



**NUFFIELD**

NEW ZEALAND  
FARMING SCHOLARSHIPS

**Global vision,  
leadership and  
innovation**



**Adapting Dairy;** to thrive in a constrained world.

By Tracy Brown  
2020 Nuffield Scholar

April 2022



I wish to thank the below Investing Partners for their support over my scholarship period and beyond

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PHOTO #2: Nuffield (New Zealand) 2020 Cohort, learning about diversification (MacKenzie Country, Otago).

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PHOTO #3: At the end of the 'World Tour of New Zealand' (Fiordland, Southland).

In submitting this report, the Scholar has agreed to Nuffield New Zealand publishing this material in its edited form.

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## Executive Summary

This report is written for decision makers who are trying to design future strategy for the sector. I define my research problem as ***“how do we adapt and organise ourselves to succeed, add value and thrive in this new constrained world”***. I will provide frameworks to:-

- 1) better understand the challenge
- 2) look at what can be learnt from groups who have already begun to adapt, and
- 3) discuss what we need to do to set ourselves up to succeed in the future.

***“We need to move our thinking from infinite growth in a world of finite resources to a world of infinite ability to adapt within a world of finite resources”.***

Dairy farmers in New Zealand are increasingly under pressure to make changes to their businesses. In addition, the system around them of how success is measured is changing. Measures of success are moving from purely financial to include environmental and social impact of businesses. There are multiple stakeholders with various views of the world and we currently have no clear framework to understand what is going on around us. A better understanding of how we need to adapt and organise ourselves, will better position leaders to make changes.

***“We are undergoing systems change, to do this well we need to get closer to and interact more with all our stakeholders”.***

We have come through a period of three decades of largely unconstrained growth in dairy. The New Zealand grass-fed, pasture based system where cows live outdoors in nature has been replicated, scaled and adapted in all regions across the country. Individuals and groups have experienced huge financial rewards through development, from operational excellence and by capital gains. Increasing economic return has been the primary aim.

The last decade has seen the New Zealand dairy sector begin to respond, adapt and deliver better ‘environmental’, ‘social’ and ‘economic’ returns for business and communities. For Maori agri-business ‘cultural’ outcomes have also been important and a 4 ‘pou’ (or pillar) approach is used which includes environmental, economic, social and cultural outcomes.

Internationally, development of the ‘Sustainable Development Goals (SDG’s) by the United Nations, is creating increased expectations on minimum well-being provisions and has influenced community expectations of farmers. This combined with increasing pressure on planetary boundaries and availability of resources has impacted producers social licence to operate.

Natural advantages plus IQ or intelligence quotient (good science and expertise) has helped us get to where we are today. EQ or emotional intelligence has helped us communicate and interact with people within our markets and businesses. SQ or social intelligence will help us be better connected to stakeholders including consumers, government, civil society, Maori/iwi and local communities. Going forward, AQ or adaptability intelligence will help us adapt our systems and collaboratively innovate with stakeholders in a way that redefines our problems and how we tackle them.

As dairy farmers we are part of a complex adaptive system which can be better understood through the ‘Three Horizons Model’ which is a tool to help us think about the future and understand ‘transformative’ change. We are currently in Horizon 2 or the transition phase which is the area that will us move towards the future depending on how we respond. We have a choice to prolong the status quo by making H2- innovations (to keep the existing



system keep functioning) or move towards the future by making H2+ innovations (which allow people to adapt).

***“More and more leaders will not be remembered for the profits or the growth of their businesses ... they will be remembered for the impact they have on society”.*** (Paul Polman - former CEO, Unilever).

My report will take you on a journey to help you understand how we as individuals and leaders need to adapt and behave differently to thrive in the future. This is just the start of a bigger, wider journey we need to take as a sector.

The key recommendations of this report are:-

1. Increase the dairy sectors contribution to society's minimum social foundation and better articulate this contribution.
2. Include the right people with the right skills to problem solve in a way that is truly collaborative and co-creative.
3. Identify and empower innovation super spreaders and systems where people can share ideas easily, work together and motivate one another towards a common mission.
4. Solutions to complex problems can't be replicated, instead we need to adapt components or processes and apply in regional or local contexts.
5. Grow further farmer and sector capability within the AQ adaptability intelligence & SQ social intelligence competencies.
6. Leverage information, capability and thought leadership that is available already in a way that is better coordinated and has more impact.
7. Grow farmers understanding of change and toolbox of mental and emotional skills to be able to cope with, manage and implement change.



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Thank you - NZRLT Strategic Partners

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PHOTO #4: My family

The idea of 'snippets' (good ideas & insights) came from my later father George Gundry who taught me to have an enquiring mind, and challenge the status quo. Sadly you were not around to discuss my thinking but I'm sure you were there when I had to push myself really hard to try and make sense of it all!

To my Nuffield 2020 colleagues, (Shannon Harnett, Ben McLauchlan, Ed Pickney & Phil Weir) HUGE thank you for all the fun, laughs, challenges, flying adventures, heated debates, support, and positive attitudes that got us through the last two years together! You lot have been like extra siblings, and I hope will continue to be! Thanks also to the Nuffield 2021 Scholars (Ben Anderson, Daniel Eb, David Eade, Jon Foley & Lynsey Stratford) who were like younger siblings bringing new energy and fresh ideas to challenge us further! Your diversity of thought added so much richness to our learning.



PHOTO #5: My Nuffield NZ family

Thanks to the international Nuffield Scholars that I connected briefly with during the 24hours we were at the CSC and virtually afterwards. I hope to spend more time with many of you when we finally get to travel.

All the people we visited across New Zealand and Australia and to others who I spent time with one on one, or over zoom, your generosity with time, knowledge, insights was just so valuable, thank you! Special thanks to Mel Poulton, Corrigan Sowman, Mark Benns, Ewen Matheson, Simon Peterson, Terrence Brocx, Sam Judd, Stu Taylor, Shannon Te Huia, and Jim van der Poel for their support, help or both.

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## Glossary

Contemporary Scholars Conference (CSC) – a one week international conference with 70-80 Nuffield Scholars from countries who are part of the Nuffield programme.

Global Focus Programme (GFP) – an eight week international travel programme with international Nuffield Scholars looking at global food production systems.

Mahinga Kai - Mahinga kai/mahika kai literally means 'to work the food' and relates to the traditional value of food resources and their ecosystems, as well as the practices involved in producing, procuring, and protecting these resources.

Mātauranga Māori – Māori knowledge or the body of knowledge originating from Māori ancestors, including the Māori world view and perspectives, Māori creativity and cultural practices.

Nohoanga – Māori overnight campsites for food gathering.

NPS-FW – The National Policy Statement for Freshwater Management 2020 sets out the objectives and policies for freshwater management under the Resource Management Act 1991. It provides local authorities with updated direction on how they should manage freshwater.

Sustainable Development Goals (SDG's) - are a collection of 17 interlinked global goals designed to be a 'blueprint to achieve a better and more sustainable future for all'. The SDGs were set up in 2015 by the United Nations (UN) General Assembly and are intended to be achieved by the year 2030.



FIGURE #2: UN Sustainable Development Goals



## Approach

Pre Covid-19, a Nuffield Scholarship would have involved eighteen weeks international travel looking at global food systems. One week of this time would have been spent attending the Contemporary Scholars Conference (or CSC) followed by six weeks travel with a group of around eight other International Nuffield Scholars taking part in a Global Focus Programme (or GFP). Pre-Covid a GFP involved visiting six or seven countries across three continents in six weeks. The remaining twelve weeks would have been spent doing independent international research.



PHOTO #6: The Nuffield logo in a tropical context at the 2020 CSC (Brisbane, Queensland).

Unfortunately, the 2020 cohort was the first group of Nuffield Scholars who were not able to have this experience. Alternatively, our Nuffield experience has involved five days travelling from Sydney to Brisbane with the five New Zealand scholars, 24 hours at the CSC on an island off Brisbane, multiple telephone interviews over the impact of Covid which led to the 'Nuffield Primary Sector Insights Report 2020' – Keeping New Zealand at the global forefront of agriculture [https://ruralleaders.co.nz/wpcontent/uploads/2021/06/101333\\_RuralLeaders\\_Nuffield-Insights-Report\\_2020.pdf](https://ruralleaders.co.nz/wpcontent/uploads/2021/06/101333_RuralLeaders_Nuffield-Insights-Report_2020.pdf) and finally, a three-week road trip around New Zealand to create a second report 'Dead-ends or Transformation' – Redesigning NZ farming to thrive through change. [https://ruralleaders.co.nz/wp-content/uploads/2021/06/2021\\_Nuffield-NZ-Primary-Sector-Insights-Report\\_ISSN-2744-6115\\_web.pdf](https://ruralleaders.co.nz/wp-content/uploads/2021/06/2021_Nuffield-NZ-Primary-Sector-Insights-Report_ISSN-2744-6115_web.pdf)

This was then followed up with individual desk top research, attendance at conferences, workshops (virtual and actual), webinars, case studies, interviews (phone, zoom & in person) and visits to specific places of interest. As a result of our inability to travel internationally the general approach I have taken has been to critically reflect internally within New Zealand while looking externally at the pressures impacting us and delving into the literature for information to help me understand and articulate the problem and a possible way forward. I have also done several case studies for groups that have responded to systems change and pressure to better understand why they have been successful.

One of the themes that came up during our Nuffield experience was the need to leverage off and share more information. I have done this in my report by reviewing several previous Nuffield reports, reflecting on, and developing my own thinking, by leveraging off previous scholar's international experience. I am very grateful to have been able to do that and acknowledge their significant thought leadership.

COVID-19 has replicated the degree of disruption, pressure and uncertainty that a Nuffield travel scholarship seeks to create (minus the international travel). Despite this (and because of the uncertainty) we have grown as leaders, and we have learnt to: be nimble, deal with uncertainty, grow our resilience and work collaboratively as a team in a way that has not been done previously.

We have also been involved with a design thinking or 're-design thinking' process of how Nuffield might look and be delivered now and in the future post Covid world. Justin Ferrell (2021) described 'design thinking' as '**a process for creative problem-finding, problem-framing and problem-solving**'. We have certainly experienced all these stages throughout our Nuffield journey. I look forward to sometime in the future being able to undertake international travel to continue to extend my thinking further.



## About Nuffield



FIGURE #3: William Morris, Lord Nuffield

*“Nuffield is a process to create insights and foresight”.* (NZ Rural Leaders Trust)

In 1947, William Morris, Lord Nuffield; an innovator, philanthropist and visionary created the Nuffield farming scholarship to recognise agriculture’s contribution to feeding the British Empire during World War II. Today the World’s most acute challenge is COVID19. In a pandemic ridden world, the importance of food security has again garnered global focus. Consequently, these scholarships are even more relevant and more crucial to our future success as a food producing nation.

## Objectives

The purpose of this report is to provide a starting point, discussion document and ‘safe place’ where I can share insights and start a conversation around what we need to change in the dairy sector to adapt to the systems change going on around us. I believe that by better understanding some aspects of social science this will help us improve our performance and ability to transform.

I am wanting to help not only our sector but also share insights that other sectors can apply in their context to also bring about change.

In summary my objectives are as follows: -

1. To better define the problem and frame up the current state and why we need to change.
2. Better understand the change process and why it’s so difficult.
3. To challenge us to reflect inwardly and demonstrate that many of the solutions we need are right in front of us, we just need to think and behave differently.
4. Propose a framework that will help us as leaders have a conversation about the capabilities we need to help us transform.



PHOTO #7: Nuffield New Zealand 2020 & 2021 cohorts first stop on the ‘World Tour of New Zealand’ at NIWA Fish Farm (Whangarei, Northland).



## Chapters 1 – Introduction

### 1.1 Initial thinking about the problem

An inability to travel internationally has forced me to reflect inwardly within New Zealand and go on a Nuffield journey quite different to that had I been able to travel. While disappointed that we weren't able to travel overseas I am grateful for the Nuffield experience that has changed the way I look at our challenges.

Authors of the KPMG Agribusiness Agenda (2021) said that "the uncertainties around what the final rules and their interpretation are going to look like is delaying investment decisions. Landowners and producers can't afford to get intergenerational investments wrong, so many are not doing anything as they wait for regulatory clarity. The lack of progress is impacting morale".

My 'point of view' or POV of where I think dairy farmers are currently at (from a farmer perspective) is aligned to this:-

- 1) we will not waste limited capital on requests with unknown outcomes
- 2) we are unlikely to change systems without clarity about the new system or model
- 3) we are starting to think the current model is broken
- 4) we are not sure where we need to move to
- 5) we don't understand why it's broken
- 6) we can see there are 'losses' from low performance in some areas
- 7) we are paralyzed waiting for 'silver bullets'
- 8) we don't really have a pathway forward for change

We often look for a solutions without really understanding the problem. The reality is there are no 'silver bullet' solutions rather a range of actions and behaviours that will move us towards the future. Note that part of the problem is that there is no one 'new system' but rather a continual evolution of the current system. Farmers want a 'clear line in the sand' but the reality is that the line keeps shifting.

***"We are trying to adapt a system, to do this will require a large number of small interventions".***

My suggestion is that we need to redefine and think about the problem differently. I will start to do this below as I talk about my leadership journey and thought process during my time on Nuffield.

### 1.2 My journey

#### 1.2.1 Environmental leadership

I have spent more than a decade trying to help lead environmental change for dairy. I have done this through past roles as Chair of the DairyNZ Dairy Environment Leaders Forum and Chair of the Ballance Farm Environment Awards Alumni. I was also appointed by Cabinet to the Essential Freshwater Independent Advisory Panel to review submissions and advise the



PHOTO #8: Weather forecasting, East Coast style (Tolaga Bay, Gisborne)



Minister on changes to the NPS-FM, and the NES. I have been trying to make change at a sector level by having an input into sector strategy such as Dairy Tomorrow while also empowering other farmers to lead in their regions in the policy space and influence other farmers to make change on farm and in their communities.

Huge progress towards better environmental outcomes has been made by dairy in the last decade. This is evidenced by the actions reported in the latest Water Accord Report in 2018. <https://www.dairynz.co.nz/environment/environmental-leadership/sustainable-dairying-water-accord/>. For example, in 2018 98% of waterways were fenced off and 100% of stock crossing points had bridges or culverts to exclude dairy cows. Farmers have begun to understand 'kaitiakitanga' or guardianship.

***"Leaving the environment in a better state than it is today for future generations is something that most farmers can connect with and understand". (Tracy Brown)***

However, after over a decade of working in this space I now realise we need to look at how we fundamentally do things to continue to make progress in the future.

### 1.2.2 Nuffield thought process

My original topic when I was awarded my Nuffield scholarship at the end of 2019 was 'policies, processes and mechanisms to create positive environmental change'. My thinking at the time was that if we could get this right, that would lead to more environmental change by farmers and would improve our social license.

Kate Scott (2019) created some excellent insights in her Nuffield Report 'Enabling Better Environmental Outcomes in Agriculture'. However, lack of good implementation and collaboration has meant the opportunity to capture the value these insights could bring to the agricultural sector has not been fully realised.



PHOTO #9: On the way to the start of the 'World tour of New Zealand' in February 2021 (Viaduct, Auckland).

Rebecca Hyde (2017) in her report 'Effective Collaboration for Environmental Gain' talked about the need for a united voice, the right type of people, collaboration/co-operation/partnership, and strong facilitation.

***"The regulations will never stop, and collaboration to grapple these changes, while remembering the 'people' element of farming, is a must." (Rebecca Hyde – Nuffield Report, 2017)***

Often change makers overlook the 'people' element but they need to be mindful of how and when they use hard power and soft power leadership. Soft power is about getting others to want the same outcomes you want and co-opts people using empathy, respect, and compassion. Hard power is about getting the outcomes you want and relies on rules, force, and coercion.

In the past the dairy sector has focused mainly on how we 'technically' get better at what we do through pure science. This is the relatively easy to see, understand and practically relate to. The social science of understanding people and behavior is a bit more 'abstract'



often described as the 'touchy feely' stuff, often things you can 'feel' in your gut but is harder to see but you really can't 'actually' touch.

Nuffield Scholar Corrigan Sowman (2020) in his project 'Farming in a pressure cooker - how pressure impacts farmers decision making' explains that how the brain responds to threat is important in understanding how best to facilitate practice change in agriculture. He suggests new skills in '**thinking under pressure**' need to be fostered in farmers to underpin performance in a long-term pressure environment. Growing our AQ or adaptability intelligence and our ability to think logically while under pressure will help us succeed.

***"In order to deal with the change currently effecting food producers, we will need to think our way to success rather than simply produce our way to it."*** (Corrigan Sowman- Nuffield Report, 2019)

Ben Allomes (2016) in his Nuffield project 'How can self-awareness and self-reflection ignite a farmers motivation to engage in leadership' talked about how people lead better if aligned to purpose & why, and talked about how with changing economic and social pressures in the rural sector farmers need to change the way they act and react to challenges if they want to survive and thrive.

Andy Elliot (2017) in his Nuffield Project 'Exporting Aotearoa' talks about the challenge that Aotearoa-New Zealand faces is finding balance between retaining and restoring our environment, whilst achieving social and economic benefit. "This is not just our challenge; it is a response to a global call for better outcomes for our planet and us".

Mel Poulton (2014) in her Nuffield Project 'Capturing Value' talks about the need for New Zealand to increase the value of its exports but is hitting production capacity. She said that some of the attitudes and behaviors that have enabled success for New Zealand may now be an Achilles heel in the global operating environment today.

When we set out on our Nuffield 'World Tour of New Zealand' in February 2021 it was the time of the Americas Cup Finals. I reflected at that time rather than the changing the rules (through policies, process etc.) the problem was more around improving performance (i.e., going better & faster) and getting farmers to connect with this and better align with our stakeholders (or spectators).

I then went down a path of thinking that if we could get the sector to perform better or reach 'high performance' across all aspects of our businesses that would help us succeed into the future. I looked at high performance organisations within sport and agriculture to see what could be learnt and transferred. I then realised that I was looking for solutions and that to some degree it would keep us in our current system but performing at a higher level.

What I was really trying to understand was "**how do we move to a state of higher performance in an unknown system that is currently changing around us**".



PHOTO #10: Kiwi company Gallagher's has had a long history of innovation with the electric fence unit.

Insights from previous Nuffield Scholars as described above helped me understand that by better understanding social science around people, change and behavior this is where the



opportunity is for us to perform better. Our visit to Dawn Aerospace (a company that has revolutionized space exploration by turning a plane into a rocket) helped me re-frame the problem by thinking about what we are trying to do.

***“In dairy we are trying to turn a plane into a rocket to go faster, interact more and perform better, while sitting in the plane and learning about the rocket system as we go which is fundamentally different!”***

In short, we are in a complex system under change, and we need to re-frame, re-think and explore what the new system might look like. This project gives me the opportunity to create a larger discussion about this.

***“The problem is not how do we make the boat (or plane) go faster it’s how do we have more boats (or rockets) working smarter?”.***

My ‘high performance’ learnings will not be lost as the insights I gained around behaviors and skills are what will help us transition to the future.

### 1.3 The dairy journey

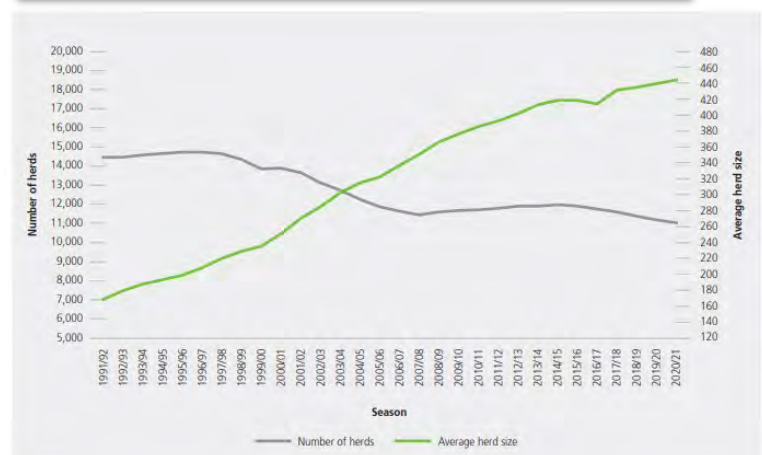
A current Kellogg’s Scholar used the following analogy with regards to where dairy is currently at:-

***“Dairy has had a big party that’s gone on a long time. It’s now time to pay, but some people have left the party early and some have arrived late but we still need to figure out how to split the bill!”*** (Kellogg’s Scholar)

Dairy has seen significant growth and development, particularly since the mid 1990 ‘white gold rush’. In the last three decades the average herd size (Figure 4) has increased (from 180 cows in the 1992/93 season to 444 cows in the 2020/21 season). In addition the average kg milk solids per effective hectare (Figure 5) has increased (from 653kgMS/ha in the 1992/93 season to 1,137kgMS/ha in the 2020/21 season). ‘Success’ for the sector has been measured by financial returns and growth in GDP.

