork, are important." (Jacobi, 2014)

Examples of global value chains are everywhere. Businesses such as Nestle, Danone, Cargill, Monsanto, JBS, and even the supermarkets are all vying for market position. And they are all working to vertically align and control variables in the value chain, from the producer to the end consumer.

"A big change in recent times (17 years) is that now Supermarkets own the supply chain. There are eight gatekeepers (people who work as buyers for a supermarket chain) in the UK who control what people eat." (Raine, 2014)

Social engineering agendas in today's world, occurs at speed through social media to cause consumers to pressure food systems.

SOCIAL ENGINEERING AT GLOBAL SCALE

Social engineering agendas in today's world, targeting consumers, occurs at speed and deliberately through the likes of social media by wealthy NGO's (Non-Government Organisations) and lobby organisations like Oxfam and Greenpeace. They pressure food systems to perform in a more 'environmentally sustainable' manner. New Zealand farmers and the industry need to engage to ensure we maintain the social license to operate. The agriculture sector will soon value this as an issue to pay a lot of attention to. For the Primary

Industry to have a future that captures value for New Zealand farmers to thrive, we must engage. The World Farmer Organisation is a side-line observer to these conversations and policy proposals that impact farms globally.

The competition amongst commercial food sellers to position their product in the market place as branded, value added and with a point of difference is great. Combined with messages from lobby groups and NGO's, and unclear food labelling regulations, consumers are desperately confused. Being time poor but wealthy, they have forgotten how to apply critical thinking to their food purchases.

GLOBAL FOOD PROJECTIONS

'Globally, there are more than 570 million farms. It is estimated 70 – 80 percent of these family farms produce more than 80 percent of the world's food in value terms. Worldwide, farms of less than 1 hectare account for 72 percent of all farms but control only 8 percent of all agricultural land. ...In contrast, only 1 percent of all farms in the world are larger than 50 hectares, controlling 65 percent of the world's agricultural land. (Food and Agriculture Organisation of the United Nations, 2014)

'United Nations projections suggest the global population by 2050 will be 9.1 billion people most of in developing nations. It is anticipated that urbanisation continue to increase where by 2050, 70% of the world's population will be urban – up from 49% in 2009. Income levels will be significantly higher than now. Given these factors, it is projected that annual global cereal production needs to lift from 2.1 billion to 3 billion tonnes; and meat from 200 million tonnes to 470 million tonnes per year.' Page 2 (UN FAO, 2009)

"...cereal production needs to lift by 50% and meat production by 85%" UN FAO WFP

Food wastage globally is one third of all food produced for human consumption (FAO, 2011). In developed nations this occurs between the supermarket and household rubbish bin. In developing nations wastage occurs between the farm gate and the consumer. This is a logistics and chilled distribution issue. "...the top priority for many governments around the world is the security of their food supply. The importance of food to the effective functioning of society gives farmer and grower groups significant political influence in many countries." (Proudfoot, 2014)

The focus is shifting from 'volume of food' to 'volume of nutritious food'. It is a discreet yet fundamental shift for how farmers produce food and care for soil. The concern for food security incorporates focus on the pressure to land, soil, water and the wider environment.

"The rate of production growth is constrained by different factors, including increasing costs of production, limited expansion of agricultural land, environmental concerns and changes in the policy environment. These factors are particularly relevant in most developed countries and some highly populated developing countries... projected production growth... will be led by Latin America, Sub-Saharan Africa, Eastern Europe and parts of Asia... Developing regions will account for more than 75% of agricultural output over the next decade." (OECD/Food and Agriculture Organisation of the United Nations, 2014)

"...projected production growth... will be led by Latin America, Sub-Saharan Africa, Eastern Europe and parts of Asia... Developing regions will account for more than 75% of agricultural output over the next decade."

INVESTMENT IN AGRICULTURE

Motivated by food security prioritisation, concern regarding environmental impacts of food production, poverty, climate change and the need for innovation, science and technology there is significant investment in Agriculture globally.

In Brazil alone, it was claimed that EMBRAPA (like AgResearch) has an annual budget of USD \$9billion to invest in agriculture production. They focus on improving the outputs and returns for subsistence farmers.

...to feed a global population of 9billion people, the 'total average annual net investment in developing countries... would amount to USD \$83 billion per year (at constant 2009 prices). (UN FAO, 2009)

'In keeping with the UN FAO forecasts of production requirements to feed a global population of 9billion people, the 'total average annual net investment in developing countries... would amount to USD \$83 billion per year (at constant 2009 prices). ...The focus of the investment would be to cover the cost of capital items in primary agriculture and downstream support services.' pg 16 (UN FAO, 2009)

Investment can arise from both the private and public sectors. There are other investment modes that are harnessing attention globally, Official Development Assistance (ODA) and (FDI) Foreign Direct Investment.

'Investors large and small, mostly from countries such as USA, Europe, some North African and middle eastern countries, China and South Africa ...are actively investing in all parts of the global value chain from farm inputs, seeds, on farm production, basic processing, trading and logistics, processing and retailing. The main products targeted by trans-nationals included...dairy products...meat... Direct investment in land through ownership or long term leases are of particular interest to foreign investors – some, but not all, of which is motivated for food production in support of their own food security strategies. The issues around this development are complex and controversial economically, politically, institutionally, legally and ethically.' Page 19 (UN FAO, 2009)

Between Latin America, Sub Saharan Africa, South and East Asia combined, there is currently 880 million hectares (Ha) in arable production. Between them there is another 1800 million Ha available to convert to arable production (Table 2).

The focus of nations around the world on the perceived opportunities of the Chinese middleclass, regardless of sector or nation, was on how they could grow volume of production to export to China.

The people on the ground provided commentary on China's investment strategy at play... identifying the key strengths or opportunities of each nation and investing in those sectors. In Australia it was mining and the grains sectors. In developing nations it was key infrastructure of ports, rail and roads. China's interest in dairy, targets one of New Zealand's strength areas. They also been investigating and making attempts to buy into the dairy sectors of Israel and Ireland too. In Brazil there was talk of Chinese investment in Beef.

ROLE OF DEVELOPING AGRICULTURE SECTORS IN OTHER NATIONS

There are many nations around the world that have significant capacity with their land and environment resource to easily double their outputs (Table 2) What sets Latin America apart is that renewable water resources are abundant in Latin America and the Caribbean with nearly 14000 cubic kilometres available. South Asia faces challenges around water scarcity which it is anticipated will become worse in some regions due to climate change. Converting the available land into production is limited by environmental considerations and infrastructure.' Page 9-10, (UN FAO, 2009)

Country	Current arable production area (year 2005)	Potential arable production area (Ha)
Latin America	200 million Ha	850 million
Sub Saharan Africa	250 million Ha	780 million
South and East Asia	430 million Ha	170 million

Table 2: The potential of undeveloped agriculture land

Developed nations whose Agriculture sectors are shrinking due to land availability, production capacity, and regulatory pressures are less likely to fill the international food gap.

Increased food production in developing nations is dependent on access to knowledge, finance, farm inputs, transport infrastructure, trustworthy chilled distribution and logistics systems, markets and non-corrupt political stability. If these factors could be realised in developing agriculture around the world, it is conceivable to lift food production significantly.

Access to education, information, tools and technology enables better management decisions, and the timing of such decisions have been articulated by farmers in developing nations as a way to

...the challenge of feeding 9 billion people can be achieved – and the answer will largely come from nations with developing agriculture sectors

double farm production. The current low base of farm outputs in some places makes it entirely possible on the face of it, to more than double food production in developing and least developed nations.

Feeding 9 billion people can be achieved and the answer will come from nations with developing agriculture sectors.

POINTS OF DISCUSSION AND DEBATE FOR NEW ZEALAND IN THIS GLOBAL CONTEXT

Starting with a call for help to build a sheep industry in Colombia, section 2.0 covered the interconnectedness of the global village in which New Zealand operates. It highlighted:

- The power shifts from west to east.
- New technology platforms are providing opportunities to create and capture value from information and big data.
- The need for flexible and nimble frameworks, infrastructure and systems for decision makers.
- Having a seat at the table can build relationships, gather intelligence, and influence agendas.
- Trade is more than just trade, it's also about security.
- The largest rising middle class population is on New Zealand's doorstep in China and India.
- The rise of global value chains, social engineering and the social license to operate needs attention.
- Global food projections indicate the need for enormous production growth of food globally.
- Significant investment USD \$83billion/year in developing agriculture sectors around the world is required.
- The natural resources and scope for agricultural growth in developing nations is significant.
- Developing nations are most likely to meet the food production gap of the world.

Given the global context described, how can New Zealand strategically position the primary industry, agriculture sector and farmers to capture value in this global village to 2050 and beyond? Questions for discussion and debate:

- *What opportunities can be created to capture value in agriculture through technology platforms?*
- *How does the New Zealand Government and primary industry ensure that its own infrastructure and frameworks are nimble and flexible to adapt in a fast changing world?*
- *It is better to engage in the exports of expertise and broaden the base for New Zealand to capture value, or leave it to other countries?*
- *How can the New Zealand primary industry extend New Zealand's agricultural footprint by transcending borders and enabling the growth of food production in developing nations in a way that captures value for both New Zealand and a nation like Colombia?*

3.0 THE NEW ZEALAND PICTURE

3.1 STORY: ORIGIN GREEN – A WHOLE INDUSTRY WITH A VISION

Origin Green commitment: In Ireland, I met some amazing people who worked to pull together value chains from farmer's, processors through the whole industry, the government and all the way to the customer and consumer. Why? To commit to an evidence-based, internationally accredited sustainability programme so Ireland will be a leading source of sustainably produced food and drink. (Origin Green, 2014)

Observation: It's fantastic to have the food and beverage industry (across sectors) on the same page, with the same vision, agreeing and working together for the same cause... inspirational.

Measuring the intangible: Accentures Melissa Barrett discusses 'the quest of measuring the intangibles and how to build them into the business case, and how collaborative work across the value chain such as in the case of Origin Green, can drive competitive advantage. There are "big buckets of value that can be delivered to all the companies in the chain. Melissa puts out the challenge that making incremental changes can be transformational.' (Barrett, 2014)

Observation: An industry of primary sectors can communicate collaborate and coordinate an approach to capture value – if Ireland can do it, so can New Zealand.

Origin Green Ambassadors: "10 highly talented executives"... are given the opportunity to do their Masters whilst being "assigned to a particular market to promote Origin Green and communicate the benefits of sourcing from Ireland to local trade customers and key global accounts. They will also gather insight into trade strategies and feed this back to the industry... in Ireland." (Origin Green, 2014)

Observation: Ireland has a primary industry working together to identify, train and equip people to get feet on the ground and solicit information to feed back to the industry at home from the global market place. This is an example of capturing value. Information is hard to measure value, but can be converted to capturing market opportunities which creates \$\$ value capture and this is measurable. This is a very smart strategy and something the New Zealand primary industry could do well to learn from – well done Ireland.

3.2 NEW ZEALAND'S OPERATING CONTEXT



Figure 4: Who is New Zealand in global agriculture, food and trade?

NEW ZEALAND ECONOMY UNDERPINNED BY PRIMARY PRODUCTION

New Zealand is a nation whose economy is fundamentally underpinned by the primary industry. A large percentage of the New Zealand economy is driven by food and beverage exports from pastoral agriculture. New Zealand has had an international comparative and competitive advantage from our low cost pastoral based food systems specialising in nutritious protein production. Many nations admire and respect New Zealand agriculture, and in many cases we are perceived as a leading light in the world of pastoral agriculture systems.

ATTRIBUTING NEW ZEALAND'S SUCCESS TO DATE

We need to celebrate all the people and organisations that have created and positioned New Zealand Agriculture in a place of high regard around the world.

Success in the primary industry can be attributed to the support from our education and science institutions, farm service providers such as banks, veterinarians, consultants, seed companies, fertiliser representatives and spreaders, accountants, lawyers, farm supplies retailers, shearing gangs, trucking firms, engineers, and processing companies amongst others.

Government investment in infrastructure such as, roads, ports, telecommunications and electricity, have also been critical for enabling success.

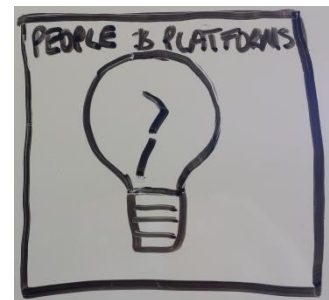


Figure 5: Built on evolving platforms, New Zealand is internationally perceived as a leading light in pastoral agriculture.

The whole industry working together is what has created the people capability, platforms and the reputation of New Zealand being a leading light in pastoral agriculture internationally.

Levy funded industry good organisations like Beef + Lamb New Zealand, DairyNZ, HortNZ, and Foundation of Arable Research (FAR) amongst others, have played a substantial role in supporting farmers in many different ways. Federated Farmers, is also contributing significantly by lobbying on behalf of farmers.

Last and by no means least, the success of the New Zealand primary industry is based on the vision, passion, innovation, commitment, and drive of New Zealand farmers. They work as stewards of the land and resources, utilising new information, tools and technology to produce food that is supplied to nations around the world.

NEW ZEALAND ATTITUDES AND BEHAVIOURS

Attitudes and behaviours of New Zealand people are influenced by a number of immigrant cultures – Polynesian, English, Chinese, and Indian to name a few. Our history of bringing peoples and cultures together has created an ability to 'see other perspectives'. We tend to be more laid back, easy going and don't like to offend, thus we have become good peacemakers.

As a post-colonial nation we have developed a pioneering spirit. The 'do-it-yourself' independence, and the 'number-8-wire fix it' mentality were forged in our culture due to the relative isolated island nation status. Due to geographical and population size, New Zealanders tend to be a 'Jack-of-all-trades'. Throw any challenge at Kiwis and they'll create a solution.

In the farming community New Zealanders have a willingness to share ideas and information. The drive to be innovative and good at integrated systems thinking has been critical to survive tough times.

New Zealanders are structured in their planning and implementation of projects and systems. They create efficiencies and focus attention to detail in our productive, processing and transport systems to overcome the added cost of getting product to the international market place.

NEW ZEALAND FACTS AND FIGURES

New Zealand has a population of 4.5million, (Statistics New Zealand, 2014) and a productive land base of 14.4million Ha (Beef + Lamb New Zealand Economic Service, 2014). Given we export 80-90% of agriculture product we produce, New Zealand is somewhat unique in global food trade statistics. In world production terms, by volume we are very small producers, however for largest agricultural exporter (by value) New Zealand ranks number twelve. We rank first in the world for sheep meat and dairy product exports, and hold the second world ranking in wool and softwood log exports. (Ministry for Primary Industries, 2015)

New Zealand exports 80-90% of the agriculture product we produce. We rank first in the world for sheep meat and dairy product exports. The New Zealand primary industry has a total debt of \$52.7 billion dollars of which the New Zealand dairy industry accounted for 65% (Reserve Bank of New Zealand, 2014) Of New Zealand's total exports, the agriculture sector contributes over 50% valued at about NZD \$30 billion. The agritech sector (as defined earlier by Coriolis) earned New Zealand approximately NZD\$1.2 billion (US\$980m) in 2013. (Coriolis, 2014)

New Zealand primary industry debt of \$52.7billion (2014), Ag sector exports earns \$30billion (2013); and Agritech sector exports earn \$1.2billion dollars (2013)

Export goal to double primary industry exports in real terms from \$32billion to \$64billion by 2025.

The export goal developed by MPI (Ministry of primary industries) is to "double primary industry exports in real terms from \$32 billion in June 2012 to \$64 billion by 2025. To achieve this, New Zealand's primary industries must grow at a rate of 5.5% a year through to 2025" (Ministry for Primary Industries, 2015)

Product	World Production (%)	World trade (%)
Dairy	3	33
Beef	1	8
Sheep Meat	6	75
Wool	14	27
Venison	<1	50
Kiwifruit	21	32
Pipfruit	1	5
Wine	0.5	2
Fish	0.3	1
Roundwood (coniferous)	2.3	14

Table 3: New Zealand production and trade statistics in the global context (Ministry for Primary Industries, 2015)



Figure 6: Low hanging fruit comparing developing nations with developed nations.

THE RISE AND RISE OF DEVELOPING NATIONS

Compared to many lesser developed agriculture sectors in other nations, countries such as New Zealand do not have a significant amount of low hanging fruit (Fig 6). It is difficult to achieve easy and significant gains in productivity or profitability in the food production and value chains of developed nations. Advances in New Zealand agriculture can be achieved, though it requires more effort, more complex problem solving, investment in science, research and development, smarter tools, infrastructure, and technology (Fig 7).

"I think that's our biggest threat and risk is that we don't recognise and appreciate that there is lots and lots of intelligent capable people that want to farm all around the world. And there's lots of good land all around the world to farm on. On the back of that is a great opportunity to generate wealth enabling these intelligent, capable people all around the world to develop" (Schuler, 2014)

New Zealand, like other well developed agriculture systems particularly in western nations around the world, requires significantly more input or investment to lift returns further (green) compared to a developing nation further down the curve (blue) which for a smaller level of investment can generate a much higher return (Fig 7). A Uruguayan lady doubled her cattle output in kilograms of carcass weight by simply changing the timing of activities in the farm calendar.



Figure 7: The law of diminishing returns: With little input, the returns are greater for developing agriculture sectors, whereas in New Zealand and developed agriculture sectors, we require greater inputs with diminishing levels of return.

"In many ways, New Zealand is naïve – others can grow more grass than us - 49.6TDM/Ha with ME 10.8 year round in Brazil vs 16-18TDM/Ha/Yr here in NZ and variable ME; furthermore we [NZ] give away our low cost production advantage by our debt burden."

PRODUCTION CAPACITY IN NEW ZEALAND

Over many years with consistent recording methods "49.67Tonnes of Dry Matter per hectare/year (TDM/Ha/Year) with an average of 10.8Megajoules of metabolisable energy (ME) throughout the year is grown on farm in Brazil; They have a 30meter free draining soil profile, and a massive aquifer underneath them. The very best dairy farms in New Zealand grow 16-18TDM/Ha/Year with variable ME." (Schuler, 2014) Most of our hill country sheep and beef farms produce 8 to 9TDM/Ha – and harvesting only 4 or 5TDM/Ha/Year.