Dairy changed the face of the landscape, particularly in the South Island of New Zealand but also brought significant economic prosperity to many struggling rural communities. People followed the

**FIGURE #4: TREND IN THE NUMBER OF DAIRY HERDS & AVERAGE HERD SIZE**



**Source: NZ Dairy Statistics 2020-21**

**FIGURE #5: MILK SOLIDS PRODUCTION PER COW & PER EFFECTIVE HECTARE**



**Source: NZ Dairy Statistics 2020-21**



rules but some of the regional policy settings were not fit for purpose and as a nation we into a situation of over-allocated resources in some catchments.

The dairy sector performance model has predominantly been based on production, growth and capital gain, but many people question whether this model is fit for purpose for the future, or if we need a new model.

***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". (Mel Poulton – Nuffield Report, 2014)***

Dairy's biggest advantage has always been cashflow. This has enabled expansion and development. Land transformation in the past has taken place from sheep and beef while currently the transformation is taking place from dairy to horticulture and particularly kiwifruit where climatic conditions suit. Dairy intensification has led to increases in fertility of soil through increased fertiliser application and increase in soil carbon with the addition of water through irrigation.

New Zealand has, and always will be a food producing nation. Dairy exports contribute 34% to total merchandise exports and have grown at over 7% per year since 1989 (Sense Partners, 2020). Kiwi farmers are applauded the world over for their efficiency at turning grass into milk with their low cost, pasture based farming systems.



PHOTO #11: Checking out Kiwifruit with Ian Jones, Craigs Investment Partners (Opotiki, Bay of Plenty).

Farmers around the world are feeling pressured about environmental, social license, labour and Covid related issues. However, I get the sense that farmers in New Zealand are feeling under even more pressure because we have always been viewed 'best in class' or 'best in the world' so why should we have to change what we do?

International commitments like the Paris Accord to reduce greenhouse gas emissions and the United Nations Sustainable Development Goals (an international call to action to end poverty, protect the planet and ensure people enjoy peace and prosperity) are beginning to have an impact. But these are big macro-economic drivers that farmers struggle to see how the little bit they do on their farm can make a difference, especially when we are already so good at what we do.

Further to this, "it is likely that further pressure will come on New Zealand to do more because we are efficient at what we do and our greatest proportion of emissions comes from agriculture" (Vangelis Vitalis, Climate Change Commission Conference). However, it is important to note that while 48% of emissions come from agriculture and (46% of these from dairy) the largest percentage of warming (as measured by GWP\*) does not come from agriculture and the industry bodies will be working hard to have this recognised when the emissions reduction targets are reviewed in 2024 (Jim van der Poel, personal communication, 2022).





As I write this report DairyNZ and Beef + Lamb New Zealand are in the middle of a nationwide round of consultations with farmers for 'He Waka Eke Noa' or the Primary Sector Climate Action Partnership to discuss possible options to price on-farm emissions as an alternative to going into the ETS. The primary sector has until May 2022 to make recommendation to government. This is just one of many environment related policies that the government has consulted on in recent years.

Note that dairy export revenue is forecast to increase 10% to \$20.9 billion in the year to 30 June 2022, driven by a weaker supply from key dairy exporting regions and a strong demand for dairy from large importing nations such as China. For the year to 30 June 2023, dairy exports are forecast to decrease by 3% to \$20.3 billion compared with the 2021/22 forecast. This is due to a flattening of milk production and a reduction in global dairy prices (MPI, 2021).

### 1.4 The Covid multiplier

Covid has had a 'multiplier' effect on the importance of dairy to the economy but also on the need to make change. It has increased the pressure as well as the need for response but has also accelerated the forces of change. In addition, as the tourism and hospitality sectors have come to a stall due to Covid, the primary sector has held up the economy.



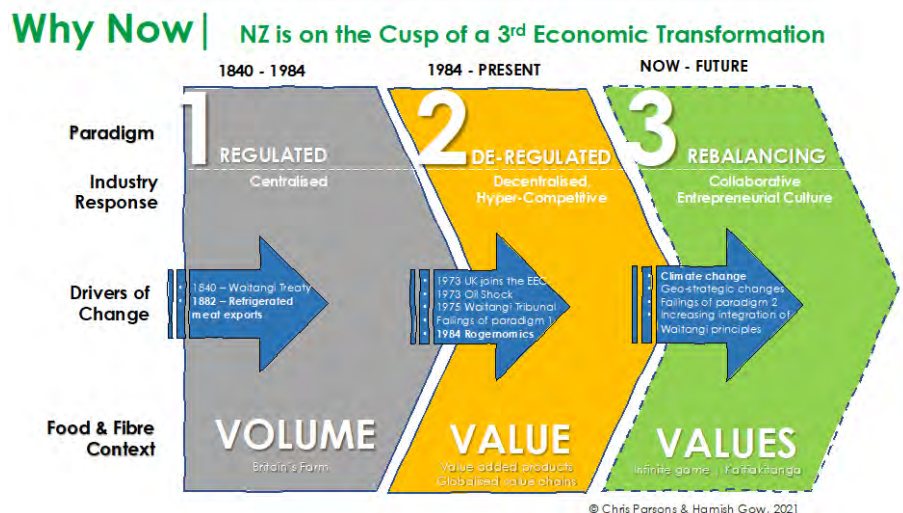
PHOTO #12: Renewable energy wind turbines (north of Wellington).

#### 1.4.1 Our changing business environment

The Covid pandemic has rocked the world in a way that no-one predicted or would have expected. New Zealand, due to our geographical distance was slow to be impacted and didn't go into our first lockdown in February 2021. At the time this seemed liked a temporary situation and people couldn't wait for things to 'get back to normal'. The reality is they won't. There will be a 'new normal' or a 'next normal' and we don't yet know what that will be.

What we do know though is that Covid accelerated trends of people getting back closer to nature, eating more real foods, reducing their energy use, and generally slowing down their lives. People have become more 'values driven' and media has been awash with reports on how the Covid pandemic created better environmental outcomes (less air pollution, better water quality etc.) as industry and people were forced to slow down. The cost of energy has

FIGURE #6: THE 3<sup>RD</sup> ECONOMIC TRANSFORMATION - VOLUME TO VALUE TO VALUES





increased with international conflict (e.g., the Russia/Ukraine war), and people are looking at alternative natural sources such as wind and solar.

The Nuffield Scholars 2020 report Nuffield Primary Sector Insights Report 2020 'Keeping New Zealand at the global forefront of agriculture' highlighted some key insights: -

1. Supply chains – their resilience and importance.
2. Leadership – how 'fit for purpose' (or not) this is.
3. Food fairness – including the rise of the 'have nots'.
4. Volume to value to values – 'best for' the world rather than 'best in' the world.

Parsons & Gow (2021) describe in Figure 6 how New Zealand is on the cusp of a 3<sup>rd</sup> economic revolution where we can expect to experience a 'rebalancing' and observe a more collaborative and entrepreneurial culture. We have moved from 'volume to value' and are now moving from 'value to values'.

To clarify what is meant by '**volume to value to values**':-

Volume = produce more, sell more

Value = selling at a higher price

Values = production aligning with our beliefs for a better world (Nuffield 2020).

We have also experienced a rise of 'conscious consumerism' and how increasingly discerning consumers will use their purchasing power to 'do good' for people and planet. We talked in our Nuffield Insight Report about the collision of business as usual with 'accelerating forces of change' and to thrive in a challenging new world we must self-disrupt and transform fundamental parts of our sector as well as how we do things. If New Zealand is to remain a global food leader, it follows that our leadership will increasingly be called to be values based and purpose driven and we will need to put the people at the centre of what they do.

***"Farmers need to be able to demonstrate a better understanding of the world they live in."*** (Murray King – Chair, LIC & Nuffield Scholar)

Great examples of organisations changing behavior to work closely together when under pressure to perform and deliver results during Covid were seen in the Maori health and social services space (Melanie Sweet, personal communication, 2020) and within the primary sector with DairyNZ, Beef + Lamb New Zealand, Federated Farmers and government working on a collaborative covid response. The challenge now is to continue with these positive behaviors, and not revert to the old 'silo' behavior.

#### 1.4.2 Accelerating the forces of change

Covid has accelerated the systems change pressure. Even though people have been under more pressure due to Covid there has been an international slowdown in many ways with people noticing and demanding more. While public perception has often been better than what we as farmers feel it is there has been a growing voice from our urban cousins that we need to do more!

***"Covid-19 has created a purposeful environment for change."*** (Debbie Currie – Educational leader)



PHOTO #13: Global Mega Trends (Massey University)



Dr Anna Powell from Massey University described a range of global mega trends (including power shifts, disruption and economic development pushing up against planetary thresholds) that are also accelerating the forces of change.

People have worked together collaboratively in ways that they haven't necessarily before to come up with solutions and new ways of doing things that previously were thought too difficult e.g., meeting virtually. The impossible has suddenly become possible.

***"Crisis combines people together."*** (Hamish Murray - Nuffield Report, 2019)

With this new way of thinking and doing people are looking at how businesses can deliver a more equitable society to stakeholders. Multistakeholder outcomes such as those delivered through the Treasury Living Standards Framework, or the UN Sustainable Development Goals have become more important.

Leaders at the PWC Workshop (2021) included the following as some of their aspirations for the primary industries: -

- create an environment and clear strategy that supports collaborative excellence and shared wealth creation for all New Zealanders.
- enable a collaborative, connected and open sharing culture.
- establish domestic and global sustainable stewardship of environment, people, community, and capital.

These types of outcomes were becoming important to people, but Covid has pushed their importance to the forefront of peoples thinking I believe by somewhere in the order of a decade. The challenge for dairy is around what is our role in helping to deliver on these?

## 1.5 Why this research matters

This research is important because dairy is under a lot of pressure to make change. We need to adapt ourselves to thrive in this new constrained world and we need to make sure resources are committed to the areas to help us progress. In the future, we will need to be able to grow people as well as cows. To grow people today to tackle tomorrow's problems we need to grow our understanding of social science and develop capability in new areas. This report will give a framework and a starting point for that to begin.

The dairy sector contributed \$19.7 billion to export revenue in 2020 and employed around 50,000 people (DairyNZ, Infographic). It is a significant part of our economy and for this reason alone it is vital that the sector continues to thrive into the future.

## 1.6 Report outline

This 'Chapter 1 – Introduction' describes my Nuffield journey including my experiences and thought process 'Chapter 2 – Background' explains what I think the problem is, gives an overview of the history of New Zealand dairy and the set-up, structure that has got us to where we are today. In 'Chapter 3 – Analysis' I use the 'Three Horizons Model' to explain the past, present and future in more detail and look into the literature to understand change and complex systems better. In 'Chapter 4 – 'Critical Analysis, I look at how people have responded to systems change pressure via case studies, reflect on insights from a workshop attended, critique some of the key issues and suggest what I think needs to happen in terms of 'Flips'. In 'Chapter 5 – Conclusions' I discuss 7 key insights and 2 frameworks to help us think



about what we need to do and in 'Chapter 6 – Recommendations' I look at the 'how' of what we need to do to move forward.



## Chapter 2 – Background

### 2.1 Understanding the problem

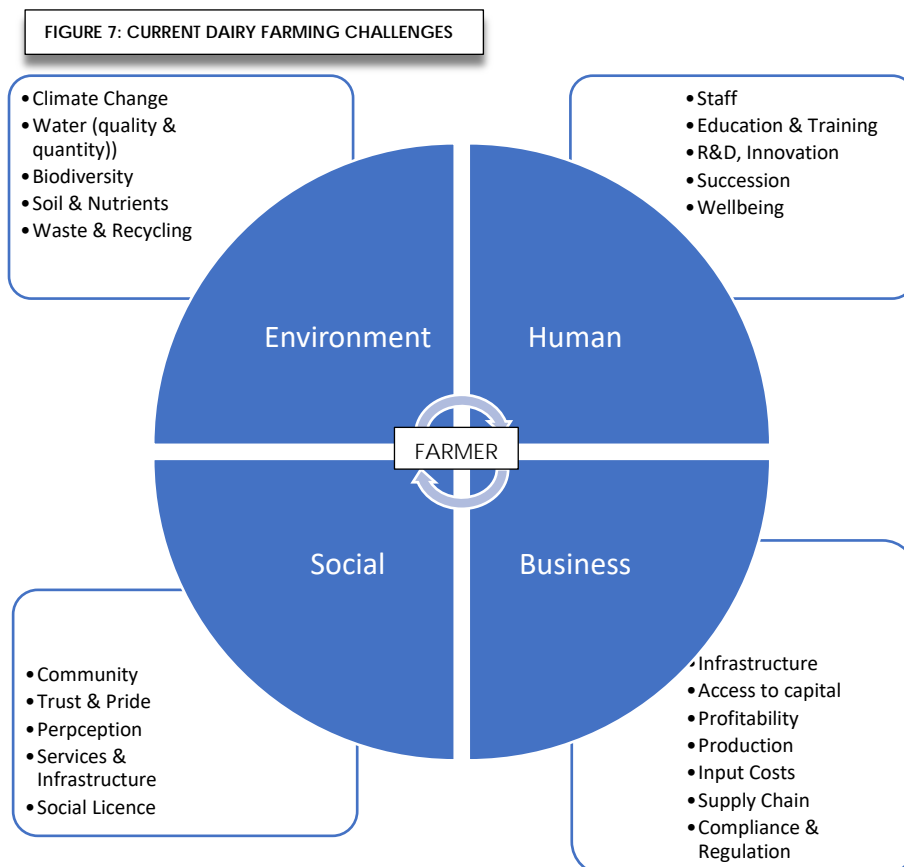
The title of this Nuffield Project is 'Adapting Dairy; to thrive in a constrained world'. As dairy farmers and as the sector we are experiencing a range of challenges that are constraining what we do and how we will be able to operate in the future. They can be broadly organized into four areas: environment, human, business, and social (Figure 7).

Environmental challenge examples include the need to reduce greenhouse gas emissions, improve water quality, maintain access to freshwater, protect soils and biodiversity, reduce nutrient inputs and waste as well as improve recycling.

Human challenge examples include attracting and retaining people, educating, and training them as well as ourselves, mental and physical wellbeing, implementing new innovations and planning for succession.

Business challenge examples include access to capital, infrastructure maintenance or replacement, profitability, cost of inputs, production challenges including weather related impacts, supply chain resilience as well as various compliance and regulatory requirements.

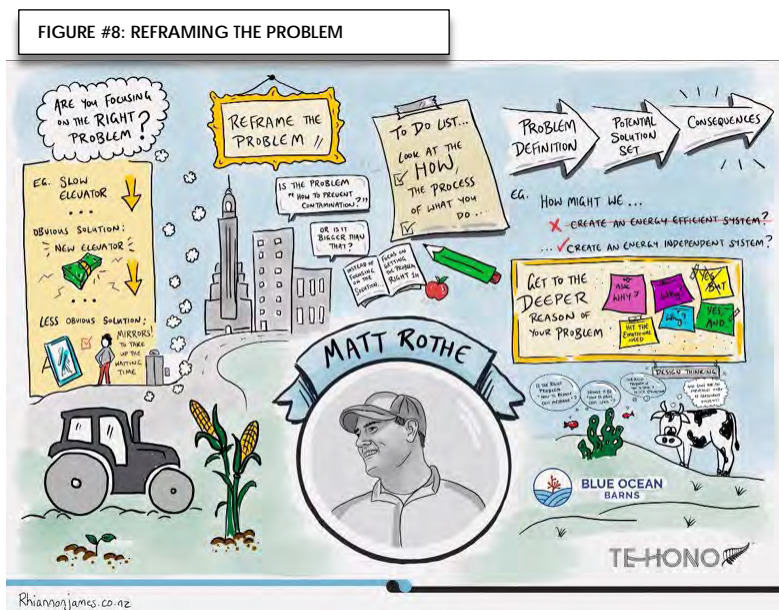
Social challenge examples focus on social license, perception, trust, and pride but also include vibrant communities as well as access to services or infrastructure.





As mentioned in Chapter 1 we are in a complex system under change, and we need to think about what the new system might look like. The way that value and success will be measured in the future is changing. In the past dairy has delivered to shareholders (those who own the company), in the future we will need to deliver to and add value for stakeholders (those who are impacted by the company). We will not maintain our social license if we don't.

Matt Rothe from Blue Oceans Barns during a Te Hono Webinar in 2021 talked about how the problems we define enable or disable innovation and asked leaders if they were focusing on the right problem (Figure 8). He explained that often we go for the obvious solution that involves spending more money rather than the solution that requires looking at things differently, reframing the problem and potentially spending less money.



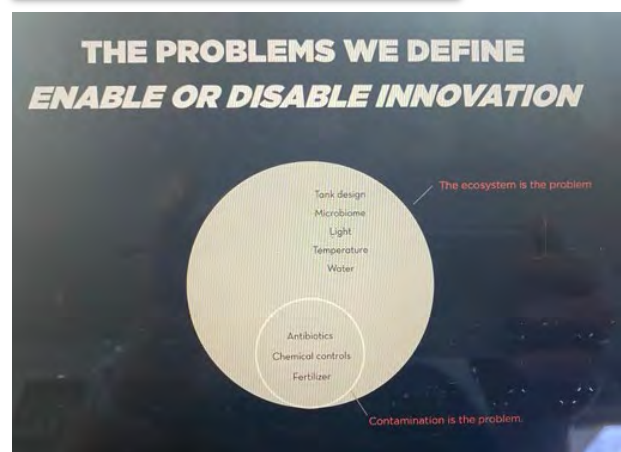
Source: Te Hono Presentation (Oct 2021) by Matt Rothe (Blue Ocean Barns).

**We are incentivised to design brilliant solutions. We are not incentivised to define brilliant problems.** (Matt Rothe, Blue Oceans Barns)

Matt gave the example of defining one particular problem as 'how might we eliminate contamination or how might we eliminate weeds, how might we eliminate pests and how might we eliminate diseases?' He explained that this may lead to unintended consequences like biodiversity loss, chemical residuals, and input dependency. He then gave the example of redefining the problem as 'how might we create an ideal ecosystem?' As per figure 9 he has changed the problem from being about the contamination to being about the ecosystem and avoided several unintended consequences.

This example clarifies the problem I am trying to define. Rather than the problem being about how do we do more to be better at dairy i.e.,

FIGURE #9: DEFINING PROBLEMS & INNOVATION



Te Hono Presentation (Oct 2021) by Matt Rothe (Blue Ocean Barns).



produce more, perform at a higher level, and contaminate less, it's about how do we better live, contribute and add value to the ecosystem that we are part of?

This can be summarized as: -

***“How do we adapt and organise ourselves to succeed and add value in this new constrained world?”***

The questions I am keen to get a better understanding of include: -

What are the factors that are contributing to this pressure for change?

How can the change process be better understood and supported?

How does a farmer take everything on board that is being asked of them and deal with it?

What is our role as leaders?

How do we adapt dairy so we can not only survive but thrive in this new constrained world?

I describe where we are currently at as follows: -

1. we are in a complex system under change.
2. we need to think about, respond and interact with that new system in a way that will be different to how we have operated in the past.
3. GDP and growth have always been used to measure success in the past.

But for the future: -

1. the way 'value' and 'success' will be measured will be different.
2. other measures of wealth including the four capitals; natural capital, social cohesion, human capability plus financial and physical capital will be used.
3. Wellbeing will also be looked at through the lenses of distribution, resilience, productivity, and sustainability.

We have succeeded in the past as a sector by doing well at pure science, to succeed in the future we will need to get better at social science. In addition, a further challenge is to turn some of our challenges into ways we can demonstrate that dairy adds value e.g., through bringing people into jobs and training or improving community environmental outcomes.

One of our challenges as leaders is to work out what our role is in this and how we will respond.

Te Mahere Whakauka (Insight Snippet #1) is an example of an organisation that has turned some of the challenges for Māori (e.g., housing, jobs, recidivism) into ways the organisation can demonstrate it is adding value while also delivering multistakeholder outcomes across a range of the Treasury Living Standard domains.

**INSIGHT SNIPPET #1**  
**Te Mahere Whakauka**

'The Hope Project'  
<https://www.whakauka.org/home>

Is a nationwide project to enable communities to resolve some of the major social, economic, and environmental challenges of our time. (Sam Judd, personal communication, 2021) This is a marae based social enterprise project using food, fibre, ecosystem restoration and housing construction (e.g., native plant nurseries and community kai production programmes) to scale sustainable jobs across 32 Maori/iwi enterprises. Progress is already being made against almost all the Treasury Living Standards domains in areas such as health, cultural capability and belonging, environmental amenity, reducing recidivism, housing etc.