For New Zealand to extract more value in terms of monetary return (Fig 7), farmers are entering into more complex forage cropping systems. To increase the productive capacity of the farm and raise revenue, the level of capital input may not deliver the financial returns to make the project economically worthwhile.

New Zealand is reaching some capacity issues as far as land availability. Most productive land being utilised in New Zealand, is constrained by resource production capacity (soil, water and nutrients), and financial capacity (the debt equity ratio, and return on investment). "We throw away our competitive advantage because of debt." (Schuler, 2014) Relative to New Zealand, developing agriculture sectors around the world can make far greater gains in food production from their current base.

Given resource constraints and agriculture debt, New Zealand is losing its title of a low cost pastoral production system.

Is New Zealand finding itself on the balance of change? The agriculture sector has a choice, either to continue on the current business cycle trajectory or to renew thinking and create a new business growth pathway. Yes we have been and are successful at what we do, but to continue on the same

trajectory given the changing operating context may not deliver the outcome we desire for a prosperous future [Point B] (Fig 8).

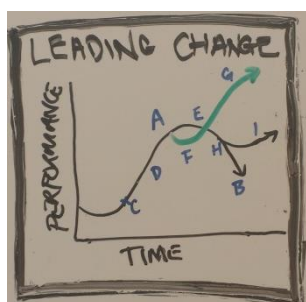


Figure 8: Leading change in the business cycle

'The optimum time to do business differently is at point A (Fig 8) where the green line starts, illustrating that anticipating the need and changing early results in far better performance sooner. Uncertainty is common when a business moves into a new way of operating (between points A, E, F) some say change is necessary, others can't see the need for change as success is still ongoing. The cost in lost opportunity by leaving change till points H and B on the original trajectory are great and recovery takes a long time. At point I, many would be relieved that change finally took place, but regret not doing it earlier. The ideal is for the New Zealand Primary Industry to position itself at point G as soon as possible. (Coach Approach, 2014)

We cannot stay on the same black line trajectory of the sigmoid curve (Fig 8). We need to launch from where we are, utilising our strengths to create new opportunities for value capture.

'Countries build new areas of comparative advantage by building on and extending the knowledge that underpins their existing advantages. New industries don't spring up overnight; instead they develop from existing ones as new knowledge and capabilities accumulate.' pg 95, (Hendy, 2013)

Looking forward, success cannot be assumed without change. Doing what we've always done, is not going to work in the dynamic fast changing global environment we are operating in today and will be operating in as an export nation in the coming decades. We need a different skill set, and modified tools in our toolbox going forward.

IMPROVING THE CONNECTION BETWEEN CONSUMERS AND PRODUCERS

Apart from Fonterra, New Zealand food companies are small by global standards and run efficient lean operations to overcome distance to the markets. In the case of our meat companies, pressure at procurement and in the international market place, forces them to a large extent to operate a simple distribution, volume based supply chain. This loses control of the product at the importer distributor, or supermarket chain buyer. It means we have very little to no connection or relationship with those closest to the end customer and end consumer.

For some years it has been argued that the effort, cost and complexity of getting into niche, high value markets often exceed the risk appetite of New Zealand meat companies and their shareholders.

"In some sectors, we don't know how to relate our products with a high paying consumer in the upper echelons of American society. This is where a lot of our value-add product should be pitched, to tap into consumer need for fresh, organic, pure, niche." (Anonymous, 2014)

For some years it has been argued that the effort, cost and complexity of getting into niche, high value markets often exceed the risk appetite of New Zealand meat companies and their shareholders.

TRADE NEGOTIATIONS FOR MARKET ACCESS AND TARIFF BARRIER REDUCTION

The focus on Trade Negotiations has been a key aspect of successive New Zealand governments. Seeking to secure access to markets, the government implements an agreement with the trading partner who commits to tariff barrier reduction elimination over a set period of time.

Trade agreements have created opportunities for New Zealand to capture value from its 'first mover' advantage over other exporting nations. An example is the Free Trade Agreement with China. "From a New Zealand perspective they are necessary to have access, when you don't have enough markets for your products... What happens when we have partial trade agreements is we get temporary

"...When you get more trade agreements, prices will come back down to the level of whoever is the most efficient producers in the world to produce things" (Bell,

distortions in prices where countries without adequate access suffer lower prices than other players in the international market and vice versa. But when you get more trade agreements even without a comprehensive WTO deal, they effectively provide efficient enough access for all players, and prices will on average reflect the cash costs of whoever can supply the last 5-10% of world demand for the commodity in question." (Bell, 2014)

We cannot assume that signing a free trade agreement (FTA) and securing market access will be enough. The implementation of the agreement is mission critical between nations. Non-tariff barriers such

as SPS (sanitary and phyto-sanitary) and regulations around documentation, then become the key issues for businesses and government to work together to address. New Zealand needs the right people, with the right negotiating skills, attitudes and behaviours to capture tangible value for their business and for New Zealand. New Zealand diplomats and trade staff from MFAT (Ministry of Foreign Affairs and Trade) and MPI (Ministry of Primary Industries) play a key role in sorting government to government issues rising from business to business dilemmas.

Securing a Free Trade Agreement is just part of the process starting with government to government negotiation. "To really capture the value from trade deals it is business to business negotiation that counts for New Zealand exports, and remember the business from the other country will work to extract value from the trade deal too. New Zealand businesses need to upskill in international negotiation." (English, 2014)

"Trade deals now are not just about what happens at the border, but behind the border and that means changes to domestic policy which is due to globalisation the changed nature of the way business is being done - because business through the global value chains means different things." (Jacobi, 2014)

Many in New Zealand are concerned about these trade agreements wondering what it is that New Zealand is giving away to seal the deal. Potential trading partners are concerned that New Zealand will flood their markets with food and beverages – particularly dairy product. Their concern is the viability of their own domestic food producers – such as dairy farmers. This is particularly so, given the awareness of Fonterra in agriculture sectors around the world.

New Zealand has to be smart to overcome the perceived threat that our biggest food and beverage exporting sectors pose to our current and potential trading partners. New Zealand's trade percentages may look fantastic, but compared to production of other nations, it is not a huge volume of product exported – milk or meat.

"To really capture the value from trade deals it is business to business negotiation that counts for New Zealand exports, and remember the business from the other country will work to extract value from the trade deal too." (English, 2014)

FOR DISCUSSION AND DEBATE: NEW ZEALAND PRIMARY
INDUSTRY – THINKING DIFFERENTLY

Starting with the story of Ireland's primary industry thinking differently, section 3 highlights are listed below:

- The New Zealand economy is underpinned by the primary industry and agriculture sector.
- The hard work of people, their attitudes and behaviours are strengths that have created New Zealand's success to date. Can these strengths be the achilles heel of New Zealanders in the new global operating context?
- New Zealand's strength in primary sector exports lead by value internationally.
- Noting the debt burden of the primary industry, agriculture is perplexed by the law of diminishing returns.
- The low hanging fruit of nations, whose developing agriculture sectors provides opportunity to generate significant returns with little on farm inputs.
- The scope of food production growth in nations such as Brazil, are significant and faced with challenge.
- New Zealand agriculture is reaching production capacity and the title of 'low cost pastoral producer' is being lost.
- Get closer to the consumer to capture value.
- The role of trade negotiations for market access and tariff barrier reduction doesn't end at the signing of the free trade agreement rather New Zealand captures value by business to business negotiations.
- The strength of the New Zealand primary industry poses a 'perceived' threat to potential trade partners – particularly with large populations and developing agriculture sectors.

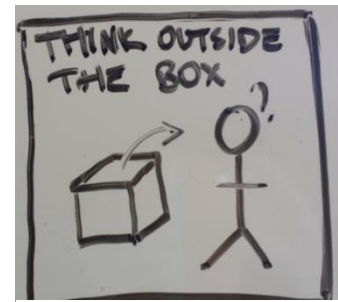


Figure 9: How do we think outside the box we've been operating in?

Given the New Zealand operating context described, by thinking outside the box (Fig 9), the following questions may be worthy of discussion and debate across the primary industry:

- *Like Ireland, how can the New Zealand primary industry find ways to measure intangible value and work together to rethink the way we do business internationally?*
- *Where does your business, each sector and the New Zealand primary sit on the sigmoid curve (Fig 8) – what can we change, when and how?*
- *How can farmers or members of their family and farm team, engage with the end consumer?*

Given the global operating environment and the trends in it, how does New Zealand build on the Agricultural strengths and position New Zealand to be a nation with a thriving Agriculture sector, primary industry, economy and population to 2050 and beyond?

4.0 HOW DO WE CAPTURE VALUE GOING FORWARD TO 2050 AND BEYOND

4.1 STORY: LEITE VERDE: ADAPTED NZ FARMING OFFSHORE

Leite Verde: An outstanding New Zealander and modern day pioneer, Simon Wallace spent 18 months touring the length and breadth of Brazil looking for just the right place – which he found in Bahia State... With his mates Paul & Harry, they set up camp in the scrub with a tarpaulin and began building a dairy farm. Using New Zealand principles, ideas, systems and in collaboration with knowledge from local people, they adapted New Zealand information, tools and technology to the Brazilian context.

There were no roads, no electricity, no machinery, very little tools, (they surveyed the levels for the dairy shed using water in a bottle) no school, no houses, no people - nothing – just scrub, water, sunlight, and three young blokes who thought they could see potential.

After getting some help from a few other kiwis and going to town on a Sunday afternoon to find staff – anyone who got on the truck that day had a job – 6 of whom are still working there... They now have a community with a school; infrastructure, and a number of farms, producing milk into a vertical supply chain, with their own processing plant and brand (Leitissimo) where they sell UHT milk into the domestic market. 97% of their staff [80] across the business are Brazilian, and they have land capacity for more development.

Observation: These guys took a calculated risk, and they had done their homework; to succeed it required hard work, time, resourcefulness, knowledge, technical skills, people skills, robust financial budgeting, patience, innovation, humility, determination, and perseverance and a willingness to develop slowly after proving it could work.

They had to be solutions focussed, adaptive, flexible, understanding, disciplined, positive and generous... and have the right people on the team (both on site, and investors). What's more, Simon and his mate Harry are still living there on farm in Brazil – they have fully immersed and established themselves in Brazil. This kind of undertaking is not for the risk averse or faint hearted!

Some key points: They wouldn't allow themselves the ease of speaking English in staff meetings – everything had to be Portuguese. They focus on growing local capacity. "The key element to stabilising the farming business here is through the establishment of autonomous systems with local people, and then giving it a life of its own to grow successfully...looking back to New Zealand similar opportunities may be limited – it's gotta change a bit... in Brazil we learn from the "golden rules" or principles of dairy farming, but importantly, adapt these to integrate into the new climate, culture, language, and biology." (Wallace, 2014)

They have a pastoral system, but it's not ryegrass or clover, rather C4 plants Tifton and Brachiarius. Land development started from scratch, so they included wildlife corridors between farms; the business generates a return through dividends back to New Zealand; and 'three times Leite Verde undertook capital raising to finance their expansion.' (Wilson S.C., 2013)

4.2 THE LINK FOR EXPORTS OF EXPERTISE, TRADE NEGOTIATIONS AND MARKET ACCESS

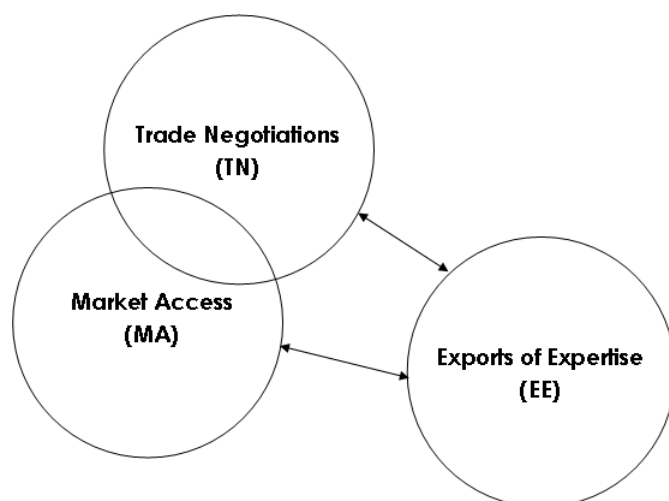


Figure 10: The relationship between the spheres of Trade Negotiations and Market Access is close however Exports of Expertise is engaged at a distance.

New Zealand has demonstrated a strong overlapping relationship between the spheres of trade negotiations and market access. The links to the sphere 'exports of expertise' are considerably weaker (Fig 10).

Formalising a framework of the three spheres working together hasn't occurred in New Zealand.

The recent work (Coriolis, 2014) allocating the trade codes for 'exports of expertise' enables the provision of information. This is important for the industry to measure value capture and will inform planning and how the industry can build a flexible framework to better capture value.

The three spheres of trade negotiations, market access and exports of expertise are

becoming more important with countries that we want to build relationships, business and credibility with. This is especially the case with developing nations who have market potential for both the exports of expertise and exports of food and beverages – the strength areas of New Zealand.

A number of the New Zealanders interviewed, felt that though there are many exports of expertise, the approach has been ad hoc and uncoordinated. Some shared concerns that we were missing opportunities to capture more value. Others wondered what the disadvantages were of letting businesses and institutions just get on with the job. Others still, commented that by lack of communication (Fig 10) between actors and stakeholders involved in the three spheres (TN, MA, EE) – money was left on the table. New Zealand was losing opportunities and unable to capture value potential.

There is an insatiable hunger and demand for agriculture information, tools and technology in all parts of the world.

4.3 EXPORTS OF EXPERTISE: INFORMATION, TOOLS AND TECHNOLOGY

One current international snapshot describes the situation where much of the information, tools and technology in agriculture are now held by countries where agriculture is shrinking. Where agriculture is expanding there are large populations. In many cases the people involved in agriculture in these countries, have a lower median age and low level of knowledge, tools and information to make changes.

There is no doubt that there is an insatiable hunger and demand for agriculture information tools and technology in all parts of the world, but especially in developing nations, or nations where agriculture is developing. Many science institutions, farmers, and agriculture businesses were looking to New Zealand Agriculture for help, for answers, for advice.

"There is a much, much greater pool of animals out there that our technology could be applied to, if it is taken offshore. But it has to get away from an emphasis on keeping the technology within New Zealand to produce our meat ten cents cheaper so we can be competitive on the world stage with the move. And it has to be, let's leverage our technology." (Davies, 2014)

THE FEAR

There are many in New Zealand who would ask, 'Why are we selling our soul for the sake of short term gain for a few New Zealand businesses. We are losing our intellectual property (such as genetics with livestock, semen and embryos; pasture seed genetics; processes for converting grass into milk or meat, or creating food and beverages) to nations who in the long run can outcompete us in the global market place. It makes no sense. We already have enough trouble competing, why would you resource nations who can increase that competition against New Zealand product in the market.'



Figure 11: We hate being left in the dust

There is great concern about the impacts long term. 'Will we be squeezed out and left behind?' (Fig. 12)

Echoing farmers, those in the commercial business world beyond the farm gate raise concerns that it is foolish to be giving away or underselling the very things that provides New Zealand, our Primary industry and various sectors a competitive advantage. They provided anecdotes of Government sponsored tour groups who were traveling through New Zealand science and academic institutions, farms and our processing

plants, to understand at a deeper level what we do, why we do it, and how we do it, so that they can apply their learnings in their home country. It could be anything from a new genetic line that is not released yet or about production techniques, production and processing efficiencies,

food safety standards, procedures and quality assurance.

Distrust, perceptions and fear are often gut feelings that we should pay attention to. However, it is dangerous to jump to conclusions without fact. The 'facts' about what is happening and why, is the very information that those who fear New Zealand exporting its expertise, don't have.

The need for better communication about what is happening, why it's happening and what measures of control are being employed around security of intellectual property, information, tools and technology, is vital. Furthermore it is critical that those engaged in hosting foreign delegations, articulate to the wider community what value opportunities are being created and captured for New Zealand. Quantifying the intangible hard to measure benefits of this activity and communicating them is important to address the fears New Zealanders have.

THE OPPORTUNITY

Conversely there are others in New Zealand, who say that by hosting delegations of farmers, or business people is that a cross pollination of ideas occurs and relationships are built.

New Zealand farmers, scientists, academics, and business people engaged directly also benefit - not just the visiting delegation or person. This can be shared with the wider community, be it the farming, science, academic, business communities, or the whole lot put together. The benefits are often intangible, difficult to quantify and subsequently hard to assess. Nevertheless, all parties directly engaged both nationals and foreigners articulate that the engagement was worthwhile.

It might be that the conversation sparked a whole new idea completely. Sometimes these ideas take a long time to develop and implement, or assess and discard. Either way it is valuable to go through that process. It could be the very idea that inspires new ways of thinking and another evolution of change (Fig 8) for our industry to create and capture value to grow and thrive in the new environment we are operating in, be it in a New Zealand context or a global context.

There is a window of opportunity now for New Zealand to leverage from its information tools and technology and lead change into a whole new export growth curve (Fig 8). This could be a new value creation space for New Zealand pastoral Agriculture, and New Zealand must be acutely aware that these nations such as Chile, Brazil, Uruguay, Colombia, China and many others, are looking to other nations such as America, Australia, South Africa, United Kingdom, Ireland, Israel, Germany, and Holland for help. "It's the knowledge and technology that sits on top of Ag, that's where the future is. And we've [DSL – *Dairysolutionz Ltd*] got to get a lot better at how we package it, how we deploy it, and how we actually get value back from it. It doesn't mean that we shouldn't do it." (Fairweather, 2014)

In the global environment of today with the power of mobile technology – using the platform of the internet, access to information can be sourced from just about anywhere in the world. The exposure to new information has changed the expectations of possibilities for many in the developing world, or developing agriculture. It has reinvigorated not only their passion for learning but their drive and ability to innovate, create opportunities, and new ventures. Those who are for the exports of our information tools and technology say, that it is important in the long run, that we engage in the exports of our expertise in order that we get a foot in the door to those markets. Either way as Mike Moore says “The future will not be gentle. New ideas and technology wait for no-one; they crash through, making old industries, procedures and ideas redundant.” pg 8, (Moore, 2009) Another factor to consider going forward is that a number of business deals and contracts already in place may not be changed that easily.