<https://www.treasury.govt.nz/publications/tp/living-standards-framework-2021-html>



**Te Mahere Whakauka**  
The Hope Project



## 2.2 Understanding productivity

Achieving higher productivity or producing more with what we have (people, knowledge, skills, produced capital and natural resources) means there is more to go around. This has been a traditional measure of business success and will continue to be important in the future as we will need to produce more from less. Interestingly, New Zealand as a whole, has gone from being one of the most productive to least productive economies in the OECD (\$68 output per hour vs \$85 output per hour in other OECD countries).

It is important to note though that the primary industries have had the highest productivity growth over the past 40 years (Figure 10), although that growth peaked in the late 1980s and early 1990s and has been more subdued since then (Figure 11) (NZ Productivity Commission, 2021).

FIGURE #10: PRODUCTIVITY GROWTH BY INDUSTRY (1978 to 2020)

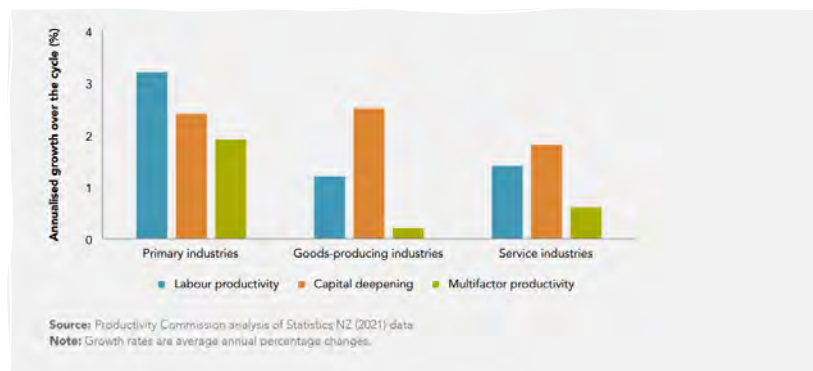
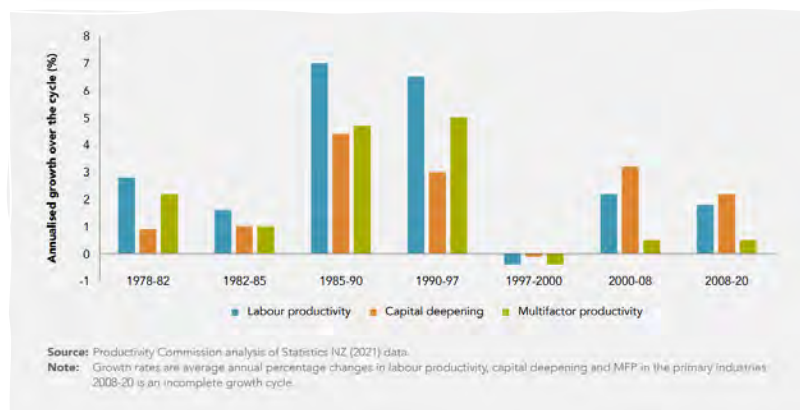


FIGURE #11: PRIMARY INDUSTRY PRODUCTIVITY IMPROVEMENT



New Zealand's primary industries have long been productivity growth leaders, built off technology, diffusion, and adoption (Hawke & Lattimore, 1999). The comparatively rapid productivity growth of the primary industries over the 1980s and 1990s is generally attributed to the wide-ranging economic reforms when subsidies were removed which prompted productivity growth (Productivity Commission, 2021).

Figure 12 (Productivity Commission, 2021) provides a framework to understand productivity growth and provides three useful insights about the-drivers of productivity: -





1. **Innovation and technology change** – this is critical to productivity growth with innovation being defined as the creation of new goods and services and new ways of working that push out the global frontier enabling more value to be created for the same or fewer inputs.
2. **diffusion of innovation** – while innovations are often led by a small group of people the diffusion of these innovations and technology to others allows the productivity benefits to be shared across the economy. This can happen through migration or job churn, merger to take over of a low productivity firm, new investment (of technology or ideas), interaction with other firms in distribution networks of supply chains where information is shared.
3. **process of relocation** – where there is movement of resources (capital or workers) from poorly performing to higher performing firms.

FIGURE #12: A FRAMEWORK TO UNDERSTAND PRODUCTIVITY GROWTH

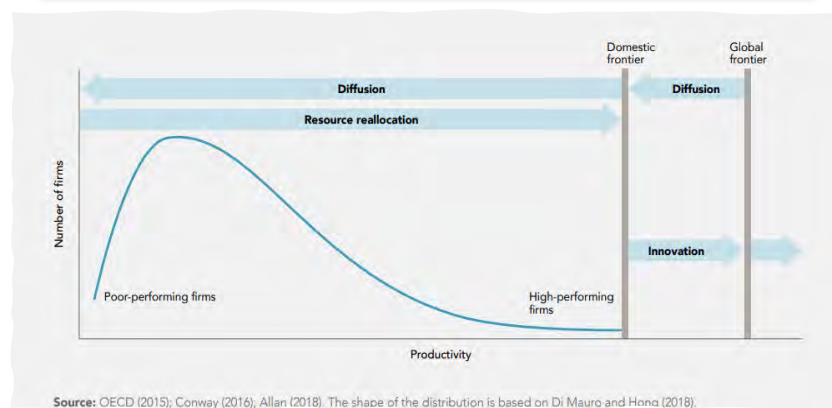


Figure 12 illustrates that a low number of high performing organisations outsized contribution to productivity and value creation. They also played an important role in disseminating knowledge and advancing innovation.

***“High performing cultures create exponentially more value.”*** (Chris Parsons, NZ Rural Leaders Trust)

New Zealand’s challenge now is to transition from working ever more hours and depleting capital stocks (especially natural capital), to lifting wellbeing by generating more value from productive inputs. (NZ Productivity Commission, 2021).

## 2.3 Understanding dairy

### 2.3.1 New Zealand

New Zealand’s climate, soil and abundant water create the perfect environment for growing grass. Our cows can access pasture year-round following their natural inclinations to be outside. As an island nation, far from everywhere, New Zealand is free from many pests and animal diseases found elsewhere in the world.

These advantages, bestowed by nature and our geography, provide New Zealand a foundation for farming with ‘a lighter hand’ than many others are able to around the world. Our pastoral systems and good cow health translate to lower carbon footprints for New Zealand milk, low rates of antibiotic use and agricultural soils that have retained high-levels of soil carbon.



There is an industry wide commitment via the dairy sector Dairy Tomorrow strategy to build on these foundations; farming in a way that cares for our cows, our land, our environment, and communities.

Dairy makes a significant contribution to economic activity across regional New Zealand, accounting for more than 5% of the GDP in 7 regions in 2019 (and more than 10% in four of those). It provides fulfilling and diverse careers for around 50,000 people, mostly in New Zealand's regions and rural communities. New Zealand dairy jobs have average wage levels for dairy farming and processing at higher levels than comparable industries. (DCANZ website).

Farmers Weekly article '10 reasons why NZ is the place to farm', in December 2021 described why New Zealand is still a great place to farm despite shipping crisis, adverse weather event and chronic labour shortages. Some of these key reasons are:-

1. Fonterra is going well.
2. New Free Trade Agreement with the United Kingdom.
3. New emerging technology for methane control.
4. Grass-fed and free-range are now seen as premium foods.
5. The primary sector has shown it can adapt and endure a global pandemic.
6. People are eating natural foods again.
7. An exciting range of new career opportunities beckon.
8. A wet spring-early summer has set most farms up well for good growth.
9. Farmers proven they can adapt and transition to new consumer demands & regulations.
10. Situation and Outlook (Primary Industries) predicts record export earnings to June 2022.

Ryan O'Sullivan (2017) in his Nuffield Project 'How can pastoral dairy farming remain competitive' discusses New Zealand's pasture based dairy systems compared to international containment dairy farming systems and concludes that most of the worlds containment dairy farmers would trade places with us tomorrow for our simple, low-cost seasonal farming systems.

### 2.3.2 Internationally

Internationally demand for dairy is strong and continues to grow. The dairy sector is also an essential contributor to the UN sustainable development goals. While the sector has obvious impacts on ending hunger, achieving food security, and improving the nutritional value of diets in a sustainable manner, the sector also has an important part to play in the achievement of many of the other sustainability goals identified (IDF website). Within New Zealand DCANZ supports and promotes sustainable development in the global dairy sector and as a signatory to the Dairy Declaration of Rotterdam is committed to a strong global food system.



## 2.4 Understanding the cost of low performance

### 2.4.1 People

Leadership and people are key to developing strategy and making innovation and change happen. Not only do we need to work attracting and retaining people to the sector we also need to grow capability so we can continue to innovate.

***“Entities don’t innovate, people do”.*** (Miriana Stephens – AuOra, Wakatū Incorporation)

It has been estimated that there will be 4,000 dairy farming jobs available this calving (2022) but people don’t currently want to join the sector.

Attendance at the ‘High Performance Culture’ workshop held in Christchurch and facilitated by PWC saw the following information presented by the NZ Rural Leaders Trust (2021)

1. We are world class at growing plants and animals, but we fail at growing people and teams.
2. 7/10 people leave the ag sector in 10 years (this equates to 81% lost potential).
3. The sector needs 10,000 new people but we need to recruit 34,000 to meet this need and account for the fallout.
4. The DairyNZ employee turnover cost calculator (DairyNZ, website) estimates the cost to recruit one new person to the sector is over \$60,000.
5. The financial cost is not the only factor, there are also the issues of fatalities, suicides, stress, and injuries. Often the combination of stress and isolation in fact leads to injuries!
6. Despite all this, the primary sector is still the most ‘productive’ as reported in the Productivity Commission Report (2021).

### 2.4.2 Environment

Currently Greenpeace has a petition asking the government to; cut climate pollution from dairy by phasing out the use of synthetic nitrogen, stop the use of imported palm kernel expeller, support farmers to shift to regen and organic farming and halve the dairy herd by 2030. This is just one of their many attempts to reduce the number of large ‘industrial’ dairy farms. The reality however is that 8-9 out of 10 dairy farms are actually family owned (Aaron Lecher, personal communication, 2021) and not ‘industrial dairy’ as the likes of Greenpeace would lead people to believe.

However, the state of our environment has had mixed and often negative reviews in recent years particularly with regards to water quality and fresh water ecosystems. The dairy sectors contribution to this is often up for discussion. Ecosystems are a complex tangle of relationships between living things and the environment.

Our Freshwater (2020) explains that the health of an ecosystem is measured by the five components:- aquatic life, habitat, water quality, water quantity and ecological processes (how things interact). New Zealand has 50,000 lakes, 249,775ha wetlands and 70 of our major river systems run for more than 425,000 kilometres (MfE, 2020).



Photos #14: Care of our forests, rivers and oceans is vitally important. Our forests are the lungs, our wetlands are kidneys while rivers and streams are the veins and arteries of **Papūānuku** (mother earth). Photos taken on a flight over Opōtiki with Nuffield Scholar Shannon Harnett.





Our Freshwater (2020) identifies five key issues in relation to freshwater:-

1. Our native freshwater species and ecosystems are under threat.
2. Water is polluted in urban farming and forestry areas.
3. Changing water flows affect our freshwater.
4. Climate change is affecting freshwater in Aotearoa New Zealand.

A new NPS-FW and NES were introduced by government in 2020 in an attempt to accelerate improvement in freshwater quality.

### 2.4.3 Social Licence

In 2014 Nuffield Scholar Mel Poulton said the following in her report:-

***“Pressure on food production and value chains is eroding the social license to operate. Farmers and the primary industry largely remain disengaged and silent”.***

Since then many farmers have got better engaged in an effort to ***‘tell their story’***. Public perception of dairy is better than it was and better than farmers often think it is, although not where the sector would ideally like it to be.

Between 2019 and 2021, public favourability towards the dairy sector remained high and increased from 55% to 56%. This figure staying stable and high during a period of increased regulation and public discussion of the sector suggests that the New Zealand public are generally positive towards the dairy sector and dairy farmers. During this period there was also a decrease of the public who feel very negative towards the dairy sector, from 7% in 2019 to 4% in 2021 (Freya Hill, personal communication, 2022).

DairyNZ perception research suggests that farmers feel that public perception (including negative public sentiment towards them) is a key issue and concern for them. Although they don't not have a quantitative figure as to what farmers would estimate public perception of dairy to be, farmers are often surprised to hear that public perception of the dairy sector is as high as it is. Work such as the 'Vision is Clear', and now the new campaign 'Here for the Long Game', which has recently launched, seeks to close some of these gaps by sharing the passion and pride of New Zealand dairy farmers with the New Zealand public (Freya Hill, personal communication, 2022).



Photos #15: The changing 'glacier like' face of the landscape with Kiwifruit in Opotiki. Will this successful sector start to have similar social license issues to dairy and what can they learn from us?



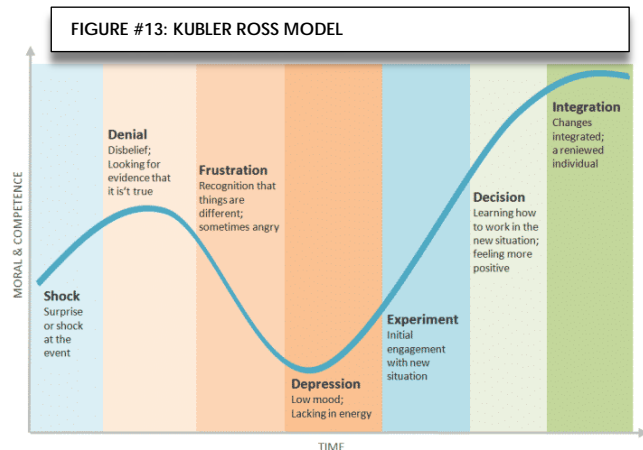
## 2.5 Understanding change

It is clear there is a need to make change but there are roadblocks to change. Cost, emotions, and mindset all have a big impact. In addition, the way that people go about making change influences how people engage with change.

### 2.5.1 Our emotional response to change

Needing to make change puts people under pressure and consequently impacts on emotions. Less energy, effort and emotional upheaval is required to carry on with the same action or behaviour. However, change is inevitable and we need to better develop a 'toolbox' of skills to help us thrive in this dynamic and multi-dimensional world.

The Kubler-Ross Model (Figure 13) as discussed by Belyh (2022) provides an explanation for the range of mainly negative emotions when people go through the grief cycle but he says are also relevant when they are asked to make change.



Nuffield Scholar Corrigan Sowman (2019) explained that when farmers feel under pressure they react with either 'red' or 'blue' brain thinking. Red brain thinking is **A**ggressive, **P**assive and leads to 'Escape' (or **APE** type) behaviour (Evans, 2019). The Blue brain response is focused on thinking being **A**ware, **C**lear and on **T**ask (and is able to **ACT**) (Evans, 2019).

Dr Ceri Evans (2019) has significantly influenced the All Blacks' ability to think and perform while under pressure. While farmers are not elite athletes (although some are), this also applies in our context because we are increasingly under pressure. In addition to the past pressures of producing more, we are now under systems change pressure. This is our 'new normal' and Evans (2019) advice is to 'step back, step up, and step in' and '**become comfortable with the uncomfortable**'.

### 2.5.2 Ways to make change & grow capability

Sacha McMeeking presented some great insights during the BOMA Webinar 'The powerful truth about Māori leadership' <https://www.youtube.com/watch?v=7XAmy1PWioo> when she talked about the Māori Covid health response and ways to make change. She talked about how change can be made To, For, With or By.

The US Green Berets paper 'By, With, Through' theory of change paper talks about leveraging capabilities of indigenous forces and people in pursuit of national security objectives 'By', 'With' and 'Through' local stakeholders (Horn, & Knarr, 2014). Chris Parsons, previous commander of the NZ SAS (personal communication, 2022) suggested adding 'for' into the equation. This is because if people working through change know that those supporting them are doing so 'for' their best interests (i.e. the best interest of the group undergoing change), it creates an authenticity that helps grow trust and therefore partnership and results. Chris gave



the example of the NZ Rural Leaders Trust and how they work 'by, with and through' industry to build capacity 'for' the benefit of stakeholders and the environment it operates in.

Included in Table 1 are thoughts on how those affected by the change would feel from disempowered to empowered. Change '**Through**' those affected is where you get the most buy-in and ownership. An example is shown in Insight Snippet #2.

**TABLE #1: WAYS TO MAKE CHANGE & GROW CAPABILITY**

	Description	How those affected by the change will feel
TO	Change made TO those affected by the change.	Disempowered
BY	Change made BY those supporting the change.	Not in control
WITH	Working WITH those affected by the change.	Supported
THROUGH	Working THROUGH those affected by the change.	Empowered
FOR	Working FOR those affected by the change.	Valued

### 2.5.3 Types of Change

Types of change vary from 'buffering' or a temporary change to 'transformative' where a long term solution is found and can be further described as follows:-

1. Buffering – a short-term solution e.g. a farmer pays staff more to work longer hours or takes less time off themselves.
2. Adaptive – a mid-term solution e.g. a farmer employs international staff and has to make some adaption to housing or giving instructions differently.
3. Transformative – a longer-term solution, "10X' or 'jump across the ditch' solution e.g. implementing an 'innovation' that totally disrupts the initial challenge e.g. robotic milking. An example of a 'transformative' change is described in Insight Snippet #3.

***"Buffering and adaptive change are incrementally better while transformative change is fundamentally better."*** (Jane Muir, DairyNZ)

The government has insisted that the dairy sector comes up with a 'Workforce Resilience Plan' as a condition for them issuing class exemptions for migrant workers. This will aim to identify transformative measures to help solve the sectors workforce challenges.

#### **INSIGHT SNIPPET #2 DairyNZ Dairy Environment Leaders Forum**

An example of change 'through' those affected by the change... The DairyNZ Dairy Environment Leaders (DEL) Forum has empowered local farmer influencers (with knowledge and connection) to lead change in their communities. These farmers have a range of connections across a range of stakeholders and can influence in a variety of ways. Farmers have owned and driven the change in their local communities.  
<https://www.dairynz.co.nz/environment/environmental-leadership/dairy-environment-leaders-forum/>



**PHOTO #15: DEL Farmers (Te Papa, Wellington)**

#### **INSIGHT SNIPPET #3 Dawn Aerospace**

Dawn Aerospace introduced us to the concept of '10x'ing' something to make it exponentially or 'transformatively' better. e.g. by 10X'g they aim to be 1000x more scalable than traditional rockets.  
<https://www.dawnaerospace.com>



**Phot0#16: Dawn Aerospace 'rocket'.**



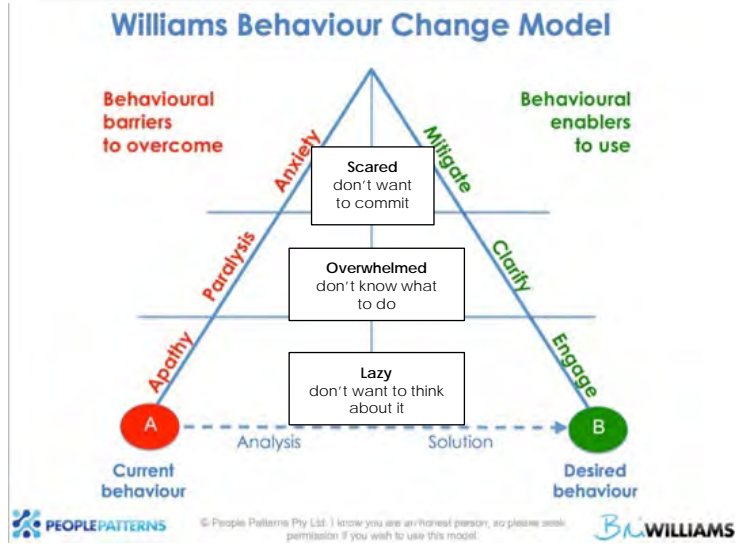
### 2.5.4 Changing mindset around change

Williams (2016) describes influencing behaviour change as a process where you need to overcome three barriers: apathy, paralysis and anxiety. Or less formally, people are lazy, scared and overwhelmed.

She uses behavioural economics to address each one:-

- To overcome laziness – improvement in engagement is needed by reducing effort and maximising reward.
- To resolve overwhelm – clarification of choices is needed by limiting the number of choices, introducing default options or using design to make it easier to differentiate.
- To overcome fear – mitigation of concerns about taking action is needed, either by creating a ‘nothing to lose’ situation or, conversely, making inaction something much worse to lose.

FIGURE #14: WILLIAMS BEHAVIOUR CHANGE MODEL



*“The routines that can help us today, can be the ruts we get trapped in tomorrow.” (Adam Grant)*

Farmers are feeling scared and overwhelmed or may in fact just be lazy towards change. One of the aims of this report is to try to explain that inaction is not an option and to clarify a path forward providing a means for us to have a better conversation about the systems pressures we are experiencing, why it is so hard to make change but much of it is about mindset.