‘The future will not be gentle. New ideas and technology wait for no-one; they crash through, making old industries, procedures and ideas redundant.’ (Moore, 2009)

“That’s how you drive billions of dollars of value...., ‘what is value?’ I suppose it’s getting access to other economies, with a certain view around driving sustainable returns. And trade is one way. But getting behind the borders I think is a terrific strategy... It allows New Zealand to extend the NZ farm beyond the geographical boundaries of New Zealand and drive the productivity gains that will drive prosperity.” (Wallace, 2014)

There is an international opportunity for New Zealand to export its expertise, (through information, tools and technology) to help developing agriculture sectors, in conjunction with smart trade agreements that enable New Zealand and the developing nation, far greater market access, volume and value. Rather than being left in the dust, we can be a leading light in agriculture globally, by building on our strengths, and comparative advantage. Purposefully moving into the exports of expertise has its risks, which is why better communication, collaboration and coordination between the three spheres (Fig 14) is critical for positioning New Zealand to thrive to 2050 and beyond.

In an article from the National Business review, Julian Cribb argues that “you will only lose your lead if you stop investing in research and development (R&D)... If you give away some of your knowledge to get people interested in more of your products – to sell it down the track – there is nothing wrong with that. One should not be frightened by competition from overseas, provided you remain on the scientific cutting edge. As long as you keep putting money back into the research effort, you can stay well in front.” (Ball, 2015) This viewpoint may not go far enough, it’s not just investing in R&D, but investing in it with a clear understanding of the intellectual property position around the R&D and commercially packaging it in such a way as to actually capture the value.

4.4 BUILDING INTELLECTUAL PROPERTY AND COMMERCIALISATION OF OUR EXPERTISE

To the inexperienced, intellectual property and its commercialisation, seems like a monumental minefield that is really difficult to navigate. To address this topic in detail is beyond the scope of this report. However a simple explanation is that “Intellectual Property refers to creative projects that can be protected by law.” (EverEdgeIP, 2014)

It has been articulated by many that in broad terms New Zealanders underestimate and undervalue what we know and do.

Knowledge and implementation of robust Intellectual Property management and strategy, is a topic which New Zealand business has vast potential to improve. It has been articulated by many that in broad terms New Zealanders underestimate and undervalue what we know and do. This refers to New Zealand agricultural science, farming systems, food and beverage processing/manufacturing, logistics and distribution, cool chain management, packaging also phyto-sanitary systems where government regulators work closely with industry to reduce costs and facilitate market access.

Referring to the exports of our farming systems, agriculture tools and technology, livestock and plant genetics, and manufacturing processes offshore, some New Zealanders and New Zealand businesses have pursued opportunities in the hope that with a foot in the door, we'll capture value in the long run. Or if we give away a little bit, and show that it works or has value, then, they will come back for more. Another angle that some have articulated is that in the hope that the receiving nation can't make 'it' work in their home country, they'll come back to New Zealand for help – be it a system, tool, process or technology.

'You need efficacy, you have to prove it in their country, because they don't value it' (Fairweather, 2014) Derek highlights a dilemma around exporting our expertise, testing it in the market and evaluating its market worth, and at the same time ensuring New Zealand captures value from the IP. "We're not (DairySolutio[n]z Ltd) capturing what we think we deserve, but we've got to earn the stripes and get moving and prove, and sharpen up your commercial model through time." (Fairweather, 2014)



Figure 12: With a foot in the door, New Zealand will capture value in the long run

In some cases it appears that very little thought has been given to the IP strategies and management plans we ought to have employed. It is acknowledged that there are probably a number of exporting businesses that export IP well – though this has not been highlighted by those interviewed on this study tour.

"We're [DSL] selling technologies and products in a relatively piecemeal basis, and I don't think we're getting the pull through that you would hope. Over time that package will get tighter, the value will be demonstrable and we'll be more able to capture more of that value – that prize." (Fairweather, 2014)

There are plenty of anecdotal examples where this is the case and we're sharing with many from other nations what we do, how we do it, and why, not realising the worth of that knowledge, experience and intellectual property, which may not be formally registered, or patented or kept as a trade secret.

Next we can attempt to determine which IP move we could adopt, and there are a number such as copyright, patents, trademarks, trade secrets, registered design, each of which have their advantages and disadvantages depending on what it is that requires an IP strategy and management plan.

Because of the success of New Zealand food and beverage production, our reputation, and product quality, position us well for being on the radar of the 'copy cats', this is why we have so many individuals and delegations coming to New Zealand to learn. And as Fig 15 illustrates, if New Zealand Businesses, Science Institutions and the Industry on the whole has a weak IP position and high product success, then everyone can copy – even more-so when our Agricultural Science papers are freely available on the internet. "Almost by default NZ business relies on the deployment play; they want to make things and sell things, instead of selling the IP behind it, or licencing it." (Davies, 2014)

The establishment of the Callaghan Institute in 2013 is an undertaking by the Government of New Zealand. Its purpose is to 'accelerate the commercialisation of innovation...to 'help high value manufacturing and services [HVMS] businesses develop and use cutting-edge technology to create a competitive international market advantage.' page 1, (Callaghan, 2014)

The Callaghan institute appears to be a new collaborative platform for New Zealand Trade and Enterprise, Scientists, Engineers and Businesses to work together to achieve greater export earnings for New Zealand. It is a step in the right direction, but without robust strategies around IP and how we manage it, we may not truly capture the full potential of value from our expertise, ideas, processes and systems.

Many of the people interviewed independently highlighted similar points provided by Coriolis below. For New Zealand to be successful at exporting its expertise with a long term planning horizon, what we export by way of expertise must be:

- Difficult to replicate
- Use of sophisticated technology,

- Protection by patents or IP,
- A well-established and integrated skill set and
- Consumer willingness to pay a premium for quality.

(Coriolis, 2014)

Another aspect to New Zealand's success in the long term is the way we craft the story of the product / service. This has to be unique to New Zealand. Ireland has done this well with the Origin Green programme (page 12) Building robust management plans to commercially package a strong IP position for NZ's expertise is important. It ensures that we have sustainable margins long term. I.e. Get NZ Exports of expertise into the green top right box of the matrix (Fig 13).

Exports of expertise must be done with strong frameworks for robust intellectual property commercialisation policies. Communication, collaboration and coordination amongst academics, scientists, businesses, government, and farmer representatives are important to ensure the strength of the framework. Key points to consider regarding this are outlined:

1. New Zealand must first and foremost ensure that the intellectual property for the exports of expertise (knowledge, information, tools and technology) are commercially packaged robustly enough to ensure the full potential return on the IP comes back to New Zealand.
2. Ensure the New Zealand primary industry upskills its people to be successful in the development and integration of Intellectual property strategies and management of research projects or the development of information tools and technology.
3. People in the primary industry and its sectors must be clear about what expertise New Zealanders are not going to export (trade secrets) with policies and processes in place to manage this.
4. The New Zealand primary industry needs to be able to capture fair value at the production, processing and distribution level closer to the consumer, where it is helping a nation build its agriculture sector. Both nations win, capturing value from their respective strength areas. This can be better achieved with robust commercialisation of IP strategies and management plans.

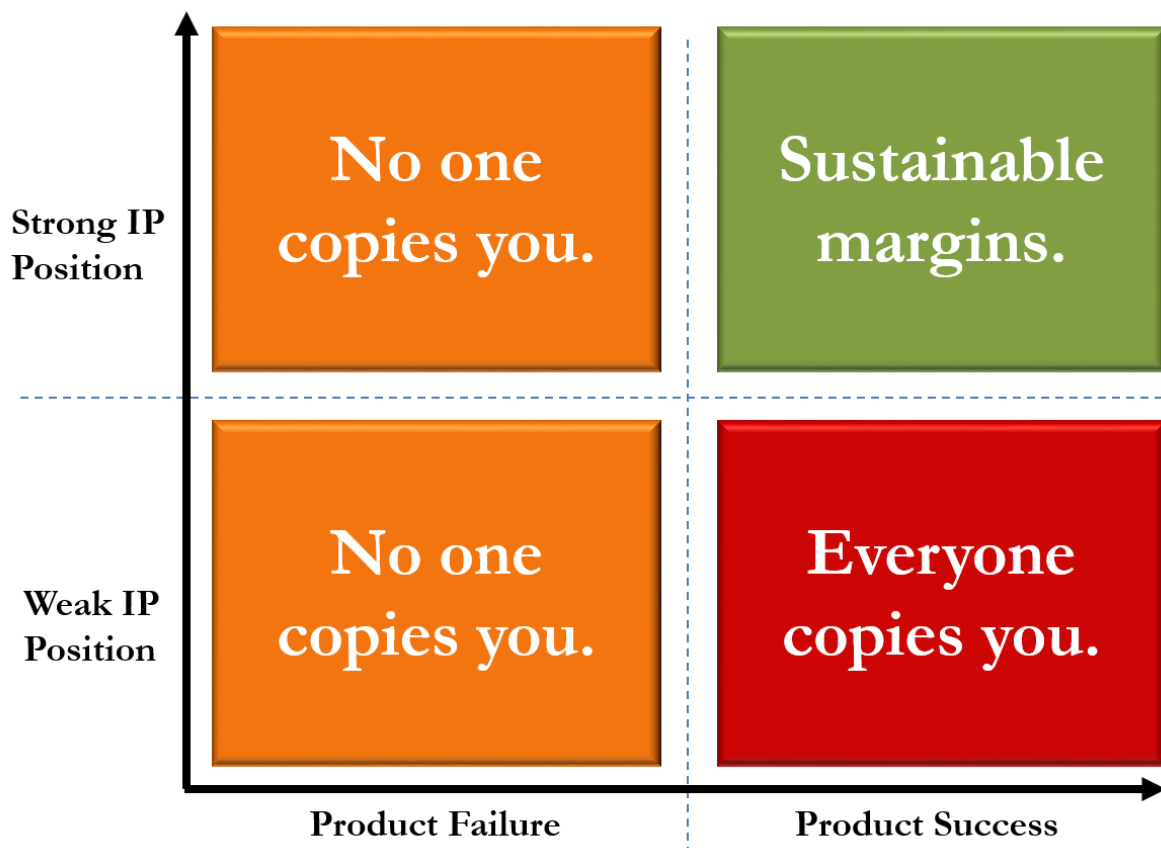


Figure 13: Intellectual Property positioning

Sourced with permission: (EverEdgeIP, 2014)

"I think there's a growing recognition that by working with New Zealand experts, our trading partners can lift their own agricultural productivity, which starts to turn some of the previous concerns about New Zealand flooding other peoples markets with product, once tariffs are removed." (Ballingall, 2014)

"I think there's a growing recognition that by working with New Zealand experts, our trading partners can lift their own agriculture productivity, which starts to turn some of the previous concerns about New Zealand flooding other peoples markets with product, once tariffs are removed. I think those arguments will gradually start to fade as those countries realise that we don't have the physical capacity to produce a whole lot more. And what we're more interested in is leveraging off our strengths and helping other countries through application of technology, seed technology, dairy farming technology – applying what I like to call exports of experts so that we can go into joint partnerships, but they're all about generating a return on our IP whilst helping other countries lift their own agricultural productivity. So it is a win-win scenario and I think, I hope that's where the direction of our travel is in terms of our primary exports in particular." (Ballingall, 2014)

4.5 THE PROPOSED SOLUTION: AN ENABLING FRAMEWORK

The proposal for a new framework that formalises and strengthens the relationship between the three spheres is very simply illustrated (Fig 14). As communication, collaboration and coordination, between the three spheres connects together, the greater the 'sweet spot' (in yellow). It is in the sweet spot where the greatest potential value capture could occur.

A business can have market access to sell its products in a foreign country without a trade agreement. However if it is a product that can be sourced from other countries, the business has a lot of hurdles to overcome in the face of competition.

Trade negotiated agreements set a system in place where there are agreed terms to enable ease of business. It's never that simple, but trade barrier issues such as tariffs can be reduced. Regulatory and procedural standards can be set, giving the business operational confidence. Trade negotiators can leverage market access for other New Zealand products to enter the market of the trading partner. The relationship between trade negotiations and market access has been aggressively pursued and promoted. The relationship between trade negotiations and the exports of expertise is less well known.

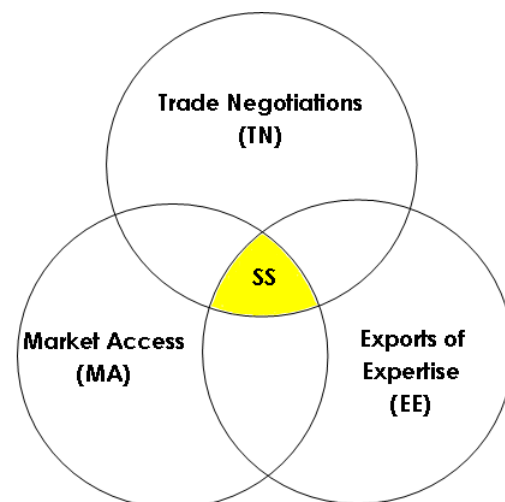


Figure 14: Communication, Collaboration and Coordination creates stronger links and potential sweet spot (SS) for capturing value

Given the global issues around food security and the need to increase food production, trade negotiators have the ability to leverage more market access from a potential trading partner. This is if New Zealand exports its expertise to help that developing nation grow its primary sectors, particularly agriculture. Exporting expertise is fraught with difficulty, so the government has to ensure that the trade negotiations provide New Zealand businesses confidence and certainty – particularly regarding intellectual property.

"It requires a fundamental mind shift."
(Davies, 2014)

"Agriculture is very important. So, by focusing on your [New Zealand's] comparative advantage, and increasing your productivity by trying to cooperate with developing countries is (especially as you have the technologies that they need),

leveraging through the WTO and other bilateral trade agreements, will enable you to increase your market access and deal with subsidies." (El-Taweel, 2014)

Some New Zealand companies may have the three spheres already aligned. In recent decades, more often than not, this was stumbled upon, rather than having implemented a coordinated industry plan. Individual businesses just got on with the job of pursuing opportunities, building relationships, they signed deals and sold product.

Fonterra provides an example of this type of strategy, growing milk pools in other countries such as China and Chile "While New Zealand milk will always be number one, we will grow milk volumes by developing high quality milk supplies and integrating them more closely with our business. The major focus will be China where we will establish several dairy farming hubs and process that milk for Chinese consumers. While we don't have to fully own the farms and factories, we will be hands-on with management control when it comes to quality and safety. This is how we run our integrated business using local milk in Australia and South America." (Fonterra, 2015) Fonterra understands the interconnectedness of the global village which transcends borders and it aims to create and capture value from it.

For New Zealand to engage in the exports of expertise, trade negotiations need to incorporate the national policies that the primary industry develops for commercially packaged intellectual property. This provides the New Zealand export businesses confidence and the framework to rely on when they undertake businesses to businesses negotiations regarding agriculture expertise. It provides New Zealand certainty that transcending borders with agriculture expertise, increases far greater opportunities to create and capture value, not just in farming, but also processing and value chain management, market access for the sales of food and beverages. Producing food in countries providing closer proximity to the consumer market, presents a significant opportunity for value capture both in New Zealand and the trading partner country.

Pulling trade negotiations, market access and exports of expertise together into one framework can help to overcome the ad hoc, haphazard approach that has occurred for decades. Instead of taking 50-60 years as in the case of the China FTA, this framework can speed the process of negotiations. Building the sweet spot (Fig 14) enables clear and purposeful approach.

The framework enables confidence for New Zealand to anticipate opportunity early (point A on Fig 8) and move together to achieve a Trade Agreement. This empowers the New Zealand primary industry, particularly the agriculture sector to create and capture value, moving to point G (Fig 8) rather than point I (Fig 8).

Exporting expertise and changing the way we do things is unfamiliar, uncomfortable, risky territory for many in the industry. Nevertheless it is a potential pathway for the industry to re-invent itself as illustrated in the sigmoid curve (Fig 8). And to capture the value potential generated, it may require attitude and behaviour change amongst New Zealanders for this new pathway to succeed. Inspired by Irelands Origin Green, with a coordinated approach the primary industry can get to point G (Fig 8) much sooner to create and capture value.

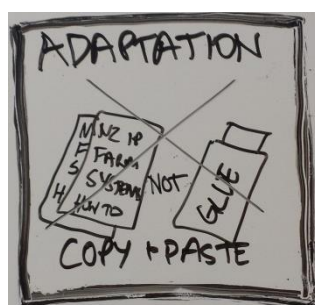


Figure 15: To succeed in exporting expertise, we must adapt it, rather than copy and paste New Zealand Farming systems.

4.6 OBSERVATIONS FROM OVERSEAS

LESSONS LEARNED: FOCUS ON ADAPTATION

There have been hard lessons learnt by many who have tried to 'copy and paste' New Zealand pastoral farming systems into other countries. The successful ventures really work hard and invest considerable time and effort to understand the operating context. They focus on adaptation, they tend to have a long term planning horizon, and allow plenty of time to establish, grow and develop the business.

It is critically important to not underestimate the importance of national politics, infrastructure, finance systems, bureaucratic systems, corruption, regulation, law, farm service infrastructure, natural resources, genetics, pasture, forages and livestock, climatic environment, disease and pests, biosecurity, language, food, traditions, values, attitudes and behaviours of the people. Most importantly, increase by 10 fold the time budget required to make progress with the implementation of the project. New Zealanders across the primary industry must accept that if we engage in the exports of expertise, we are on the journey with these nations for decades as they build their agriculture sectors.

It is important that as expertise is exported and implemented, we can not look back to New Zealand, but rather look forward to creating something uniquely new – it is a completely different operating environment. If we are to do this well, we must take the principles of the New Zealand system, and truly adapt it – in some cases the result will not look much like New Zealand at all, but rather a local solution, for a local context, with adapted information tools and technology generated from the principals of pastoral agriculture and food production from New Zealand, and maybe other countries too.

Furthermore, the adaptation may include merging expertise from a number of countries. This is where New Zealand needs to think very carefully about how we export our expertise. The depth and strength of the links we make with our efforts in trade negotiation and market access will enable business to business relationships through exports of expertise, to truly capture value in the long term. This is where policies and frameworks are important for New Zealand to realise full value capture potential.