### 2.5.5 Moving performance from ‘Good to Great’

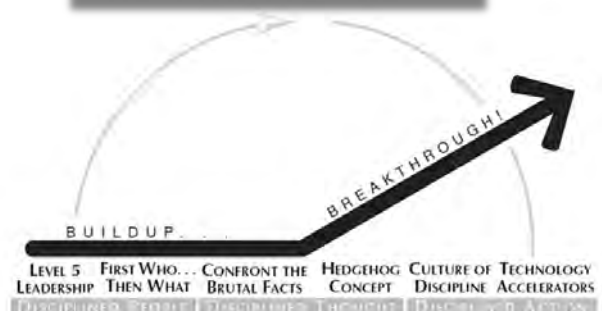
When thinking about how to make ‘transformative’ change as discussed during our visit to Dawn Aerospace I looked into the literature further for insights. Collins (2001) in his book ‘Good to Great’ describes the transformation to high performance as a process of build-up followed by ‘breakthrough’, broken into three broad stages; disciplined people, disciplined thought, disciplined action. Within each of the three stages there are two key concepts that can be explained as follows:-

#### Disciplined people

Level 5 leadership – a certain style of x-factor leadership that is a mix of personal humility and professional will.

First who then what – get the right people on

FIGURE #15: GOOD TO GREAT MODEL



Source: ‘Good to Great’ by Jim Collins



the bus, the wrong people off the bus, the right people in the right seats and then figure out where you're via great strategy.

Disciplined thought

Confront the brutal facts – have the discipline to confront your current reality while maintaining unwavering faith that you can and will prevail in the end.

Hedgehog concept – the intersection of what you are best in the world at, deeply passionate about and what drives your economic engine.

Disciplined Action

Culture of discipline – disciplined people who engage in disciplined thought and who then take disciplined action.

Technology accelerators – to accelerate momentum (once all the above are in place) not create it.

Wrapped around the entire framework the 'flywheel' which captures the concept of the entire process going from good to great.

James Kerr (2013) in the book 'Legacy – 15 Lessons in Leadership' when talking about moving the All Blacks from good to great describes 15 principles that have had a huge role in reshaping the culture and performance of the All Blacks. The principles are all thought and behaviour related and also align with Collins (2001) thoughts on disciplined people, disciplined thought and disciplined action. In the image 'This is how we roll' is how farmer Mark Benns has adapted the All Black's high performance lessons into his own business. This is a great example of a shift in mindset to improve business performance.

FIGURE #16: LESSONS FROM THE ALL BLACKS

James Kerr's First XV - lessons from the All Blacks

- I Sweep the sheds — Never be too big to do the small things that need to be done
- II Go for the gap — When you're on top of your game, change your game
- III Play with purpose Ask 'Why?'
- IV Pass the ball — Leaders create leaders
- V Create a learning Environment — Leaders are teachers
- VI No dickheads — Follow the spearhead
- VII Embrace expectations — Aim for the highest cloud
- VIII Train to win — Practise under pressure
- IX Keep a blue head — Control your attention
- X Know thyself — Keep it real
- XI Sacrifice — Find something you would die for and give your life to it
- XII Invent a language — Sing your world into existence
- XIII Ritualize to actualize — Create a culture
- XIV Be a good ancestor — Plant trees you'll never see
- XV Write your legacy — This is your time!

Source: 'Legacy' by James Kerr

FIGURE #17: THIS IS HOW WE ROLL



Source: Mark Benns, Farmer. An adaption of the All Black XV lessons.



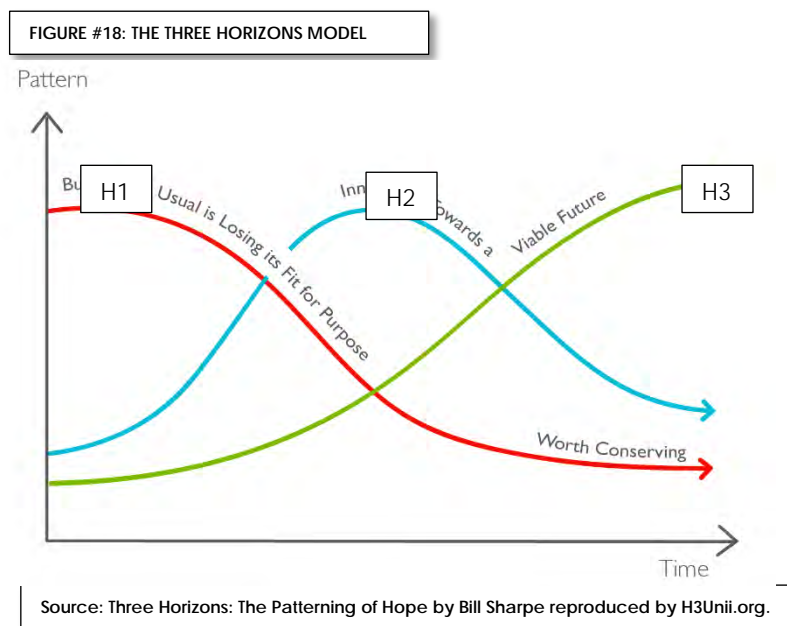


## Chapter 3 – Discussion & Findings

Change has always been part of what we do to continually get better at what we do (i.e. continuous improvement). The pressure of change feels like it is currently more than it has ever been for most of us in our farming careers. The primary reason for this is that agriculture and in particular dairy, is currently experiencing really big systems or transformative change. Figure 18 provides a model or framework to help understand this.

### 3.1 Transformative Change - The 3 Horizons Model

Bill Sharpe's 'Three Horizon Model' is a simple and intuitive tool to help us think about the future and further understand the 'transformative' change we are currently going through. Each line represents a view of the future & pockets of these three versions of the future are present right now.



The three horizons 'offer a coordinated way of managing innovation, a way of creating transformational change that has a chance of succeeding, a way of dealing with uncertainty and a way of seeing the future in the present' (H3Uni.org).

*"The future is already here it's just unevenly distributed."* (William Gibson)

The future can be perceived through the following three lenses:

Horizon 1: Business as usual

Horizon 3: Vision of a viable future

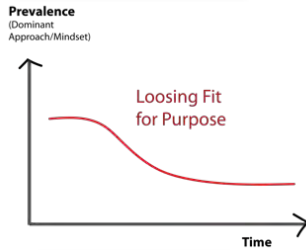
Horizon 2: Innovation towards the vision

Note that the word '**innovation**' can refer to something new as in a piece of technology or can be a change made to an existing product, idea, or way of doing things.



### 3.1.1 Horizon 1 - Business as usual

FIGURE #19: HORIZON

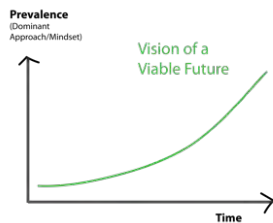


Source: H3Uni.org

- Business as usual reaches its peak (Figure 19).
- It starts to decline when the world changes.
- Available resources decline over time.
- It loses its 'fit for purpose'.
- Self-reinforcing existing behaviour no longer achieves desired results.

### 3.1.2 Horizon 3 - Vision of a viable future

FIGURE #20: HORIZON

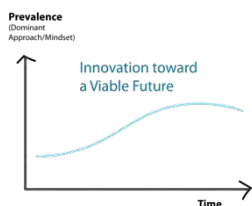


Source: H3Uni.org

- Business as usual reaches or is reaching its peak in H1 (Figure 20).
- At the same time...that H1 is declining...
- The long-term successor to 'business as usual' is growing in H3.
- H3 is a better fit to the changing world.
- New ideas, technology or ways of doing things are rapidly taking off.

### 3.1.3 Horizon 2 - Innovation towards the future vision

FIGURE #21: HORIZON



Source: H3Uni.org

This is the opportunity, innovation or transition space (Figure 21).

Transition or transformation requires...

- A temporary pattern of new activities & innovations.
- New ways of thinking & doing emerge.
- Temporary support for H1.
- Other innovations to transition to H3.

H2- innovation prolongs the status quo, while H2+ innovation aids the shift to H3. H2- strategies are often politically feasible but prevent evolutionary disruption and may ultimately force revolutionary change. For example, in 1973 when the UK joined the European Economic Community, New Zealand borrowed heavily and regulated our economy which led to the revolutionary changes of Rogernomics in 1984.

H2+ strategies hasten the H3 future and allow systems, economies, and people to adapt and evolve over time without the trauma of revolutionary change. For example, 'He waka eke noa' the unprecedented primary sector and government collaboration to build a framework to measure and reduce GHG's at the farm level. This initiative is a potential foundation for future cross-sector collaboration (Nuffield 2021).



## 3.2 Measuring success – Past, Present & Future

In Chapter 1 I talked about the current model, how people and resources are under pressure and while it may have worked in the past it won't necessarily be fit for purpose in the future. It is important to note however that no one has necessarily done anything wrong, we only do wrong by not recognizing that we need to change now.

Below I use the 3 Horizons Model above as a framework to explain the past present and future systems. The traditional way to measure success in 'Horizon 1' has been through economic returns or GDP (the traditional growth graph). Economist Kate Raworth (2017) proposes a new way to measure economic success in the Future or 'Horizon 3' that is socially just and environmentally safe. Currently we are a complex system under change and are starting to innovate in 'Horizon 2' by measuring success in terms of economic, environmental, social and in some cases cultural outcomes.

### 3.2.1 The Past – The Growth Model

'Horizon 1' is the status quo or past situation and represents how things have been done until now. The marginal growth of the economy gets smaller and smaller over time (Figure 22). As time passes organisations on this trajectory start to lose relevance if they don't make change as the world around them changes.

This is an 'individual' or 'colonial/pioneer' world where the aim is to maximise production by using science to adapt and get to best practice. Farmers have been innovative and fast to grow and expand their farming systems.

However, the system around them has not been able to keep up and eventually there is pressure on resources and people.

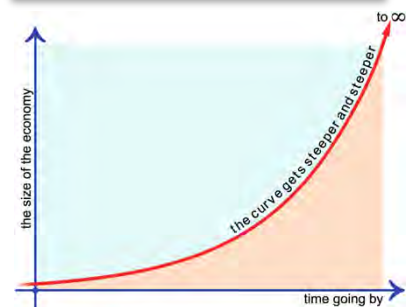
Rapid growth in some areas has resulted in an increase in cow numbers and driven externalities resulting in over allocated catchments, degradation of water quality and social license issues.

***Given resource constraints and agriculture debt, New Zealand is losing its title of a low-cost pastoral production system".*** (Mel Poulton - Nuffield Report, 2014).

In 2014 Mel Poulton in her Nuffield Report asked the question "Is New Zealand finding itself on the balance of change?" She said the agriculture sector has a choice, either to continue the current business cycle trajectory or to renew thinking and create a new business growth pathway. She acknowledges that '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. Poulton (2014) explained that the optimum time to do business differently is at point A on the 'Leading Change' graph (Figure 23) and talks about the '**lost opportunity**' of leaving change too late.

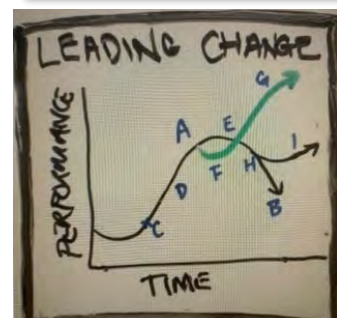
Farmers and business owners have huge sunk costs in

FIGURE #22: THE INFINITE GROWTH



Source: Doughnut Economics by Kate Raworth.

FIGURE #23: LEADING CHANGE



Source: Poulton, M. (2014)



investments, and many are under huge financial pressure from banks to perform well financially. Ownership of that land is also often of emotional or symbolic significance to individuals and as described by Sowman (2020) is often tied up with our identity of who we are.

This situation known as “The Endowment Effect’ where people place a higher value on an object that they already own than the value they would place on that same object if they did not own (Investopedia, 2022). This causes people to worry about what they will lose as individuals if they must make change.

### 3.2.2 The Future – The Doughnut Model

Horizon 3 in the three horizons model is the emerging future or theorized future state and represents profitable future business models not yet realised.

Nuffield Scholar Andy Elliott (2017) in his research proposes one such future model where rather than continuing to push products out into the market that suit our culture, needs, and wants we need to redefine the problem as ‘meeting the health and nutrition needs of the world’s consumers’. This is in line with Simon Sinek’s (2011) concept of the ‘golden circles’ where he explains that people don’t get ‘what’ you do but they do get ‘why’ you do it.

Andy suggests that meeting people’s needs should fuel our aspirations for export growth, help us gain new customers, and drive change to our production systems and environment. We saw evidence of this new kind of business model in action when we visited Wakatū Incorporation in Nelson and spoke to Andy (Research & Business Development Manager) and Miriana Stephens (General Manager) at ‘AuOra’, Wakatū's consumer-focused, health solutions business. This business by its existence is contributing to a whole range of social and community outcomes.

- 500-year intergenerational vision – *Te Pae Tawhiti*
- Based primarily across *Te Taihuhu*
- Asset base of \$300m+
- *Manaaki* cares for our people and culture
- *Whenua* is the custodian of our land and waterspace
- *Kono* is our Food and Beverage Basket to the World
- AuOra designs and delivers natural health and wellness solutions that enhance quality of life and our natural world

PHOTO #17: Source, AuOra, Wakatū Incorporation

*“By unbundling and changing our business model, our products and customer mix, we create a pathway for our businesses to be more adaptive and more profitable. It then becomes a natural progression to align farming practices that enhance the products’ value. The backfill of sustainability is safer and far more palatable to the producer if it is market and customer led.” (Andy Elliot, Nuffield Report, 2017)*

Raworth (2017) suggests this is the new economic model for the future and proposes that we need to change the goal from ‘growth’ as it is in ‘Horizon 1’ to an economy where the goal should be to ‘meet the needs of all within the means of the planet’. In other words, to ensure that no one falls short on life’s essentials (from food and housing to healthcare and political voice), while ensuring that collectively we do not overshoot our pressure on Earths life supporting systems on which we fundamentally depend (such a stable climate, fertile soil, and protective ozone layer). This model is called the Doughnut Model (Figure 24) and is about maintaining a social foundation while living within planetary ecological boundaries.

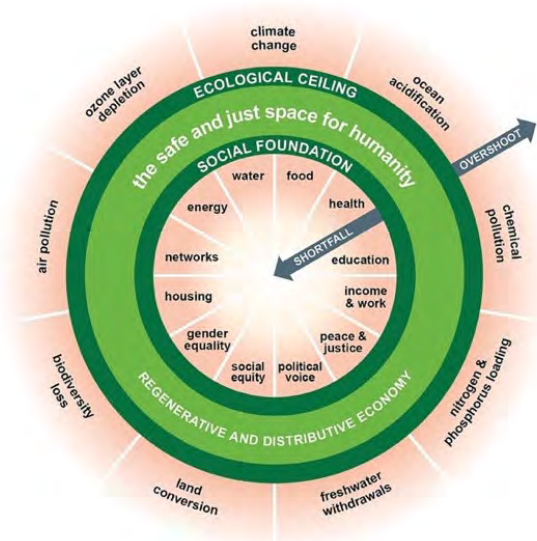
*If we recognize that our wellbeing fundamentally depends on the stability and thriving of this planet, then we will put that at the heart of the economic systems we create.” (Kate Rowarth)*



The doughnut model describes a future that is no longer about the individual but about a collective of socially adaptable humans where community and collective outcomes are central to success of the system.

Many farmers and organisations will ask “what’s in it for me” and “how will I be compensated for changes”? Most people are in business to make money rather than do what is socially correct. As conscious consumerism grows it will be like the pressure experienced in the last decade to improve environmental outcomes. It will need to become part of our ‘business as usual’ value proposition to demonstrate how we are delivering across a wider range of societal outcomes.

FIGURE #24: THE DOUGHNUT MODEL



Source: Doughnut Economics by Kate Rowarth.

*“Today we have economies that need to grow, whether or not they make us thrive. What we need are economies that make us thrive, whether or not they grow.”* (Kate Rowarth)

### 3.2.3 The Present – Transformation

As leaders and change agents we work in the H2 or disruptive innovation horizon. This relies on co-innovation and co-transformation. If you prolong the status quo you are in the H2-space. If you enable movement to the future H3 horizon you are operating in the H2+ space.

Note that an ‘innovation’ may not be something technical it may simply be a new way of doing things. As a result of pressures from civil society farmers have begun to change how they measure the success of their business by incorporating the concept of the ‘three-legged sustainability stool’.

*“Sustainability is ‘net’ add.”* (Bernard Looney, Global CEO, BP)



The concept of 'net add' introduced to us on a Commonwealth global speaker series encapsulates the idea that what you do somehow adds benefits to other stakeholders.

Many farmers have also begun to understand the concept of cultural outcomes and have connected with local hapū to better understand Mātauranga Māori values and what is important for local communities. This has played out with examples of farmers protecting mahinga kai, nohoanga as well as pa sites on their farms.



### 3.3 Linking the 3 Horizon Framework to measures of success

TABLE #2: COMPARISON OF HORIZONS 1, 2 & 3

HORIZON 1 – PAST	HORIZON 2 – PRESENT	HORIZON 3 – FUTURE
Growth Model	Innovation/Transition	Doughnut Model
<p><b>Prevalence</b> (Dominant Approach/Mindset)</p>	<p><b>Prevalence</b> (Dominant Approach/Mindset)</p>	<p><b>Prevalence</b> (Dominant Approach/Mindset)</p>
Economic outcomes with a small focus on environment and social outcomes.	3 (or 4) legged sustainability stool, or 4 'pou' approach including economic, environmental, social (& cultural) outcomes.	Multiple outcomes in line with the UN Sustainable Development Goals



### 3.4 How might our sector be changing?

McGahan (2004) says that "to make intelligent investments within your organization, you need to understand how your whole industry is changing". He discusses that when determining which type of change or transformation your industry is going through you need to consider whether there are threats to your industry's core activities and/or to your industry's core assets and describes four types of change: progressive, creative, intermediating, and radical change.

Currently farmers feel their core assets and core activities are threatened so feel they are undergoing radical change. If that wasn't difficult enough, on top of this the system of how success is measured is changing around us as described above hence creating a situation of complex systems change.



PHOTO #18: The complex business of growing lettuces at Leaderbrand (Gisborne)

#### 3.4.1 What is a complex system?

Wikipedia (2022) describes a **complex system** as a system composed of many components which may interact with each other their behaviour is intrinsically difficult to model due to the dependencies, competitions, relationships, or other types of interactions between their parts or between a given system and its environment. Systems that are "complex" have distinct properties e.g. nonlinearity, emergence, spontaneous order, adaptation, and feedback loops, among others.

The study of complex systems, is an approach to science that investigates how relationships between a system's parts give rise to its collective behaviours and how the system interacts and forms relationships with its environment. Examples of complex systems in the dairy context include the earth's global climate, transport & shipping, individual farm systems, and even individual animals.

The dairy sector itself is a complex system, with multiple relationships and interactions. This helps explain why the current state is challenging, difficult to understand and predict how and what change might occur.

#### 3.4.2 'Cynefin' - A framework to aid decision making

Snowden & Boon (2007) have formed a new perspective on leadership and decision making that's based on complexity science. They explain that different contexts call for different kinds of responses and that before addressing a situation, leaders need to recognize which context governs it and tailor their actions accordingly.

Snowden created the Cynefin framework (Figure 25) in 1999 as a conceptual framework to aid with decision making. Cynefin, pronounced kuh-nev-in, is a Welsh word that means 'habitat' and signifies the multiple, intertwined factors in our environment and our experience that influence us (how we think, interpret and act) in ways we can never fully understand.