“So long as we keep challenging current thinking, evolving farm systems and trying to develop at a faster rate than everyone else then we can do that. But your window of lag where someone else catches up on your idea is going to be much shorter than it used to be.” (Schuler, 2014)

LESSONS LEARNED: IT'S ALL ABOUT PEOPLE

LEITE VERDE

The stories of people development in the Leite Verde operation in Brazil are significant. At the outset, many of the staff could not read or write. They had one worker there who when he arrived to start work couldn't even sign his name – he is now running one of the farms himself and overseeing five farms in the business. “...all this technology is coming into populations that 10 years ago there was a mass of people there, who's learning was limited to what was being passed on from the people immediately around them. So now the learning opportunities are global. The likes of Tata, 10 years ago there was no-one anywhere to teach him, but he is an extraordinarily intelligent and able man who has learnt and applied new farming ideas, systems and technologies extraordinarily well.” (Schuler, 2014) They built a school to educate the children of their workers and ended up also running night classes for the workers to learn to read and write.

They developed a strong community at the farms where they have their own social club and sports competition.

BUILDING THE CAPABILITY AND TEAM

It is people who have created New Zealand's Primary industry success to date, and it is people and their capabilities that will create and shape the success of New Zealand's future. We are moving into a new global space all the time. We are adapting to a changing global environment. Therefore we've got to have better educated people in the primary sector. We don't have enough well educated CEO's. We need more, young, well educated people. (MacLean, 2014)



Figure 16: It's all about people and raising capability

"I am a product of New Zealand tools and technology. I completed a PhD scholarship in New Zealand... since then there has been a special link with New Zealand"

(Montossi, 2014)

Many of those who have been to New Zealand to study at our universities and work on farms in New Zealand have often become our biggest promoters. They have seen how our systems work; they have insights towards understanding our culture, and have great respect for who we are and what we do.

Fabio Montossi fondly remembers his time in New Zealand as a student, "I am a product of New Zealand tools and technology. I completed a PhD scholarship in New Zealand... since then there has been a special link with New Zealand" (Montossi, 2014) There is a vast global network of people who have travelled and worked

in New Zealand and returned to their homelands to either farm or service their agriculture sectors. Many expressed their wish to return to New Zealand to live and work, whilst at the same time caught by their patriotic commitment to lift productivity and profitability in their own country. "A number of our people have gone to New Zealand studying apples, forestry, pasture and reproduction." (Montossi, 2014)

It was noted by some New Zealanders – mostly expats, who saw this group of foreigners with strong ties to New Zealand being important to capturing value from the exports of information tools and technology to both nations. Fabio Montossi is an example of this. An observation is that often times it is education that creates a pathway to building capability and the international team for New Zealand; it opens doors, builds relationships and often starts at the front end of someone's career, so the potential opportunities to leverage off those relationships in foreign countries may be 40+ years of that students professional career in their homeland. It also builds a whole new platform for science and business to connect and operate or invest. As in the case

of Uruguay it resulted in a visit from the Uruguayan president to New Zealand. It is at this point that New Zealand could create and capture opportunities for trade negotiations and market access.



Figure 17: Positioning New Zealand Agriculture to be a leading light

Through study visas and work visas, the opportunity exists to put legs on New Zealand's leading light status in pastoral agriculture, manufacturing / processing and supply chains management. It is a scary thought for many New Zealanders. However New Zealand businesses, academic and science institutes, could develop information, tools and technology with the commercial objective wrapped in robust Intellectual property strategy and sound management plans. This would position New Zealand to capture value, and help build the ability to thrive to 2050 and beyond.

Developing foreign capability in New Zealand demands a much longer national planning horizon; The Government's 'Business Growth Agenda is only to 2025 – just ten years away. Building human capability not just in New Zealand but through foreign students should have a minimum planning horizon of 50 years.

New Zealand strategists and the government are more likely to take on a 50+ year planning horizon if the rest of New Zealand society, including our businesses, academic and science institutions start lifting their planning horizon. This is something our strategic thinkers, movers and shakers could harness and glean from Maori, where there are examples of Maori Agribusinesses who have a strategic planning horizon of 150 years.

LESSONS LEARNED: ATTITUDES AND BEHAVIOUR

Foreigners who have spent time in New Zealand Agriculture Universities and in our Primary Industry by working on farms say the same thing. '... There is something about the New Zealand farmer, the New Zealand people that we just can't replicate and it's what makes you so successful, uniquely you!'

'What makes New Zealand truly unique is the way the people think. It's their systems thinking. It's what New Zealand farmers do. They live on their farms and have their finger on the pulse every single day. There is something about the New Zealand farmer... that we just can't replicate and it's what makes you so successful.'

Conversely there are anecdotal instances where some would claim the attitudes and behaviours of New Zealanders are holding them back. The things that have made Kiwi's successful to date are now becoming an achilles heel in the global operating environment – for example our 'do it yourself' way, which struggles to some extent in a collaborative global environment.

The ways we've done things in the past may actually become a hindrance for progress in the new world environment. This reflects feedback from expats and foreigners who work or have worked with New Zealanders. This is about New Zealand people finding new ways to operate at a personal level. "New Zealand lacks a level of urgency and sophistication round a lot of this, and it hinders businesses when they get on to the world stage... play differently.' (Davies, 2014).

The Small to Medium Enterprises that are starting to move into the global export market, are mostly owned and operated by a single person; or owner operator with maybe 10 or 15 staff. So the owner

operator is the one that is trying to run the business in New Zealand, plus try and build the new businesses overseas. This person becomes too stretched. What he's been able to do in New Zealand (as far as do it yourself and fix everything) he can't do in America or other countries at the same time as running the NZ business.

There are many New Zealanders operating in the global environment who still hang-on tightly to who they are, how they operate and do business as a Kiwi. This does not work in foreign environments. New Zealanders have to adapt and change.

International business collaboration bringing in local people to build a resident team offshore is the new model for capturing value internationally.

This is why the Leite Verde story is important: one of the things they

determined to do right at the outset was to never have a farm meeting in English. Meetings had to be in Portuguese. The New Zealanders still couldn't speak Portuguese fluently but what a standard! By doing this they built credibility and relationship. They adapted to the local culture, environs and totally immersed themselves in it, whilst still keeping true to their own culture. They recognised they were operating in a completely different environment and they embraced it.

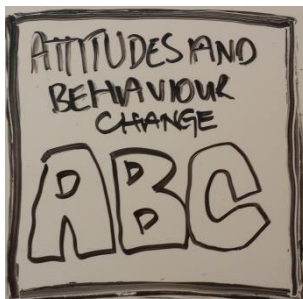


Figure 18: Attitudes, and behaviours, the way we do things count, and we must be flexible, brave and adaptive to new ways.

Shaun Hendy and Paul Callaghan argue that "what New Zealand needs to do in building a more prosperous future is to change our perception of who we are and what we can be' (Hendy, 2013) Attitudes and behaviours, the way we do things count, and we must be flexible, brave and adaptive to new ways (Fig 18). It's back to basics to learn a different ABC for the new global village.

4.7 FEET ON THE GROUND AND A SEAT AT THE TABLE

There are two other opportunities for capturing value: having feet on the ground in the international market place and secondly having a seat at the tables of influence in the geopolitical space as the Origin Green story highlights.

Having people on site managing situations, in foreign countries is an expensive strategy. Nevertheless the returns can be invaluable and often an intangible way for New Zealand to capture value.

The question is what happens when you don't invest by having people on the ground or sitting in seats at the tables of influence?

The answer is: poor or weak relationships, little information or insight from the ground, ineffective or poorly managed issue recognition, conflict resolution, and opportunities missed. We become ignorant of the other relationships or contextual plays happening in and around our interest area – be it in the market place in a particular country, region or locale, be it with specific customers or the end consumer, or in geopolitics – intelligence is compromised.



Figure 19: Feet on the ground: A priceless and often intangible way for New Zealand to capture value

MARKET PLACE:

Moving the export focus from volume to value and securing supply and demand in the realms of the high paying consumers as suggested in section 3 requires a great deal of relationship management. Communicating with the consumer at their level is critical for capturing value. New Zealand must know its markets, understanding consumer priorities, culture, needs and wants, addressing their concerns, to capture opportunities. Delivering through strong committed relationships requires feet on the ground to capture value. It is costly, and complex.

"The people who are closer to the end customer are the people who are going to capture the most value."
(Harris, 2014)

The New Zealand exporter and producer have no connection with the end consumer, where distribution channels stop at the importing customer. Without feet on the ground in the market place to capture opportunities, value is left on the table and captured by others – not New Zealand exporters, processors or New Zealand farmers. "Those who are closest to the end customer or consumer capture the most value" (Harris, 2014). The investment in the market where consumer connection counts is a way to leverage from market access and will require the full support of the relevant sector(s). This is another aspect of the debate for capturing value.

The market place is where New Zealand can start to rethink its distribution systems. This is particularly the case if we are utilising our strengths in export supply chain management for development initiatives in foreign countries. Working off the FTA's of the developing nation, may in fact enable New Zealand to position its own product in different markets due to the stringent standards and regulations New Zealand has for production processing. Meanwhile the food and beverage production achieved with New Zealand's help in a developing country can meet the growing demands and priorities of its own people.

POLITICAL SPACE:

Having a seat at the table and engaging to influence is critical for shaping our future. There are multinational food companies and NGO's, claiming to represent farmers from across the world, setting global agendas through the Civil Society Mechanism (CSM) at the UN FAO. The CSM is one of five different mechanisms which deliver proposals to the UN FAO Committee on Agriculture of which member states (Governments from across the globe who are members of the United Nations) take back to their home nations and debate for implementation, or not. This is where individual nations determine that they will adopt the proposal as it is, modify it, or choose to fight the proposal. Diplomatic staff must work within the parameters of political sensitivities, and the resource constraints of the nation they represent, regarding what battles they can and will engage in.

Farmers can represent NZ's interests in a way that diplomats can't, and the real power of influence will come when farmers and diplomats work together at the tables of influence around the world.

The impacts of these agendas are felt behind the farm gate here in New Zealand and on farms around the world. It doesn't matter the size as it includes subsistence farmers with no scale, little development, little information tools and technology, or larger farms that have scale for economic viability and have access to information tools and technology; to massive farms leveraging off economies of scale which have unlimited access to information, tools and technology and are able to invest in their own large scale research projects.

For a country like New Zealand, with a small population, economy and limited resource, we have to pick and choose our fights and make a stand on the issues that would have the biggest impact at home. "In many ways we are still policy takers - we are not setting the global agenda. Our ability to get what we want and succeed where we want to succeed, has to rely on very careful strategy, cultivating relationships, coming up with good ideas – we can't buy our way into things we can't force our way into things... but if you can show that you've got good ideas and good relationships in these places, we can make a lot of headway... too many New Zealanders think these things come to us on a plate. They simply do not and we simply work hard and there's no other way than boot leather..." (Jacobi, 2014)

Government Ministries such as MFAT and MPI, and their diplomatic staff, are doing a great job with the resources that they have and the diplomatic lines that they have to walk. However there is an opportunity for actual farmer voice at these tables. Unfortunately this work is undervalued by the farming community despite it having a direct impact behind our farm gate. The role of the Agricultural Envoy / Trade Attaché to a point meets this need of farmer representation, but again he also is limited by time, resources and the tyranny of distance. Furthermore the he is a political appointment, constrained by political sensitivities and directives.

As an industry we need to invest in this area, working smarter together to influence the discussion and proposals submitted by the likes of the CSM (Civil Society mechanism). We cannot afford to be complete policy takers. We are part of a global agriculture trade ecosystem and it's up to the New Zealand farming community to engage and provide influence.

The role of farmers in shaping the strategic direction of the industry is vitally important. We do have the future of our industry in our hands. Why? Because farmers, fund, guide, and advise their representative bodies as to what they should have as focus priorities. Farming people can often articulate the impacts of regulation from global agendas which are driven by NGO's and multinational companies. Farmers can also promote the opportunities for better regulation impacting the farm. Farmers are the people who vote on the strategic direction of the industry. Farming families and their business teams must ensure that they are well engaged with the issues and well informed with both a domestic and global perspective. This is so that they can contribute in an objective, constructive way to set our industry on course for success now, and for the long term. This is another component to the New Zealand and Primary Industry capturing value.

The bigger the base of farmers or their family members engaging with issues at a local and regional level, the larger the voice to speak to national issues. Those who engage with issues and opportunities to represent farmer interests at the national level, can be part of the team of farming people who help to effectively engage in international issues. It all starts at home.

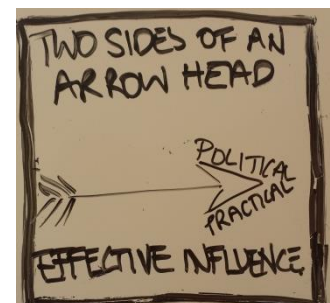


Figure 20: Politically appointed people working together with practical hands on farmers can create an arrowhead of effective influence.

The story of kiwis who took New Zealand farming principles to Brazil and adapted them for successful farming, is a living example of capturing value from the exports of New Zealand expertise. This set the scene for section 4 which highlights the following points:

- There is currently a strong relationship between the spheres of TN and MA, and weak links to EE.
- Communication, collaboration and coordination between the actors and stakeholders involved in the three spheres (TN, MA, and EE) can increase the sweet spot to capture more value.
- The need for stronger flexible frameworks and platforms for the exports of expertise
- Many in the industry fear the perceived negative repercussions of exporting NZ expertise.
- The global opportunities for New Zealand are tremendous.
- Challenges can be overcome by implementing smarter policies, strategies and management plans around the commercialisation of information, tools, technology and intellectual property.
- When exporting expertise, focus on adaptation – a copy and paste mentality will fail.
- The focus should be on people and building human capability – both in New Zealand and the foreign network of graduates and returned foreign workers.
- New Zealand needs feet on the ground and seats at the tables of influence both in the market place and political space.
- Farmers and politically appointed people need to work together to influence global agendas, regulation and policy that impact New Zealand behind and beyond the farm gate.

This is about our vision for the future. It's about New Zealand crafting its own destiny. With a planning horizon to 2050 and beyond, the following questions are asked to start the discussion and debate amongst farmers and the wider primary industry.

- *How can the Primary Sector build the framework to create a sweet spot of value capture between trade negotiations, market access and exports of expertise?*
- *How can the New Zealand primary industry enable the upskilling of its people in international negotiation, intellectual property strategies and the commercialisation of IP?*
- *How can the New Zealand primary industry find agreement on what is trade secret and stay accountable to those decisions?*
- *Will New Zealand and the primary industry prioritise and resource the need for feet on the ground and seats at the table in the market place and political circles – how can it do this?*
- *What is it that we can learn and implement from the Leite Verde story, to transcend borders and extend our agricultural footprint offshore for the purpose of helping developing agriculture sectors, and capturing value for New Zealand?*



Figure 21: This discussion must be had with a long term planning horizon in mind: to 2050 and beyond.

CONCLUSION

The report concludes that though New Zealand has been exporting know-how, information tools and technology for decades, the full potential value capture hasn't been harnessed. There has been no formal framework in which to export expertise. Many New Zealanders are concerned and rightly so. Our success to date can be attributed to the attitudes and behaviours of people yet these same attitudes and behaviours may be an achilles heel for New Zealanders in this dynamic global environment.

The world is concerned about two things which happen to be New Zealand's key strength areas: Food production, and agriculture expertise for food security. The opportunities for New Zealand are great.

New Zealand has a goal to double primary industry exports in real terms from \$32 billion to \$64 billion by 2025 but is hitting production capacity. There is significant demand in the world to lift food production to feed a population of 9 billion people. The agriculture growth potential in developing nations is significant. This creates a different opportunity for New Zealand to capture value. By utilising its strengths, New Zealand can export its expertise and secure markets for the exports of food and beverages.

The report proposes a framework to create a sweet spot for value creation and capture for the primary industry. It is communication, coordination and collaboration amongst those involved in trade negotiations, market access and the exports of expertise that strengthens the sweet spot.

With robust strategies and management plans around the commercialisation of intellectual property and trade secrets, New Zealand can confidently export expertise and create a whole new cycle of industry business that can help achieve the goal of increasing revenue from exports. It is about offshore adaptation of New Zealand farming system principles and a focus on building human capability that will enable success. This is about long term investments of 50 years positioning New Zealand to thrive to 2050 and beyond. To do this the farming community and wider industry must connect and engage with feet on the ground and seats at the tables of influence.

RECOMMENDATION

To overcome the problem "New Zealand agricultural expertise is being exported without a flexible framework to capture full value potential" the report proposes a simplified solution and some action points listed below:

Work needs to be done to determine how we can measure what is termed 'intangible value' from the exports of expertise. New Zealand needs to implement a robust and flexible framework for the integration of trade negotiations, market access and exports of expertise. Through improved communication, collaboration and coordination New Zealand can create a 'sweet spot' within the new framework from which to capture value. Robust strategies and management plans around the commercialisation of intellectual property and trade secrets, need to be implemented at a national policy level and integrated within businesses, academic and science institutions, and government.

New Zealand farmers and the primary industry have an opportunity to reassess at what stage their business, their sector and the primary industry is at on the sigmoid curve (Fig 8). Understanding both the global and national context in which we farm and do business we need to take an honest look at how to do things differently. The farming community and the industry need to ask themselves about how to prioritise the investment of resources, time and people to engage in activity in the market place and global political forums.

It is recommended that farmers and the primary industry start discussion and debate with the questions listed at the ends of sections 2, 3, and 4. Focus groups could form (each with at least a farmer, scientist, academic, IP specialist, processor, exporter, policy writer, business person, trade negotiator and diplomat) to move the debate for each section to action: planning and implementation. Don't agree on any variable until the industry can agree on all of them.

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APPENDICES

APPENDIX 1: THE NEW ZEALAND TELECOMMUNICATION TECHNOLOGY CHALLENGE

New Zealand telecommunications technology challenge				
New Zealand Problem	Benefit	Strategic response	Value Capture	
			Tangible	Intangible
Limited to nil, cell phone coverage in rural areas of NZ; The expense of satellite internet connection are hindrances to NZ agriculture advancement – losing competitive advantage	Farmer & Primary industry ability to create and capture value; Access information on the go; Utilise mobile apps to improve work efficiencies; Capture on farm data for in situ decision making; Connect with customers and consumers; Share the production and farmer story from behind the farm gate.	Government to build enabling telecommunication infrastructure for all rural areas so that farmers and the wider primary sector can create and capture value, domestically and internationally. It must have capacity for significant growth in loading of data movement,	Effectiveness and efficiencies earn money: improved farm systems management; improved live data on farm and for wider value chain	Building connections, relationships, understanding / empathy; transparency; the cross-pollination of ideas, systems and information