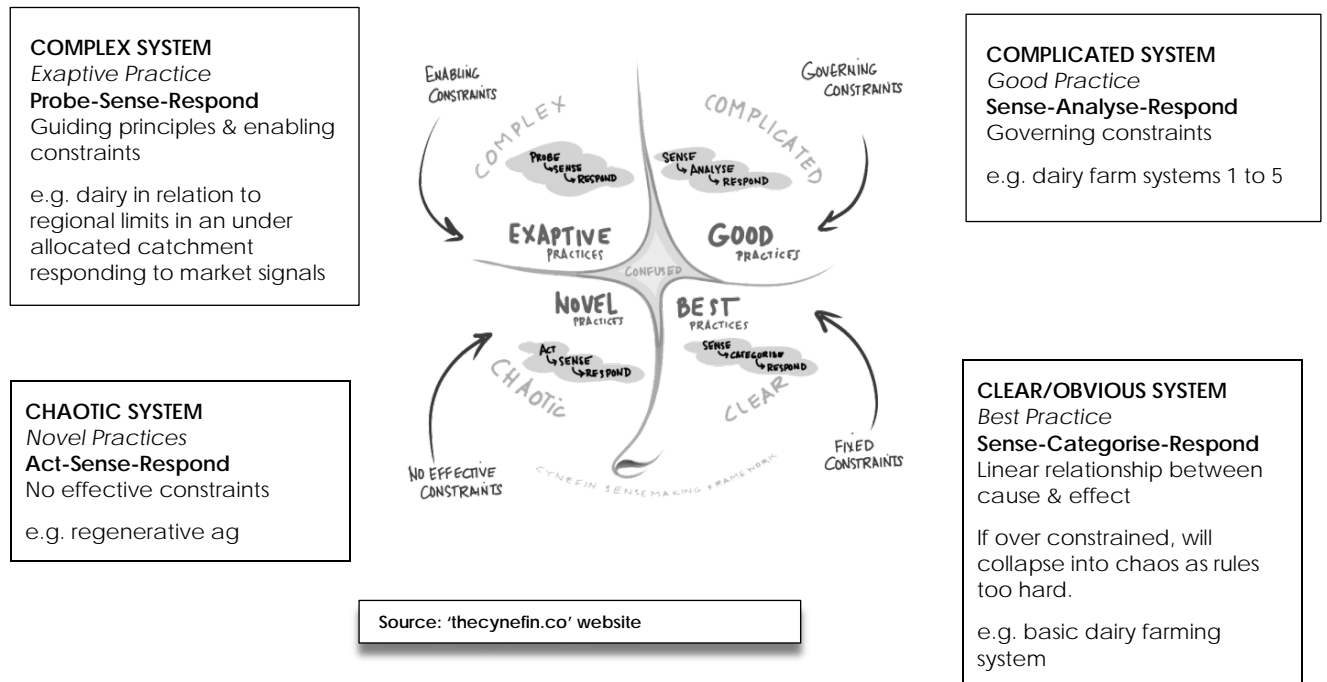




Dave Snowden (The Cynefin Co. website) explains that a model aims to replicate reality while a framework is a way of looking at reality and describes Cynefin as a 'sense making' framework



FIGURE #25 – THE CYNEFIN FRAMEWORK



In a complex system there is no linear relationship between cause and effect. Information on how components are inter-related is established by 'probing', 'sensing' and 'responding'. Snowden suggests that you can work this out by combining ideas from 'Design Thinking' and 'Lean' to: -

- understand your customers (or stakeholders)
- get clear about the problem you're solving
- come up with a range of solutions
- prototype solutions
- test the prototypes

It is clear from this that complex systems require closer more interactive relationships where solutions are developed through repeated checking and testing i.e. '**Probe-Sense-Respond**'.

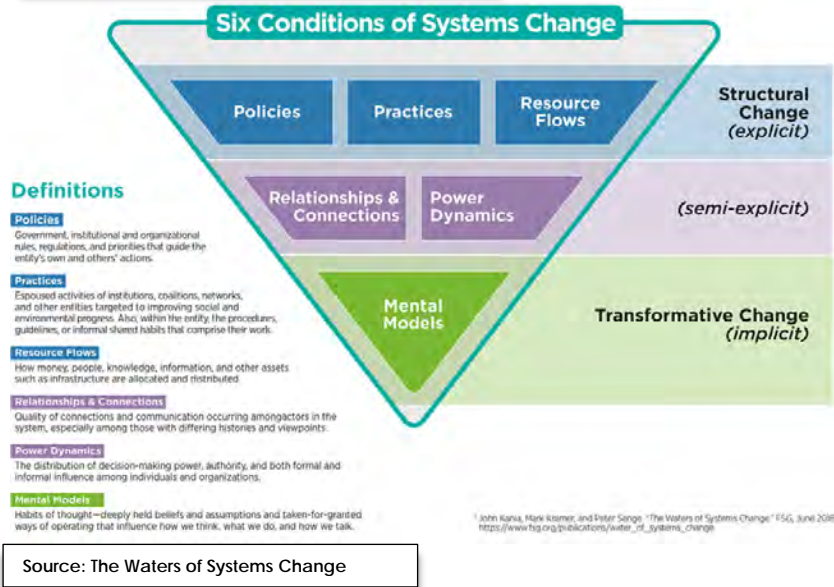
### 3.4.3 What is systems thinking and change?

At its core systems thinking requires a shift in mindset from linear thinking to embracing complexity and interconnectedness. Systems change requires working across organisational boundaries and scales. By applying a systems lens to complex problems, one can help map the dynamics of the surrounding system, explore the ways in which the relationships between the systems components affects its functioning, and ascertain which interventions can lead to better results (OSPI Blog, 2022).

Social Innovation Generation from Canada say that systems change is about shifting the conditions that are holding a problem in place. It's not an issue or person but rather the set of conditions around the person (FSG Webinar).



FIGURE #26 – SYSTEM CHANGE CONDITIONS



Kania, Kramer & Senge (2018) in the paper 'The water of systems change' describe six conditions (Figure 26) that hold a social or environmental problem in place:-

1. Policies
2. Practices
3. Resource flows
4. Relationships & connections
5. Power dynamics
6. Mental Models

Represented here by this framework of Structural, Relational and Transformative change factors.

All of these six conditions are currently changing for us in dairy, there are multiple 'moving parts' which is why things are challenging and difficult to navigate.

### 3.4.4 'Standard' vs 'Mission' approach to systems change

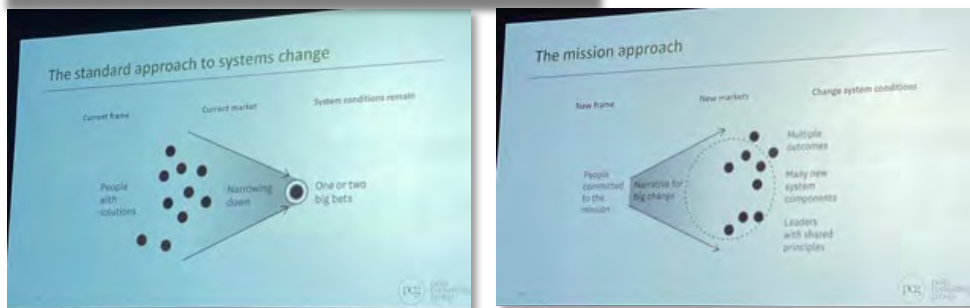
Kieran Brown, from Polis Consulting Group spoke at the Primary Industries Conference in 2021 on the Keynote Panel: Analysing the strategic shifts in innovation policy in the low-carbon era. He said "how we do change needs to change" – from 'standard approach' to systems change to the 'mission approach' to systems change. New Zealand Inc and its primary industries need a new approach to mission oriented innovation on a major scale.

This is simplistically explained by referring to the two diagrams in Figure 27. The standard approach in the past has been to have people working on possible solutions and then narrow down those solutions to 'one big bet'. The mission approach starts with people being committed to the mission and a narrative for big change. There are lots of interactions and 'solution iterations' with the problem and more possible solutions to better suit the systems change.



*"To get a good idea, you need a lot of ideas". (Linus Pauling – Two time Nobel Prize winner)*

FIGURE #27: THE STANDARD VS MISSION APPROACH TO CHANGE



Source: Kieran Brown, Polis Consulting Group

*"Problems should be solved by those closest to them". (Matt Hocken, Nuffield Scholar)*

Nuffield Scholar Matt Hocken (2017) introduces the idea of 'collaborative innovation networks' which are group of people who agree to cooperate to share ideas and generate innovation. It is more than a loose network of connected people.

### 3.5 System pressures & signals

Table 3 is not an exhaustive list but a framework to provide context of some of the pressures identified relevant in the agriculture, dairy, and environment space. They each fall into one of the conditions of system change as described above: - policies, practices, resource flows, relationships/connections, power dynamics or mental models.

#### 3.5.1 Global

Global system pressures in relation to 'policies' include the Paris Accord for climate change while examples for 'power dynamics' include the rise of the 'Me Too' and 'Black Lives Matter' movements which have shone light on inherent (often unconscious) inequality in society.

*You become part of the solution, or you are the problem (KPMG, 2021).*

#### 3.5.2 NZ Inc

An example of system pressures in relation to 'relationships and connections' in New Zealand is the changing relationship with Maori/iwi and the desire for co-governance of natural resources.

#### 3.5.3 Local

A local systems pressure 'resource flows' example is that of freshwater quality and the new regulations to try to improve this



TABLE #3 – SYSTEMS PRESSURES GLOBALLY, NATIONALLY & LOCALLY				
Systems Pressure	Sub Pressure	GLOBAL	NZ INC	LOCAL
		<i>International consumers &amp; markets</i>	<i>New Zealand as a nation</i>	<i>Hapū, Catchment, Community &amp; Farm</i>
<b>LOCAL PEOPLE</b>	Expectations around processes.	Indigenous people & relationships with resources	Crown/Maori treaty partnership.	Hapū & local community
<b>ENVIRONMENT</b>	Climate Change	Paris Accord	Zero Carbon Act	Methane Carbon
	Freshwater	Availability	Quality Swimability	Mōtauranga Māori values Quality Availability Swimability
	Oceans	Acidification Rising sea levels Pollution	Species protection	Sedimentation Rising sea levels
	Biodiversity	Protection	Protection	Identify, protect & regenerate
	Air Quality	Big issue in international cities	We have an opportunity to use this to our advantage	Could attract people and services from the cities into communities (especially post Covid)
<b>SOCIAL LICENSE</b>	Influence	Global movements e.g., Greenpeace	New Zealanders control social license but are not our end customer	Everyone is a journalist
<b>WORKFORCE</b>	Equity	Modern Slavery Me Too Diversity Inclusion	Diversity Inclusion	Locals first
	Availability	Migrant workers	Unemployment Immigration	Quality Retention Perception
<b>COMMUNITY</b>	Drivers & expectations	Sustainable Development Goals	Treasury Living Standards Framework	Regional Council plans informed by community expectations
<b>WELLNESS &amp; WELL-BEING</b>	Physical	Food as medicine Health	Obesity	Exercise in the natural environment (sea, rivers, mountains)
	Mental	Well-being	Well-being	Well-being
<b>CONSUMER PREFERENCES</b>	Trends	Veganism Anti-dairy Alternative proteins	Veganism Anti-dairy Alternative proteins	Purchase local products



<b>LAND</b>	Above ground	Availability Contamination	Urban development Protection of highly productive land	Changing land use changes people and services (increase if dairy to hort. or decrease if sheep/beef to forestry) Changes to visual landscape
	Below ground	Contamination	Nutrients impact on water	Nutrients impact on community catchment and Mātauranga Māori values.
<b>SUCCESSION</b>	Perception	Less land available for food production.	Reducing access to capital & land. The succession by 'development & intensification' model no longer fit for purpose in over allocated catchments	Children of farming families do not want to enter the dairy sector due to social license issues. Immigrant families in the sector want something 'more' for their children

### 3.6 What else can we learn about performing under pressure

I was asked during my research “is it the individual, the team or the system that needs to change”? They answer is all three, but system change is the most complicated, least talked about and hardest to understand. When I first started my research, I thought that if I better understood the factors that were required to perform well under pressure that would help with getting the dairy sector to perform under pressure and through change.

I realise now that this will prolong and help us to stay in Horizon 1 by improving what we currently do. But if we apply some of these learnings in a ‘systems change’ context these insights can also help us transform.

Hocken (2019) in her book ‘The Lean Dairy Farm’ refers to the All Blacks and asks the question as to why they are the best team in the world and what sets them apart?

**“We can’t control how the other team plays – only how we play.”** (Jana Hocken)

This is also so relevant in the systems change context as we can’t control what’s going on around us but we can control how we think and behave.

#### Insight SNIPPET #4 America’s Cup Sailing

Sean Clarkson (personal communication, 2022) Americas Cup and Round the World sailor also talked about process and continuous improvement which means open and honest debriefs (feedback) and goals or why you’re doing it (drive) as being the most important factors for high performance under pressure.



PHOTO #19 – Sean Clarkson,



Hocken (2019) says there is obvious technical ability (or ‘mastery’) in any high performance (and pressure) situation but concludes that there are probably three things that set the All Blacks apart; culture, drive and process. On further research and discussion with others across leadership roles in a range of fields, including other sporting codes, farming, Māori/iwi organisations and business we all agreed that these factors were the basis of a good framework to think about this further with wellbeing, problem-solving and feedback as additional factors that should also be included.

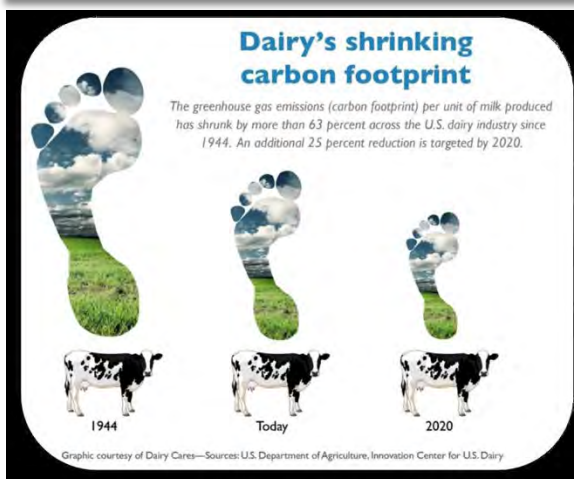
I briefly explore 7 factors below that I think are relevant in the context of both performance and systems change: - mastery, culture, drive, process, wellbeing, problem-solving and feedback.

### 3.6.1 Mastery

Most of us have focused our entire dairy careers on how we technically get better at what we do. How with new science and new information we tweak to change what we do to make things better and our farms more ‘productive’. To be excellent at what you do can also be described as reaching ‘mastery’ (Jane Muir, 2022, personal communication).

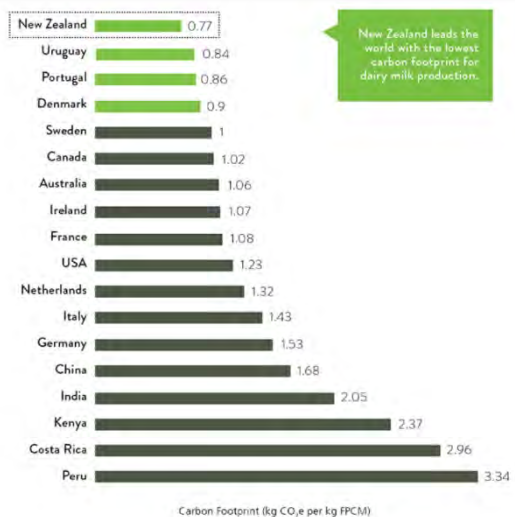
It is widely accepted that technically we are great at what we do. So much so that New Zealand leads the world in producing the lowest carbon footprint milk. To put this in perspective, while carbon footprint in the US has shrunk by more than 63% since 1944 (Figure 28), New Zealand (Figure 29) still only produces half the carbon footprint of US milk (0.77 compared to 1.32 kgCO<sub>2</sub>e per FPCM).

FIGURE #28 – DAIRY’S SHRINKING CARBON FOOTPRINT IN THE US.



Source: New United Nations Report <https://cdrf.org/new-United-nations-report-california-u-s-dairies-models-reducing-carbon-footprint/>

FIGURE #29 – INTERNATIONAL CARBON FOOTPRINT OF MILK



Source: DairyNZ

The point is though that we are under continuing pressure to do better, particularly as mentioned earlier because New Zealand is seen as a world leader at these things.



IQ or mastery or technical ability will get us so far, EQ (emotional intelligence) in terms of culture, drive and process will get us a bit further to better performance. However it is AQ (adaptability intelligence) which includes feedback and problem solving that will help us transform as a sector. Each of the aspects is explored briefly below with AQ & EQ being discussed further in section 3.8 'Skills for Systems Change'.

### 3.6.2 Culture

***"The system determine the culture."*** (James Parsons)

Culture can be described as the ideas, customs, and social behaviour of a particular people or society. Belonging, behaviour and values are all part of what makes culture and culture has a big impact on people's ability to perform especially when under pressure.

***"A feeling of acceptance and belonging is an important part of a high-performance culture."*** (Shelley Holmes)

Holmes (2021) says that "because we are innately social animals, acceptance and belonging are core needs for us. If you want to create a team who are capable of giving their best then you need to take care of people's sense of belonging". In her '4B's' of high performance model (Figure 30) she refers to belonging, believing, bottom line and behaving. 'Bottom-line' this is roughly equivalent to mastery, technical ability or results, belonging and behaving are part of culture and believing aligns with the concept of drive which I will discuss shortly.

Eastwood (2021) in his book *Belonging: The Ancient Code of Togetherness* talks about whakapapa and how it represents a powerful spiritual belief - that each of us is part of an unbroken and unbreakable chain of people who share a sacred identity and culture. He explores this idea and how it is applied around the world in high-performing settings encompassing sport, business, the arts and military.

During our Nuffield experience we also observed that a sense of belonging was important in the sport, business and military settings to help people transition through change.

Eastwood (2021) also talks about

- the need to find your identity story
- defining a shared purpose
- visioning future success
- sharing ownership with others
- understanding the 'silent dance' that plays out in groups
- setting the conditions to unleash talent and
- converting our diversity into a competitive advantage.

Diversity is a key point as this is often seen as a disadvantage because things take longer, but with diversity comes diversity of thought, new ways of doing things and new ways of looking at a problem.

FIGURE #30 – THE 4B'S OF HIGH PERFORMANCE



Source: Make a dent leadership  
<https://www.makeadentleadership.com/acceptance-and-belonging/>





In Lindy Nelson presentation 'The Importance of Belonging' at the 2021 BOMA Agri-Summit <https://www.youtube.com/watch?v=56CCC14wRsY> she spoke about how is someone doesn't feel like they belong they withdraw, keep silent, stop offering solutions, lose confidence, stop challenging status quo and only do what is required by withdrawing discretionary effort and spending more time worrying about the future! She says "our ability to succeed has always relied on our ability to co-operate". It can be deduced from this that a lack of a sense of belonging equates to lower performance, lower productivity and a reduced ability to cope with change.

*"Imagine if every single person in our sector knew where they belonged, knew how they can contribute and then extend that to the 50,000 people that we need to fill our capability gap. Imagine the innovation that would occur. Imagine the productivity that would occur. And imagine the sense of purpose and meaning that we would have."* (Lindy Nelson MNZM, Founder AWDT)

I suggest that one of our greatest opportunities to improve performance is to create a greater sense of belonging for people in and entering the agri-sector.

### 3.6.3 Drive

Drive includes what connects people to wanting to do something and why they want to do it. It's difficult to articulate drive at an entire sector level because peoples reasons for why they do what they do are different. Family, financial, community are all drivers for different people.

One definition of drive is to 'propel or carry along by force in a specified direction'. Drive not only includes purpose and why but also contribution as many people want to feel they make a difference in some way.

*"People don't get what you do, they get why you do it".* (Simon Sinek)

One of the best examples of 'why' that I think everyone in dairy could connect and relate to is **"better than before"** (Mark Benns, personal communication, 2021). This is something all farmers could relate to whether they want to be better than before financially, technically, or be better at spending time with family or having time to do the things they want to do.

Daniel Pink (2009) in his book 'Drive, the surprising truth about what motivates us' discusses that once people are paid fairly, they look for more from their work i.e. 'intrinsic' motivation such as purpose, autonomy and mastery.

### 3.6.4 Process

In terms of process it is important to get the detail right but also all the holistic actions that contribute to the wider process.

#### INSIGHT SNIPPET #5 Pūniu Rivercare

After Shannon Te Huia (Pou Tāhuhu, PRC) won the Kiwibank Community Hero Award he got asked to go and help many other marae-based catchment groups around New Zealand. However, he said "this meant we moved focus away from our core purpose (to restore our awa). The culture changed because we lost connection to why we were doing things which is for **our** river or awa."

Another organization Te Mahere Whakauka has now been set up whose purpose is to scale up (but make region specific) what worked for Pūniu Rivercare but across New Zealand.



PHOTO #20 - Shannon Te Huia.



*“Excellence lies in the attention to detail.” (SAS)*

If we are open to new innovative ways of doing things this is how transformative change can be made. Hocken (2019) talks about continuous improvement and the LEAN process and by eliminating waste this will save time as well as cut costs. This will lead to a more productive, profitable and higher quality dairy farm. To be able to produce within our ecological ceiling we will need to eliminate more waste whether that be time, energy, nutrients etc.

*“The seeds of greatness are planted in the daily grind.” (Adam Grant)*

Hocken (2019) gave the example of milking cows and focusing on the 8 minutes of milking out of a 3 hour process. The focus has often been on doing the 8 minutes better and there's only so much you can do to improve that. She suggest you are better to think in terms of what are the opportunities to improve the whole milking process from start to finish from the time the cows leave the paddock until they return. This is about thinking more holistically and strategically while also focusing in on the detail.

One of the themes we noticed on our Nuffield World Tour of New Zealand was the tension between operational excellence vs innovation and the need to get the balance right as both are needed.

### *The role of technology as an accelerator*

It is important to note that 'technology' is different to 'technical ability'. At times there is a role and a need for technology in order to get instant or more rapid feedback to the individual. For example in high performance sport where measurements are required on heart rate, blood lactates or oxygen or in farming where measurements on milk production, somatic cell count or nutrient levels lead to rapid increases in efficiency or reduction in wastage. MacKenzie (2018) says "there's no one thing that does it all though. So you need to carefully integrate all your tools into the farming system, rather than the farmer into the tool system".

*“Technology is a decision support tool, not a decision tool”. (Craig MacKenzie)*

To use the term 'technology accelerators' as described by Jim Collins in his book 'Good to Great' this is the thing that will provide the 'breakthrough' to greatness when all other parts of the system are functioning optimally.

The point I really want to make here is how often we focus, fund and rely on technology to make us perform better when some of the earlier parts of the operational process and the things that support change like culture, wellbeing, feedback etc. may not be functioning as well as they could be.

Team New Zealand yachting is described as **“human led and tech powered”**. I refer here to the 'Fit for a Better World Strategy' (MPI, 2021) while this is a good strategy and has a science and innovation focus for the future it could be improved by also focusing on people and the social science of change that is needed to move people to this 'better world'. For example, supporting people with skills to get through the change process and develop new competencies like adaptability intelligence so our sector also can be human led and tech powered.



### 3.6.5 Well-being

We observed everywhere on our trip around New Zealand the importance of wellbeing for people to be able to perform as well as have resilience through change processes

Avery (2017) in his book 'The Resilient Farmer' is trying to ensure farmers and their communities are ready for tomorrow's challenges. He talks about six resilience factors that have kept him happy and coping when under pressure:-

- Connection; to open the possibility for change and growth
- Giving; to feel emotionally rewarded
- Taking notice; of what's happening around you in the world
- De-personalise problems; as envy, anger and blame are disempowering
- Keep learning; as this is part of success
- Being Active; is vital for mind and body

Farm Strong on their website describes these factors as the 'five ways to wellbeing' and have had huge success with New Zealand farmers in this area.

We learnt that holistic well-being is also incredibly important for athletes to be able to perform well. Rowing New Zealand has totally re-shaped the system to support well-being and meet the needs of the athletes. Elite programmes are now offered out in the provinces where athletes can work, or study surrounded by the support networks they need.

***"We need a whole community approach to community well-being and prosperity". (Gary Jones - NZ Apples & Pears)***

All of this is also relevant in the systems change context because people cannot be expected to lead and make change if their personal wellbeing needs are not being met. Change can be stressful and requires good mental and physical wellness to be able to cope.

### 3.6.6 Feedback

Feedback is critical for improving performance and changing the way we do things and can be given and received in a range of ways.

Shannon Te Huia (personal communication, 2022) said "feedback in the form of reward, recognition or remuneration is important for some people". Sean Clarkson (personal communication) said feedback and debriefs are crucial in a high performance situation while at Maungatapere Blueberries we learnt that shortening the feedback loop with berry picking had substantially increased productivity.

#### **INSIGHT SNIPPET #6 Rowing New Zealand**

Under the leadership of former CEO, Simon Peterson, Rowing New Zealand underwent significant cultural change from a 'dictatorship to a democracy'. "Things were delayed, and decisions took longer but equal (or better) medal outcomes were achieved. The important thing was that athletes and others in the organisation were happier and more engaged".



**PHOTO #21 - The 'black boats' at Rowing New Zealand (Cambridge, Waikato)**



Nuffield Scholar Hamish Murray (2020) also talked about the importance of feedback in his report 'Future Farm Workplaces'. He explained that exposure to the processes, tools and methods used in 'Design Thinking' and 'Lean' led to agile ways of working that combined diverse individual thoughts, promoted collaboration and inclusiveness. It also helped people operate using rapid experiment and feedback loops to promote fast progress rather than being stifled by the need for consensus and perfection.

Creative conflict, collaborative innovation, iterative design, problem redefining, and improved reward recognition are all ways to describe how we think about getting and receiving feedback as we change the way we interact with the world and move towards a new future. Feedback can also come in the form of telling someone they've done a good job or done well. Humans thrive on this, and we don't do enough of it!



PHOTO #22 - The 'black boxes' for 'rapid feedback' on athletes' performance at Rowing New Zealand (Cambridge, New Zealand).



PHOTO #23 - Maungatapere Berries significantly improved their productivity by shortening the feedback loop from the packing shed to the berry pickers.

### 3.6.7 Problem-solving

Stu Taylor (personal communication, 2021) talked about the need to be able to problem solve to adapt and perform well in the farming context. Michael Sanderson (podcast interview) talked about the importance of being able to problem solve in the high performance yachting context when in the southern ocean with ripped sails.

Problem solving or 'problem redefining' will be a critical as we move through the process of systems change. This and our ability to give and receive feedback are part of the AQ or adaptability intelligence capability we will need to develop further. These kinds of skills will help us with our ability to think outside the box to find new ways of doing things.



### 3.7 Leadership & decision making in pressure and complex systems

*"We cannot become what we want by remaining what we are." (Max DePree)*

Change is inevitable, change is our new norm but if change could be better understood and better explained in the context of what's going on around us it would potentially be easier to engage with the process.

*"Leadership is the ability to facilitate movement in others towards a destination you can describe." (Russ Hill)*

Hill (2021) in the podcast 'Why trust is broken' highlights a previous presentation by Simon Sinek who made the point that most of today's leaders do not show enough empathy and describes this as 'being concerned about the human being, not just their output'. Leadership is not about 'being in charge' but rather 'caring for those in our charge' and as a leader you are no longer responsible for the job but rather responsible for the people in the job.

Reflections from the PWC Workshop (2021) also highlighted the focus on people in high performance teams noting putting people first, team values, culture, wellbeing and empathy as important aspects of this.

The Nuffield 'Dead-ends or Transformation' report also noted that to enable the right leadership outcomes to be fit for the future world it is important for organisations to select leaders on the basis of their intrapersonal (e.g. discipline to stay focused) and interpersonal (e.g. empathy) skills rather than just their professional and technical competency as is often currently the case.

### 3.8 Skills for Systems Change

Birney (2017) talks about five capabilities we need for systems change: -

1. systemic diagnosis – looking at challenges in a holistic way.
2. strategy design – that creates impact through interventions.
3. innovation for impact – that harnesses a culture of creativity.
4. collaboration and engagement – as systemic change cannot be achieved alone.
5. leadership and learning – for a complex and uncertain future.

She says the innovations we need to further the transition to sustainability include our mind-sets, values, beliefs, new forms of organization and collaboration and in all sorts of combinations that we don't yet know.

*"We must awaken our imaginations to do the extraordinary and embark on journeys of co-creation and experimentation to figure out answers to the complex challenges we face." (Anna Birney)*

All these capabilities require emotional intelligence, adaptability intelligence and social intelligence skills which are discussed further below.



### 3.8.1 Emotional Intelligence (EQ)

Emotional intelligence (otherwise known as emotional quotient or EQ) is the ability to understand, use, and manage your own emotions. Wikipedia says that people with high emotional intelligence can recognize their own emotions and those of others, use emotional information to guide thinking and behaviour, discern between different feelings and label them appropriately, and adjust emotions to adapt to environments.

EQ skills have been recognised and talked about as important for leadership for well over a decade. This does not mean however that there is no room for improvement, and they are particularly important in the context of change because (as mentioned in section 2.5.1 above) change is inevitably emotional.

### 3.8.2 Adaptability Intelligence (AI)

AI skills are really important as they help you deal with new scenarios and situations, therefore building your resilience and confidence. These skills will be vital in our new normal where we will need to co-innovate to solve problems.

Rich Alderton, Adaptability Advisor at UK organisation 'High Performance Change' redefines change not just as a process, but as a form of intelligence. Adaptability is a skill that can be learned and developed, enabling organisations to deliver strategies and initiatives more quickly and more effectively. He believes that if you raise people's 'Adaptability Intelligence' and they will be more open to the idea of change and says:-

*"Total resistance to a change challenge = 9/10ths fear & anxiety about the **idea of change** + 1/10 fear & anxiety about this **specific change**".*

This ties in with the Williams Change Model (2021) in 2.5.4 where I talked about farmers being scared, overwhelmed or lazy with regards to change.

Alderton (2021) goes further to say that technical expertise is not enough if the expert cannot adapt when faced with change. He also says that the way we're approaching change is broken. Change isn't a logical business process that coaxes you from A to B. It's an **emotional mindset that determines your attitude to life** and calls it 'Adaptability Intelligence' because it's a skill that you can develop and master.

### 3.8.3 Social Intelligence (SQ)

Social intelligence is about building multi-dimensional networks and social capital. The one dimensional relatively homogenous way that people connecting in the past will no longer be fit for purpose for the future. People will need to be able to connect and influence in a range of ways across a range of levels e.g. on social media, with local iwi/hapū, local communities, and wider civil society.

The old networks that made people successful in the past won't necessarily be what makes people successful in the future. Trust will be built by creating mechanisms for growth of connection and understanding through shared experiences. Relationships, rapport and understanding will help with the design of future systems where multi-stakeholder objectives are met.



Just like Covid lockdowns slow down transfer, organizational silos slow down the transfer of thoughts and innovation. The number of interactions and 'unexpected collisions' decline and individual 'islands' capture and hold information (Hamish Gow, personal communication, 2022).

***"We don't know who the 'super spreaders' of new ideas and information are but guaranteed they will be the ones with good AQ & SQ."*** (Prof. Hamish Gow)

From a social intelligence perspective it is important to have both strong ties and weak ties with people. If you live in a community of strong ties that just interacts with themselves, you could tend to only focus on those with your group and get a narrow perspective on the world.

***"Close friends are important – but research shows that building networks of casual acquaintances can boost happiness, knowledge, and a sense of belonging."*** (Ian Leslie)

Leslie (2020) refers to earlier work by Mark Granovetter from 1973 and says that for new information and ideas weak ties (or outer circle acquaintances) are more important to us than strong ties (inner circle close relationships). Brown (2011) says that both strong and weak ties are important but perform different functions in relationships and can extend your network far beyond your normal reach.

Weak ties are crucial in binding groups of strong ties together. They bring circles of networks into contact with each other, strengthening relationships and forming new bonds between existing relationship circles (Brown, 2011).



Photo #24: Connecting with Te Rarawa owned Māori agribusiness 'Bells Produce' in Kaitaia.

### 3.8.4 Global Intelligence (GQ)

We will also need to grow our level of GQ or global intelligence to better understand consumer preferences, geopolitical forces, and global financial factors. This is a topic for another day and something I would like to look into further when we eventually get to travel internationally as part of the Nuffield programme.

In 2014 Nuffield Scholar Mel Poulton said "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 an export nation in the coming decades".

***"We need a different skill set, and modified tools in our toolbox going forward"***. (Mel Poulton – Nuffield Report, 2014)

Note that to navigate people through change as a leader you have to meet people where they are at. This will require walking alongside them to help them journey to a new mindset and a new way of operating. EQ, SQ, AQ & GQ skills will be developed at different stages with some people requiring more time, training or nurturing for this to happen.



## Chapter 4 - Critical Analysis

My critical analysis has four main parts. Firstly, I have looked for groups or organisations that are making change or are doing well in these challenging times. I have tried to look at common themes around what they are doing differently from how things have been done in the past. This has been done via Case Studies and has involved visits, meetings, discussions and observations. Secondly, I attended the PWC Workshop in Christchurch at the end of 2021 which gave me insight into what 40+ agri-sector leaders thought was holding back the agri-sector. Thirdly, I have critiqued the main issues of concern in my concept of the problem and have given some alternative perspectives on these. Finally I have created a table of 'Flips' that I think need to happen for the sector to thrive in the future. These are based on observations of organisations that have made some of them and discussions with people about what they think needs to change.

### 4.1 How have groups and sectors responded?

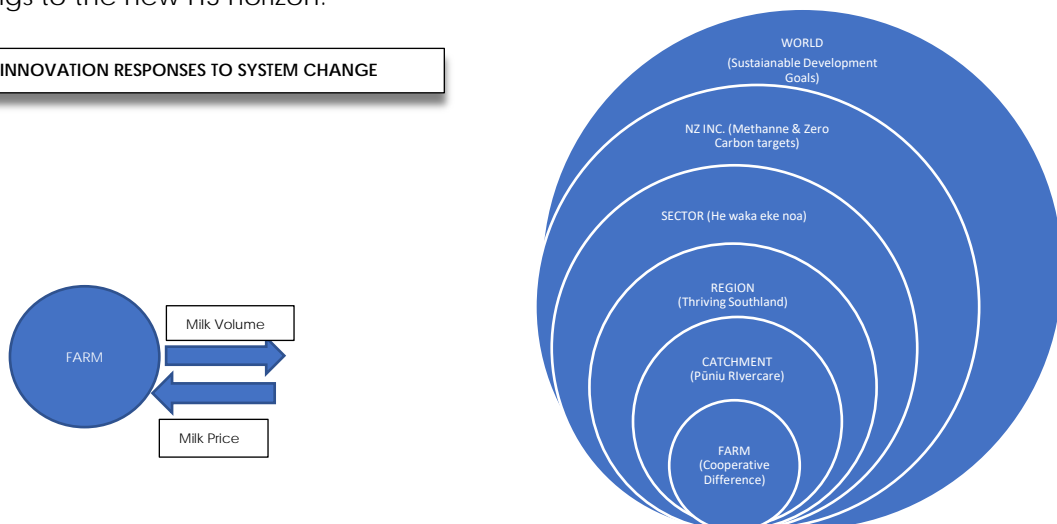
#### 4.1.1 World to farm level response

We have gone from a relatively one-dimensional model of the individual farm producing milk and being paid a milk price (or producing milk in response to the milk price in some cases) to a multidimensional framework where various parts of the system have responded to some of the system pressures described above (Figure 31).

In the case of environmental pressures, the UN has created goals such as Climate Action, Life Below Water & Life on Land within the Sustainable Development Goals. New Zealand has responded to this as well as domestic pressure by legislating the Zero Carbon Act and implementing Essential Freshwater. The agricultural sector has responded to the climate change targets with He waka eke noa. At a regional level there has been significant collective action like that of Thriving Southland, while at the catchment level Pūniu River care in the Waikato is a great example of what can be achieved by focusing on one awa (or river). At the individual farm level programmes such as the Fonterra Co-operative Difference are helping individual farmers calculate and adjust their contribution at a farm level.

These responses have all been innovative H2+ responses to help shift from the old way of doing things to the new H3 horizon.

FIGURE #31 – INNOVATION RESPONSES TO SYSTEM CHANGE








Birney (2017) says that the innovations we need to further the transition to sustainability go beyond technologies, products and services and commercial enterprises to include our mind-sets, values, beliefs, new forms of organization and collaboration – and in all sorts of combinations that we don't yet know. We must awaken our imaginations to do the extraordinary and embark on journeys of co-creation and experimentation to figure out answers to the complex challenges we face.

I discuss some of the H2+ innovations or changes I have observed further in the case study insights below and look at what has made them perform well that can be applied to other situations.



## 4.1.2 Case Studies


TABLE 4 – CASE STUDY RESPONSES

	LEVEL OF RESPONSE	GROUP OR ORGANISATION	DESCRIPTION	KEY INSIGHTS
1	Sector response  	He waka eke noa Primary Sector Climate Action Partnership  Criteria for options: - Effective Practical Credible Integrated Equitable	<a href="https://hewakaekenoa.nz">https://hewakaekenoa.nz</a>  This is a partnership between 11 industry organisations as well as the government. Partners include:- Apiculture New Zealand Beef + Lamb New Zealand DairyNZ DCANZ Deer Industry New Zealand FOMA Federated Farmers FAR Horticulture New Zealand Irrigation New Zealand Meat Industry Association Ministry for Primary Industries Ministry for the Environment	The HWEN partnership has been driven by the common purpose of reducing Aotearoa’s emissions and building resilience to climate change for the agricultural sector.  The partnership has been working with farmers and growers who are affected by the new emissions targets to try and come up with a workable solution. Multiple stakeholders are involved including industry bodies, government, and Maori. If successful it will have a measurable impact by decreasing emissions more than the ETS will while aiming to maintain farmers profitability. Over 140 possible solutions have been narrowed down to two possible ways forward. Other options have been discounted mainly for equity reasons. Following initial farmer feedback options have been adjusted and further refined. The farmer engagement has been led by farmer directors from Beef + Lamb NZ and DairyNZ, supported by key staff from each organization. This sort of collective engagement has not been done before with 40+ face to face or online meetings being held over 4-6 weeks.



**He Waka Eke Noa**  
Primary Sector Climate Action Partnership










	LEVEL OF RESPONSE	GROUP OR ORGANISATION	DESCRIPTION	KEY INSIGHTS
2	Wider community response  	Northland Dairy Development Trust (NDDT)  	<p><a href="https://nddt.nz">https://nddt.nz</a></p> <p>The Northland Dairy Development Trust was formed in 2006 to support farmers in securing quality dairy research relevant to Northland. The Trust was a joint initiative between the Northland Agricultural Research Farm (NARF) and Fonterra. Trustees are appointed by NARF and Fonterra with an independent chairman. They contract a science manager and trust coordinator on a part time basis to ensure their objectives are met.</p> 	<p>The NDDT is driven by partnership, integrity &amp; commitment. Their purpose has been to provide relevant research for Northland farmers and raise the profile of Northland as an innovative and progressive dairying region. There are multiple stakeholders involved including MPI, DairyNZ, farmers, Fonterra, GEA, FIL &amp; Ballance &amp; the Chair of the Regional Council. Local people are very much embedded in and leading the project. The project is making a difference by trialing alternative pasture species that are relevant to Northland and increasing temperatures due to climate change. One local farmer has also been trialing alternative species on his farm for approx. 20 years and information is being shared between the research and commercial farm. The NDDT is very open with information and open for feedback. They hold regular open days and farmers are invited to come and join staff on their fortnightly pasture walks. They also have a very interactive Facebook page where farmers and researchers can connect.</p> <p><b><i>“The value of having a farmer management committee is the debates and mistakes that keep the science real and honest and reflects a relevant farm scenario”.</i></b>            (Terrence Brocx – Chairman – NDDT)</p>



	LEVEL OF RESPONSE	GROUP OR ORGANISATION	DESCRIPTION	KEY INSIGHTS
3	<p>Wider community response</p> 	<p>Thriving Southland</p> <p><i>Tōnui ana te whenua. Tōnui ana te takata.</i></p> <p><i>A thriving prosperous land. A thriving prosperous people.</i></p>  	<p><a href="https://www.thrivingsouthland.co.nz">https://www.thrivingsouthland.co.nz</a></p> <p>Thriving Southland has been a vehicle to inspire community action to protect and improve the environment by enabling and supporting catchment groups, using solutions that come from the community and farmers.</p> <p>It originated from a group of DairyNZ Dairy Environment Leaders who after a cancelled flight from Wellington got together and came up for a strategy for their region. Initially they worked to get farmers on board into catchment groups and later the government came on board with funding to enable Thriving Southland to be set up and the support for the community and farmers to be better resourced.</p>	<p>The group had a clear purpose or vision 'a prosperous Southland, healthy people, healthy environment from the mountains to the sea'.</p> <p>A 'burning platform' of changing regional (and national) regulations meant the group was very focused on creating and implementing their strategy.</p> <p>The whole community, including all stakeholders have been brought on board and been involved.</p> <p><b>"People need to turn and face nature collectively".</b></p> <p><b>"Through collective action you get collective engagement".</b></p> <p><b>"You need to get the community to understand that everyone has a role to play".</b></p> <p><b>"No one sector can do it on their own".</b> (Ewen Mathieson - Chair, Thriving Southland)</p> <p>The people affected by the change have been the ones driving the change and facilitating the processes to find solutions.</p> <p>The people leading the groups have understood the issues and been good at connecting with and influencing stakeholders to be involved.</p> <p>What they have been doing has made a real meaningful, visible and measurable difference for their region. They have been able to get feedback from government and regulators on progress and from the public and farming community via social media.</p> <p><b>"Engagement &amp; empowerment have been key to the success..."</b></p> <p><b>1. farmer 'engagement' has allowed them to understand what to do and why they need to be involved,</b></p> <p><b>2. once we got engagement understanding has led to 'empowerment' and helped them to look at how they need to move and change. It's been important for farmers to see they don't have to do it all within their farm system, this is a whole community effort".</b> (Ewen Mathieson – Chair, Thriving Southland)</p>



<p>4</p>	<p>Catchment Group response</p> 	<p>Pūniu Rivercare (PRC)</p> <p>VALUES</p> <p><i>Mauri</i> – boosting a new life force into a sustainable world</p> <p><i>Kaitiakitanga</i> – keepers of our waterways, rivers, whanau &amp; homes.</p> <p><i>Whanaungatanga</i> – strategic relationships &amp; empowering whanau.</p> <p><i>Maramatanga</i> – to know your place in a sustainable world.</p> <p><i>Rangatiratanga</i> – self-determined to take the lead for a sustainable world.</p> <p><i>Kohā</i> – limitless generosity acknowledging the celebration of life.</p>   	<p><a href="https://puniuinc.org">https://puniuinc.org</a></p> <p>The Pūniu River is 57km long and flows past four Marae to where it meets the Waipā River.</p> <p>PRC is an incorporated society with the overall vision “Safe places, healthy water, healthy people”.</p> <p>The Kaupapa (purpose) of PRC is to enable local hapū to be involved in the environmental restoration and enhancement of the Pūniu River catchment, the wider Waipā and lower Waikato catchment areas, while providing employment and work experience opportunities for local people. PRC now employs 45 staff and has won various environmental and leadership awards.</p> 	<p>Maori world view and values at the centre of everything they do.</p> <p>Switched people from an unhealthy, consumerism mindset (with no regard to resources) to being more conscious of their impact &amp; realizing that ‘kaitiaki’ was within them (i.e., moved from a destructive to re-generative mindset).</p> <p>Joining PRC looked after people’s well-being better.</p> <p>Gave them a sense of purpose and people felt they were part of the solution.</p> <p>Having a real tangible impact on their local river.</p> <p>Multiple stakeholders, local farmers, government, hapū, communities. Local people driving the change.</p> <p>Ways of doing things were adapted early on as they were developed based on what worked and didn’t work.</p> <p>Straight replication to other regions didn’t work, found they needed to empower people to build relationships in their own regional context.</p> <p><b>“Need to replicate the process not the person”.</b> (Shannon Te Huia, Kaitiaki)</p> <p>What’s good for Maori is good for everyone. The two groups want the same things (e.g., to swim in the rivers, go fishing &amp; have more time with their kids) but were literally ‘speaking different languages’.</p> <p>Feedback on how they are going and reward in the form of open days to showcase work was important.</p> <p>The challenge now is to increase their impact within the constraints of footprint, water, availability of contracts while staying focused on strategy.</p> <p><b>“When we took our focus off restoring our awa (trying to help other regions) the culture changed as we lost our purpose”.</b> (Shannon Te Huia, Kaitiaki)</p>
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#### 4.1.3 What's made them perform well?

There are some common themes as to why these 'innovations' or new and different ways of people doing things have been successful. They can be broadly summarised as follows: -

1. **Values driven** – shared strong values around what people believe or want to work.
2. **Common purpose** – shared and clear common purpose or why.
3. **Multi-stakeholders** – there are a range of people involved (sometimes 'unlikely friends') who are coordinated and well connected.
4. **Multiple outcomes** – multi dimensional outcomes are achieved.
5. **Local ownership** – local people embedded including local Hapū. Engagement is bottom up and the change is being driven by those affected by the change.
6. **Realizable local impact** – making a real measurable difference to communities.
7. **Fit for purpose leadership** – the right leadership in the right roles at the right time with the right skills!
8. **Well facilitated** – by those affected by the change.
9. **Collaborative problem defining (& solving)** – really understand the problem they are trying to solve.
10. **Feedback mechanisms** – feedback is timely, robust, and incorporated to keep improving the problem or redesign the solution through an iterative or design thinking type process.

It was noted with one group that I spoke with that even better co-ordination and connection of stakeholders would help them to make even more progress with change. Everyone also talked about their frustration because it takes much more time to get things done but you get a much better result.

The innovation was initially happening from the 'ground up'. The locally and regional responses had started some time ago. The national HWEN response is an example of something that has happened more recently.

Also relevant to several of the case studies and in other discussions is that simply copying what works for one project in one region won't work. To succeed in exporting expertise, we must '**adapt rather than copy and paste**' as policy, infrastructure, services, natural resources values, people etc. all need to be understood in the local context.

The focus should be on people and building human capability. Conversations need to be had about how we upskill people, who are the right organisations to deliver this and what is the best context to deliver e.g., national, or regional.



## 4.2 PWC Workshop Insights

In November 2021 I attended the PWC 'High performance in the primary industries' workshop in Christchurch. This was attended by 40+ senior and emerging leaders from the New Zealand primary industries. The objectives of the day were to validate and confirm there is a cultural challenge that is driving a number of poor outcomes for the sector and to explore what the attributes of a high performance culture would mean within the primary sector context. Individually and in groups attendees unpacked some of the current behaviours stopping us from achieving a high performance culture. Figure 32 shows that behaviours can be summarised into one of these key areas:-

1. Agility
2. Cultures
3. People
4. Organisations.

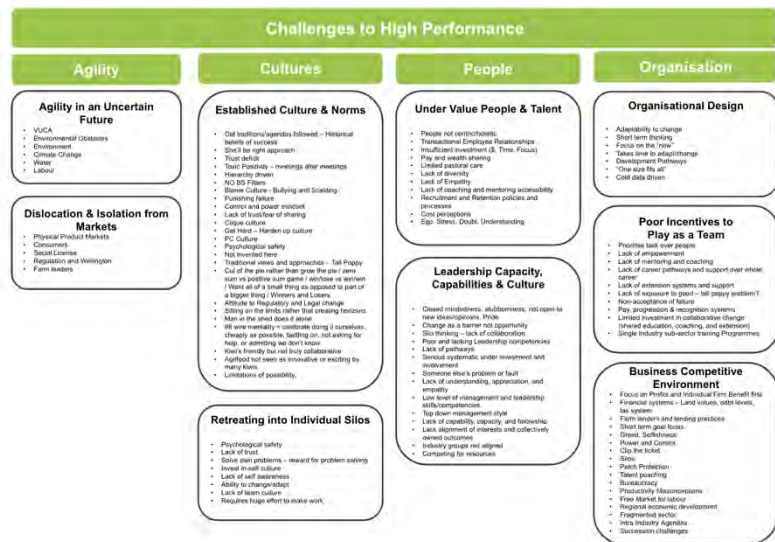
It was confronting to note the number and range of 'behaviors' that people currently see and experience that are holding the primary back. Note that 'behaviour' is described in the Oxford Dictionary as 'the way in which one acts or conducts oneself, especially towards others'.

However, even more confronting was the quick 'litmus test' that was done on the group to test our aspirations of where we are today compared to where we want to get to (Figure 33).

1. 100% of attendees thought we needed to change the status quo to a more supportive/teams based environment.
2. 97% thought we needed to be more collaborative.
3. 94% thought we needed to be more values driven (PWC, 2021). My observation is that this needs to be shared values in an organisational context.

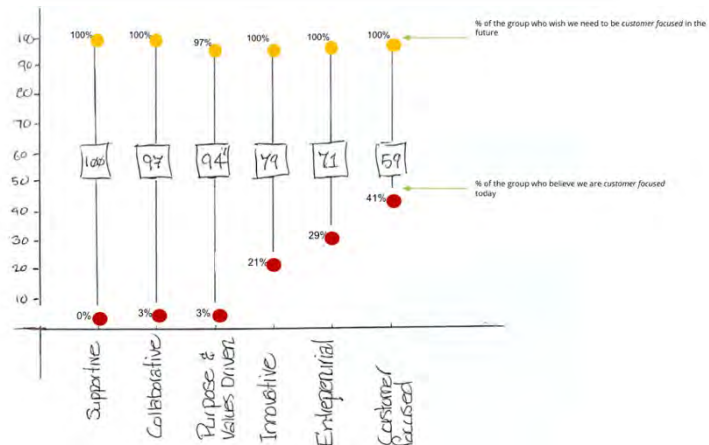
When this is considered in the systems change context it becomes even more relevant. Support, collaboration, purpose, values, innovation and entrepreneurship are things that

FIGURE #32 – CHALLENGES TO HIGH PERFORMANCE



Source: PWC Workshop Playback.

FIGURE #33 – CULTURE CONTINUUM ASSESSMENT



Source: PWC Workshop Playback.



are needed to help organisations, groups and sectors move from a H1 to a H3 horizon. If we are struggling with these aspirations in our current state how will we make the transformation we need to? The group did identify several high performing firms, start-ups, cohorts and pan-sector responses that might be described as 'islands of excellence' (PWC, 2021). Much could be learnt from these groups their values, behaviour and culture.

### 4.3 Critique of counter views

#### 4.3.1 Dairy is a sunset industry

Many would argue that dairy is a sunset industry and none of this matters anyway as it won't exist for much longer. In the article 'Spotlight on sunset industry' The Vegan Society (2022) claim 'global economists predict the collapse of the dairy industry within 10 years' and that as a country famed for its innovation Aotearoa is currently falling behind as new technologies come into play. They say that dairying is no good for our land, it is polluting our water and it is inherently cruel to the cows.



PHOTO #25 – Examples of plant-based milk alternatives (Source: the Vegan Society)

The go further to say that consumers are finding that plant-based alternatives are fast becoming a cheaper option than their favourite dairy item. Oat milk is the new environmentally friendly product, being cheap to produce, grows with low inputs and can now be processed within Aotearoa (Vegan Society, 2022).

The Vegan Society (2022) believe that precision fermentation is the way of the future to feed the burgeoning global population. They also suggest that infertile land should be given back to rewilding, and that the growth of native forests, is a good climate change mitigation strategy for Aotearoa.

By contrast the OECD-FAO Agricultural Outlook 2020-2029 said that world milk production is projected to grow at 1.6% p.a. (OECD, iLibrary) over the projection period (to 997 Mt by 2029, faster than most other main agricultural commodities). There is increasing demand for dairy in particularly in India, Pakistan and Africa, which is being driven by income and population growth.

New Zealand is the most emissions efficient producer of milk internationally (Figure 29). If we don't produce milk, other less emissions efficient countries will take our place. This is called emissions leakage. Ritchie(2022) compares the environmental impacts of various plant based milks as concludes that it depends which environmental impact you are concerned about as to which milk is the best. She also says that it is important to consider demographics, nutritional requirements and other dietary intake. While many plant based milks are now fortified with nutrients she does say that 'the protein in dairy is a more complete protein source, which means it has the full profile of essential amino acids.

It is likely that 'infertile land' is already planted in trees to help with climate change. To plant more natives farmers need changes to the ETS to occur for their sequestration to be included or for them to be included in the HWEN sequestration proposal. With regards to the comments on animal cruelty this is simply incorrect and the sector have high standards around animal care and a commitment through the Dairy Tomorrow strategy to 'be world leading in on-farm animal care' (Dairy Tomorrow, 2017). A further issue that is rarely discussed





is what would happen to all the land if it was depopulated of animals? There would be other unintended consequences such as an increase in weeds and pests.

#### 4.3.2 Capitalism vs Altruism

Many would argue that Raworth's (2017) Doughnut Economics model will never work because capitalism will always win over altruism and it is human nature for people to put their own self-interests first above those of others. Micha Narberhaus (2021) in the article 'Doughnut Economic is the answer, isn't it?' says he doesn't disagree that an economy based on more intrinsic motivations is possible and even preferable but doesn't believe that in today's global hyper commercialised capitalism there are sufficient incentives to move to such a scenario.

Narberhaus (2021) believes that the core of the problem is at the global level. While individuals can make adjustments that come at a significant monetary or convenience cost they have a close to zero effect on climate change for example. He discusses the option of an international consumption tax that could be paid on the richest 10% of the world's population or a 'quasi lock-down' that would continue for an indefinite future that most of the population of rich countries would not be excited about.

Both perspectives have merit but we have seen that Covid has changed peoples perspectives significantly on what is important and what they value and people are becoming happier with less personal wealth and more community wealth.

#### 4.3.3 Theory vs Practical

Many would also argue that a situation where we live within earths planetary boundaries while at the same time providing a minimum social foundation sounds good in theory but could never be achieved in practice. Branko Milanovic (Peril and Promise, u-tube) says limiting global growth is unrealistic and would lead to trade-offs that people would not want to make.

However, the city of Amsterdam has adopted the doughnut theory post Covid in 2021 and aims to be a circular city by 2050. Residents have adopted a mindset that what is really important in life is 'having enough'. This has given business leaders, government and activists a much needed space to collaborate around shared goals. Other cities such as Copenhagen, Brussels, Portland and Philadelphia are also adopting this way of operating.

This is a concept I want to explore further when we are able to travel internationally for Nuffield and will be interested to see if it has been adopted at a sector level anywhere.

#### 4.3.4 Values vs Purchasing Power

When people have all their needs met as per Maslow's Theory (1943) their lives become 'values' driven, but when they are overwhelmed with economic and food insecurity



PHOTO #26 - Amsterdam has adopted Doughnut economics (Source: kateraworth.com)



decisions their decisions are driven not necessarily by values, but value of purchasing power (Mel Poulton, personal communication, 2022). These people will demonstrate 'values' in the way they care about others in their communities but these very same people will revert back to value/price point decisions when under pressure and they will be driven by 'value of purchasing power'. Severe global/national economic disruption causes people to understandably revert to 'survival' mode.

Peoples drivers to how they make decisions are different in times of peace vs times of conflict and it is important for us to understand these. Values will still be demonstrated by how we care for others and conduct ourselves through such upheaval (Mel Poulton, personal communication, 2022).

#### 4.4 Flips – What needs to change?

There are several fundamental changes that I have identified through the course of my research that I think need to happen. These are summarised as 'Flips' below.

The Oxford definition of 'flip' is 'turn over, push, pull or throw (something) with a sudden quick movement'. In reality these changes will happen much slower but the word is used to describe them to illustrate that real definite and different thinking and behaviours are required to help us transition through systems change. Note though that some things from H1 will be carried through to H3 there just may be a shift in focus to more pastoral care, collaboration, enablement and empowerment of others, adaptiveness tec.

Flips describe the change in behaviour that will help us transition from Horizon 1 to Horizon 3 in the Three Horizons Model. I have grouped the flips I think need to happen into the following categories; measuring success, place in the world, mindset, behaviour, wealth, people, leadership, information, processes and skills.

TABLE #5 – 'FLIPS' OR CHANGES THAT NEED TO HAPPEN

Horizon 1	Horizon 3
Status Quo	Future
<b>MEASURING SUCCESS</b>	
One dimensional outcomes	Multi-dimensional outcomes
Shareholder capital	Stakeholder capital
Performance measures for shareholders	Performance measures for stakeholders
Activity	Outcomes
Compliance	Compliance +
Growth curve i.e. Traditional Economics	Thriving within sociological floor & our ecological ceiling i.e. Doughnut Economics
Volume -> Value	Volume -> Value -> Values
Specifications & standards	Standards driven by values
Winning (finite mindset)	Being better than before (infinite mindset)
Planet '-ve' actions	Planet '+ve' outcomes
<b>PLACE IN THE WORLD</b>	
Best in the world	Good for the world & good for people
Unconstrained	Constrained
Provider of product	Provider of nutritional wellness
<b>MINDSET</b>	
Incrementally better	Fundamentally better
Growth orientated	Purpose orientated
Extractive	Generative
Produce our way to higher performance	Think our way to higher performance
Challenges	Possibilities



Compartmentalised problems	Holistic solutions
Red brain defensive	Blue brain action
'Reductionist' mindset Problem -> Solution	'Expansionist' mindset Redefine the problem -> interact to understand the solution
Being driven by change	In the driving seat of change
<b>BEHAVIOUR</b>	
Protective	Curious
Self-interest	Altruism
Defensive	Critically reflective
Pioneer	Kaitiaki
Colonial systems	Indigenous biodiversity
Optimisation	Experimentation/innovation
Risk aversion	Uncertainty embracing
Working together	Transformational partnerships
<b>WEALTH</b>	
Wealth accumulation	Wealth distribution
\$'s	\$'s + social outcomes
Growing value	Capturing value
Liberal economic theory built on growth	Collaborative capitalism
<b>PEOPLE</b>	
Western society	Indigenous society (with ties to the land and natural resources)
Survival of the fittest	Belonging and connection
Competition	Co-creation
What we can get out of workers	What we can give, do or enable for people
Challenging relationships and sub-standard performance by employees	Relationships of respect, honesty & integrity where employees deliver or exceed expectations
Teaching	Coaching
<b>LEADERSHIP</b>	
Leadership = Being in charge	Leadership = Caring for those in your charge (while still having accountability and deliverables)
Hold power	Empower
Profile & position	Purpose & participation
<b>INFORMATION</b>	
Models (Explain a well-defined system)	Frameworks (Help us understand, explore and re-define)
Ownership of information	Leverage of information
Closed source & systems	Open source & systems
<b>SYSTEMS &amp; PROCESSES</b>	
Tick the box	Continual feedback & adaptation
Value chain	Values web
Experts (with solutions)	Explorers (who better define the problem & engage stakeholders to help solve them)
Farmers as individuals	Farmers with multistakeholder relationships (locally and globally) e.g. government, Māori, international consumers, civil society
<b>SKILLS</b>	
Science	Science + Social Science
IQ Intelligence + EQ Emotional Intelligence	IQ + EQ + AQ Adaptability Intelligence SQ Social Intelligence GQ Global Intelligence

#### 4.5 What does this mean for the future?

As a sector we are generally good at doing science and innovation and coming up with new and better ways of doing things. Where we have room for improvement is around developing people to better cope with tomorrow's challenges by growing capability and capacity to help drive implementation and new ways of doing things.



As leaders we need to rethink about how we change how capability and competency in the areas of emotional and social intelligence. We also have a big job ahead to build capacity of the people within the sector which will in turn help us innovate and make change.

Heisler (2014) describes 7 principles in the military context to build capacity that are also relevant in the dairy and agricultural context: -

1. Common purpose – what brings partners together.
2. Endurance – over time to build partner capacity.
3. Opportunism - seizing the moment when unforeseen circumstances create an opportunity.
4. Resilience – ability to cope and adapt to unforeseen events and changes.
5. Synchronization – ability to bring together disparate programmes, activities, and authorities.
6. Transparency – horizontally between partners and vertically between actors.
7. Unity of effort – working together over time towards a common goal.

Most of the observations around things that need to change that are discussed in this chapter involve a change in behaviors, a change in mindset or both. Where there has been success behavior has been collaborative and there have been multiple stakeholders involved. Where we are failing is where there is lack of collaboration and people aren't focused on a common purpose and don't feel supported. Many of the 'Flips' described also require behavior change but many are also about a change in mindset.



## Chapter 5 – Conclusions

I have seven key insights including an explanation of the change that is occurring around us, observations on the response to this, comments on how to go about systems changes and thoughts on some of the capabilities that we need to develop to help us thrive in the future.

Note that the aim of this report however is not to provide solutions but rather to provide information to better understand the problem. One of our roles as leaders needs to help people understand complex issues and empower them to help solve them.

I concluded through my Nuffield experience that we often offer up solutions without first really understanding the problem. I did this myself by first thinking we had to find a way to 'make the boat go faster'. Perform better, be more efficient, achieve 'high performance' and simply be better at what we do! At the end of what has been a two-year journey I now better understand that we need to have 'more boats working smarter' that are more interactive, innovative, and closer to our stakeholders.

Success with systems change will require a strong culture in the sector and a clear why around our purpose e.g., "*Better than before*". We will need to foster an increased sense of belonging where every person is valued and has an opportunity to contribute the capability. We will need to change mindsets in a range of areas and implement many of the flips I have described. We will also need purposeful leadership by leaders who can make the 'leadership leap' to the new AQ and SQ capabilities described, and we will need to foster capability development of local change agents and influencers to lead change within communities.

### 5.1 Key Insights

#### 5.1.1 Key insight #1 – Complex systems change is causing pressure

We are under increasing pressure because the system around us is changing. We are moving from a growth model to a model where we will need to maintain a minimum social foundation (as per the Sustainable Development Goals) while living within our ecological ceiling (the Doughnut model). Currently in New Zealand we are transition phase where there is a rebalancing of economic, environmental, social, and cultural outcomes as we move to a more holistic way of measuring the success of businesses. The system around us is changing structurally, relationally, and transformatively.

e.g., 'Meat the Need' is an example of a farmer led charitable supply chain helping maintain a minimum social foundation within communities where farmers are helping feed families in need. This project is achieving multi stakeholder outcomes through the act of giving and improving social licence for farmers.

#### 5.1.2 Key Insight # 2 - Collaborative, co-creative responses are people centric

People are at the centre of complex systems change. Collaborative co-creation of the future is happening at all levels from global, national, sector, regional, and catchment to farm level. Factors that have made these initiatives successful globally from the Sustainable Development Goals through to individual on farm level are primarily about relationships and connections, power dynamics and challenging beliefs and assumptions (or mental models) of how we think.



e.g., He waka eke noa has been a challenging and controversial process. To be able to move forward on this everyone will need to 'give a bit' on their ideal solution to find a solution that will be equally uncomfortable but work for everyone.

#### 5.1.3 Key Insight # 3 – A 'mission approach' is required for adaptation

Complex systems changes require more interactions and innovation 'super spreaders' need to be identified and enabled to do this. We need to move from the standard systems change approach where one 'big bet' is selected from many possible solutions to a system with multiple components where people committed to the mission with shared principles work on multiple outcomes.

e.g., Thriving Southland has a small group of farmer leaders committed to the vision 'A thriving prosperous land. A thriving prosperous people'. They have initiated a range of projects to get farmers and the community on board with the change process some of which include: - Paint a better picture, Aquavan marine studies education, Winter crop trials, and Catchment groups.

#### 5.1.4 Key Insight # 4 – A complex system can't be aggregated or replicated

A complex system needs to be broken down and the components understood and then built up again or adapted. The contextual environment and how a system interacts changes from situation to situation. Assertions can be applied and taken as given but assumptions need to be tested.

e.g., It wasn't as simple as replicating Pūniu Rivercare but rather replicating the processes within the organisation and using another organisation (Te Mahere Whakauka) to apply them nationally in regional contexts.

#### 5.1.5 Key Insight # 5 – Adaptability & Social Intelligence need further development

AI or adaptability intelligence involves having the skills to be flexible to change, deal with different scenarios, balance multiple demands, and adapt to new situations. A leader with these skills can adjust strategy or style and work through multiple challenges as they arise. SQ or social intelligence is about having multidimensional networks where trust can be built, and mechanisms created for better stakeholder connection. Complex systems require us to better develop AQ & SQ skills and capability in our people.

e.g., within the DairyNZ Dairy Environment Leaders Programme AQ and SQ skills have been nurtured and developed in farmers to give them the skills and confidence to lead regional change programmes.

#### 5.1.6 Key Insight #6 – Use, leverage & better organise information.

There is a lot of information and thought leadership capability available within the sector. Often when solutions are sought something 'new' is looked for. We need to better organise, present, and use what we have available already. We also need to look at what we have with fresh eyes and challenge to look at what we have available to us from a different angle. e.g., Many previous Nuffield Scholars have made recommendations, not many have been picked up and applied within sectors. Where they have as in the case of WaiOra at Wakatū Incorporation they have had phenomenal success.



### 5.1.7 Key Insight #7 - Change Mindset around change

Change is not going away it will be constant in our 'new normal'. We need to use social science to better explain to farmers their reaction to change and how they can better manage their thinking around change. This will set them up better to cope. e.g., Doug Avery and organisations like FarmStrong have been able to change the narrative around 'well-being' and move it from a 'tabu' subject to something mainstream where farmers now have better frameworks and tools to discuss these issues

***Māku e kii atu, he tāngata, he tāngata, he tāngata.***

***What is the most important thing in the world? Well, let me tell you, it is people, it is people, it is people.***

All my key insights are people related. We are great at doing science as a sector but all organisations at all levels, whether they are on farm, providing services to the sector, supporting, or leading the sector would do well to consider how these insights could be applied in their context. Some will be more relevant than others.

## 5.2 Leadership Challenge

Just as the way the success of our businesses will be measured in the future is changing, so too will the way we view success of our leaders.

***"More and more leaders will not be remembered for the profits or the growth of their business ... They will be remembered for the impact they have on society."*** (Paul Polman, former CEO of Unilever)

Leadership tomorrow won't be about profile and position it will be more purposeful as well as participatory and about achieving real meaningful outcomes. It won't be about being in charge but rather caring for those in your charge. It won't be about holding power but rather about empowering (with accountability) others to get closer to stakeholders and interactively problem redefine and solve challenges.

***"Good leaders introduce new thoughts; great leaders teach new ways of thinking"***  
***and***

***"Influential leaders raise other leaders to deliver/implement the thinking and help others to do so too."***

At the PWC Workshop (2021) the type of leadership that led to high performance was described as inspired, co-operative, had a high level of communication and was structured but flexible.



### 5.3 Science + Social Science

Technical greatness will only get us so far, it's our ability to **connect** and interact with people as well our ability to **adapt** that will help us transform.

*"It is not the strongest of the species that survives, not the most intelligent that survives. It is the one that is the most adaptable to change."* (Charles Darwin)

We need to move our thinking from infinite growth in a world of finite resources to a world of infinite ability to adapt within a world of finite resources. Simon Sinek (2019) describes a finite mindset as one that fears surprises and an infinite mindset as one that sees opportunity in uncertainty. He says that the aim of the game is to stay in the game (indefinitely) by continuing to adapt.

Growing social science capability for the dairy sector will help us be more successful. Figure 34 shows some of the areas where there are opportunities for us to improve and grow our influence.

### 5.4 'IQ' to 'IQ +' Framework

Figure 35 is a framework that links many of the ideas from this report in a way that should help people think about the competencies needed for the systems change process we are going through. Some of these skills will not be currently being delivered and as a sector and we will need to think about what programmes need to be developed to ensure we are future ready.

FIGURE #34 – SOCIAL SCIENCE INFLUENCE OPPORTUNITIES







### 5.4.1 Future Competencies Model

FIGURE #35 – IQ + EQ + AQ + SQ FRAMEWORK

	<b>SQ</b> Social Quotient	<b>CONNECTING OUR WAY TO SUCCESS</b>	<div style="border: 1px solid black; padding: 5px;"> <b>Relationships</b> Weak ties vs strong ties         </div>
+			
	<b>AQ</b> Adaptability Quotient	<b>ADAPTING OUR WAY TO SUCCESS</b>	<div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <b>Process</b> Reduce waste of energy, time, inputs &amp; be operationally efficient         </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <b>Feedback</b> Design thinking, Collaborative innovation &amp; creative conflict         </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <b>Problem solving</b> Need to be explorers, redefine problems &amp; identify the common purpose         </div> </div>
+			
	<b>EQ</b> Emotional Quotient	<b>THINKING OUR WAY TO SUCCESS</b>	<div style="display: flex; justify-content: space-between;"> <div style="border: 1px solid black; padding: 5px; width: 25%;"> <b>Culture</b> Incl. teamwork, respect, behavior, &amp; belonging         </div> <div style="border: 1px solid black; padding: 5px; width: 25%;"> <b>Drive</b> Our 'Why' &amp; 'Purpose' we do what we do         </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <b>Wellbeing</b> 5 ways to wellbeing - connect - give - take notice - de personalize - learn - be active         </div> <div style="border: 1px solid black; padding: 5px; width: 20%;"> <b>Thinking</b> Red brain vs blue brain         </div> </div>
+			
	<b>IQ</b> Intelligence Quotient	<b>DOING OUR WAY TO SUCCESS</b>	<div style="border: 1px solid black; padding: 10px; text-align: center;"> <b>Technical Ability or Mastery</b> (The <u>foundation</u> or science of how to get better)         </div>



## Chapter 6 – Recommendations

Innovations or new ways of doing things that will further transition us towards sustainability and improving our social licence, go beyond pure science of new technologies, products, or services to include new behaviors and changes in mindset. They include areas of social science which involve better understanding and supporting the change process, helping support people get past the barriers to change, empowering them to lead the change themselves and upskilling them in new competencies such as AQ and SQ.

Our world is becoming increasingly complex with multiple stakeholders. We need to get closer to these stakeholders so we can demonstrate and share the value that the sector brings to the economy and communities. In doing this we will embark on a journey of experimentation, and co-design of solutions to the complex challenges and 'redefined problems' of system change we face.

The following are a list of actions I am recommending based on my Nuffield experience to date. They are the 'how' of the assimilation of all my thinking, conversations, research, and conclusions.

### 6.1 Recommended Actions

#### Recommendation #1

Increase the dairy sector's contribution to society's minimum social foundation and better articulate this contribution to help retain social licence by getting more farmers to act and understand that how and where they contribute is important.

#### Recommendation #2

Include the right people with the right skills and capabilities (collaboration, connection, and innovation) who are close to the problems to be solved, in a way that is truly co-creative by nature.

#### Recommendation #3

Identify and empower innovation super spreaders and systems where people can share ideas easily, work together and motivate one another towards a common purpose or mission.

#### Recommendation #4

Solutions to complex problems can't be replicated, instead we need to adapt components or processes and apply in regional or local contexts.

#### Recommendation #5

Grow further farmer and sector capability within the AQ adaptability intelligence & SQ social intelligence competencies using existing conduit organisations such as AWDT and NZ Rural Leaders Trust.

#### Recommendation #6

Leverage information, capability and thought leadership that is available within the sector. This needs to be better coordinated, valued, and implemented as a lot of the solutions we need are available they are just not well implemented. Organisations within the sector and



government need to work together better on this to establish better processes to allow this to happen.

**Recommendation #7 -**

Grow farmers understanding of change and toolbox of mental and emotional skills to be able to cope with, manage and implement change. This is a role for industry bodies but must be done in conjunction with key local farmer influencers.



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CSC *Global Leadership Series UK* with HRH The Princess Royal and guest speaker the CEO of BP Bernard Looney.

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<https://ruralleaders.co.nz/farming-in-a-pressure-cooker-how-pressure-impacts-farmer-decision-making/>

## Personal Communications

Benns, M. (2021 & 2022). Mark Benns - Farmer & Tatua supplier.

Brocx, T. (2022). Terrence Brocx – Farmer & Chairman, Northland Dairy Development Trust.

Clarkson, S. (2022). Sean Clarkson - International sailor.

Hill, F. (2022). Freya Hill - Senior Manager, Insights & Analytics, DairyNZ.

Gow, H. (2021 & 2022). Prof. Hamish Gow – Sir Graeme Harrison Professional Chair in Global Value Chains & Trade, Professor of Agribusiness, Lincoln University.

Judd, S. (2021 & 2022). Sam Judd MNZM. Co-Founder Te Mahere Whakauka.

Letcher, A. (2021). Aaron Letcher, Senior Manager Strategic Engagement, DairyNZ.

Matheson, Ewen (2021 & 2022). Farmers & Chairman, Thriving Southland.

Muir, J. (2022). Jane Muir - People Team Leader, DairyNZ.

Parsons, C. (2021 & 2021). Chris Parsons MNZM, DSD – Chief Executive, NZ Rural Leaders Trust.

Peterson, S. (2022). Simon Peterson - Former CEO, Rowing New Zealand.

Poulton, M. (2022). Mel Poulton – Farmers & Special Agricultural Trade Envoy.

Sweet, M. (2021). Melanie Sweet - Director, Te Ahu Consulting.

Taylor, S. (2022). Stewart Taylor - GM Craigmere Sustainables.

Te Huia, S. (2022). Shannon Te Huia - Kaitiaki, Pūniu Rivercare & 2021 Kiwibank Local Hero of the Year.

Van der Poel, Jim. (2021 & 2022). Jim van der Poel - Chair, DairyNZ.



## Conferences Attended

E Tipu – The Boma Agri Summit

<https://etipu.boma.global/2021>

Climate Commission Conference 2022.

<https://www.climatecommission.govt.nz/get-involved/events/>

including:-

- The RT Hon George Eustice MP, Secretary of State for Environment, Food & Rural Affairs, UK
- Professor Mark Howden, Director of the Institute for Climate, Energy & Disaster Solutions at the Australian National University
- Dr Rodd Carr, Chair of Climate Change Commission
- Dale Crammond, Ag Inspector at Department of Ag, Ireland - Climate Change & Bioenergy Division
- Professor Andrew Campbell, CEO Australian Centre for International Agricultural Research & Chair Global Research Alliance
- Phil Houlding, Director of International Policy, MPI NZ
- Ray Smith, Director General of MPI, NZ
- Murray Hemi & Warren Landless, Miraka
- Dr Tanira Kingi – Director Climate Change Commission & Pāmu, Scion

Primary Industries New Zealand Summit 2021.

<https://primaryindustries.co.nz/agenda>

## Nuffield Visits & Presentations (Australia & New Zealand)

*Thank you and apologies if I have missed anyone off the list!*

Corene Walker – InzideEdge, BOP (*Emotional Awareness, Disruptive Leadership, Health & Wellbeing*).

Various members of the Umwelt Environmental Team – Umwelt, Australia (*Social License, Mining*)

Jodie Radcliffe – CEO, Nuffield Australia & Nuffield International (*Nuffield, Cattle*)

Merino New Zealand - Christchurch (*Wool & Innovation*)

Logan Williams, Keravos – Christchurch (*Wool & Innovation*)

Barenbrug team – Ashburton (*Research, Seed*)

Craige McKenzie (Nuffield Scholar) – Methven (*Precision Agriculture*)

Hamish Marr (Nuffield Scholar) – Methven (*Arable & Glyphosate*)

SAS senior leadership – Auckland (*Leadership, Pressure, Crisis Management & High Performance*)

NIWA – Bream Bay, Whangarei (*Aquaculture*)

Bells Produce (Te Rarawa) – Kaitaia (*Māori Agribusiness, Market Gardening*)

Olivadi – Kerikeri (*Avocados & Bioenergy*)

James Parsons (Nuffield Scholar) – Whangarei (*Value Chains, Sheep & Beef*)

Patrick Malley, Maungatapere Berries - Whangarei (*Berries*)

Matt Punter, Kaipara Kai – Dargaville (*Diversification, Community resilience, Water*)

Peter McNab, Fonterra – Auckland (*Dairy & Kiwifruit*)

Simon Yarrow, Callaghan Innovation – Auckland (*Innovation, Operational efficiency*)

Sam Judd, Founder Te Mahere Whakauka – Auckland (*Māori social enterprise*)

Antony Heywood, Hort NZ – Pukekohe (*Horticulture*)

James Kuperus, Onions NZ – Pukekohe (*Onions*)



Jeanette Rae, Scarborough Fare (*Hydroponics, Diversification of markets, LEAN, Online*)  
Brent Wilcox, AS Wilcox – Pukekohe (*Market Gardening*)  
Dacey Balle, Balle Bros - Pukekohe (*Potatoes, Onions, Family business ownership*)  
Philip Burton, Waikato River Authority – Hamilton (*Iwi co-governance*)  
Mark Harris, Gallagher's – Hamilton (*Technology, Innovation, Partnerships, Intergenerational success*)  
Ed Hemming, Volare – Hamilton (*Bakery & Start up business*)  
Simon Peterson, Rowing New Zealand – Cambridge (*Culture, High Performance*)  
Marise Stewart, Rangitāne Tū Mai Rā Investments (*Māori land ownership & Māori agribusiness*)  
Ian Jones, Craigs Investments – Opotiki, (*Kiwifruit, Musses, Investment*)  
Shannon Harnett (Nuffield Scholar) – Opotiki, (*Kiwifruit & Avocados*)  
Gordon & Murray, Leaderbrand Produce – Gisborne (*Vegetables*)  
Dave, Fenton, Dave Reid, Ewen, Farmers – Gisborne (*Rural communities, Forestry impact*)  
John Loughlin, Chairman Rocket Global Ltd, MIA, Eastpack (*Apples, Supply Chains*)  
Gary Jones, NZ Apples & Pears – Hastings, (*Apples & Pears*)  
Scott Lawson, Lawson Organics – Havelock, North (*Organics*)  
Chris Garland, Baker Ag – Masterton (*Extension, On-farm change*)  
Mark & Susannah Guscott, Atkins Ranch – Martinborough (*Supply Chains*)  
Dr Anna Powles, Massey University – Wellington (*International Relations*)  
Nick Beeby, GM Market Development, Beef + Lamb New Zealand – Wellington (*Consumer behaviour, Trade*)  
Gavin Forest – GM Policy & Advocacy, Federated Farmers – Wellington (*Policy*)  
Leigh Catley, GM Communications, Federated Farmers – Wellington (*Comms*)  
Kelly Forster, Programme Director, HWEN – Wellington (*Climate Change*)  
Phil Wiles, Policy Analyst Land Use Team, Climate Change Commission – Wellington (*Land use*)  
Andy Elliot (Nuffield Scholar) Research & Business Development Manager, AuOra (Wakatū) – Nelson (*Māori agribusiness, Innovation*)  
Miriana Stephens, GM AuOra (Wakatū) – Nelson (*Māori agribusiness, Innovation, Health & Wellness*)  
Julian Raine (Nuffield Scholar), Oakland Dairy – Nelson (*Dairy, Vertical integration*)  
Murray King (Nuffield Scholar), Kingsway Farm – Nelson (*Dairy, LIC, Data, Water storage*)  
Ben McGlauchlan (Nuffield Scholar), Director Marlborough Grape Growers – Blenheim (*Viticulture*)  
Art & Helen Blom, Mills Bay Mussels – Blenheim (*Mussels, Dairy, Tourism*)  
Hamish Murray (Nuffield Scholar), Bluff Station – Kaikoura (*People, Leadership, Resilience*)  
Crown Research Institutes, Melissa Robson Williams et al – Christchurch (*CRI's*)  
including:-  
- Brendon O'Connell, Agritech NZ  
- Robin Dynes, AgResearch  
- Roger Robsin-Williams, Plant & Food  
- Steve Wakelin, Scion  
- Richard Levy, GNS Science  
- Nicky Harcourt, Landcare Research  
- Meg Divane, Institute of Environmental Science & Research  
Farmlands, Futures Team – Christchurch (*Business transformation*)  
James Powell, Co-founder, CFO & Spaceplane Chief Engineer, Dawn Aerospace – Christchurch (*Rockets, Innovation*)  
Steve Anderson, Managing Director, Foodstuffs New Zealand – Christchurch (*Supermarkets*)  
Damian Lynch, GM Strategy & People, Foodstuffs South Island – Christchurch (*People, Strategy*)  
Dougal Ferguson, Executive Director, Management Consulting, PWC - Christchurch (*Insights & issues*)



Kate Scott, Ground HQ – Cromwell (*Environmental Planning*)  
Desiree Reid-Whitaker, Cadronna Distillery – Cromwell (*Brewing, Start-up business*)  
Keith Nalon, Businessman & Entrepreneur – Queenstown (*Entrepreneurship, Business innovation*)  
Ed Pickney (Nuffield Scholar), Jericho Station – Te Anau (*Sheep & Beef, Diversification*)  
Todd Charteris, CEO, Rabobank – Hamilton (*Finance*)  
Bruce Weir, GM Country Banking NZ Rabobank – Hamilton (*Finance*)  
Chuck Dowdell, RocketLab – Mahia (*Rockets, Innovation, High Performance*)  
Major John Cooke & Lieutenant Colonel Maurice Parsons, Linton Army Camp, – Palmerston North (*Military, Infrastructure, People*)  
Dean Williamson & team, Global HQ - Fielding (*Leadership, Information sharing*)  
Pūkaha (National Wildlife Centre) team – Mt Bruce (*Conservation, Restoration*)  
2018 & 2019 Nuffield Scholar presentations at Nuffield Biennial (*Report insights*)  
Matt Morrison, All Good Bananas & Phoenix Organics – Wellington (*Food & Beverage, Social License*)  
Various Representatives of the Diplomatic Community - Wellington Diplomat Function (*International relations, Trade*)

**Via Zoom**

Ian Proudfoot – KPMG, Wellington (*Global Agribusiness*)  
Mike Taitoko, Toha – Wellington (*Regenerative Agriculture*)  
Steve Cardon, Pāmu – Wellington (*SoE's, Diversification, Innovation*)  
Caroline Lambert – EU Head of Trade Section at European External Action Service – Wellington (*Trade*)



# Appendices

## Appendix 1 – Dairy Quick Stats

### QuickStats about dairying – NEW ZEALAND

<b>HERDS AND COWS</b>	<b>Total effective hectares of dairy land in New Zealand</b> <b>1,730,374 million hectares</b>	<b>Milk processed by dairy companies (2019-20)</b> <b>21.1 billion litres</b>	<p><b>THE NORTH ISLAND HAS 71.4% of New Zealand's dairy herds, 58% of dairy cows and produces 54% of New Zealand's milksolids.</b></p> <p><small>THE SOUTH ISLAND HAS 28.6% of New Zealand's dairy herds, 42% of dairy cows and produces 46% of New Zealand's milksolids.</small></p>
<p>Total number of herds <b>11,179</b></p> <p>Average herd size <b>440</b></p> <p>Number of cows (milking) <b>4.92 million</b></p>	<b>3.68 HERDS TESTED</b>	<b>3.46 MILK LITRES WASTED TO AB</b>	
<b>FARMERS AND DAIRY LAND</b>	<p>Number of farm owner/operators (including herds with contract milkers) <b>7,865</b></p> <p>Number of sharemilkers <b>3,227</b></p> <p>Average farm size <b>155</b></p> <p>Average cows per ha <b>2.84</b></p>		

**DAIRY FARMING CONTRIBUTED 34%** (in 2019-20) of the total value that New Zealand earned from its merchandise exports.\* This is about two and a half times greater than the meat sector, more than three times the wood sector and ten times the wine sector.

*The value of dairying in New Zealand*

Jobs in the dairy industry  
**50,000 employees**

Amount of export revenue NZ earned from dairy farming (year to June 2020)  
**\$NZ19.7 billion**

Source: Dairy's economic contribution - 2020 update, Sense Partners

New Zealand produces **3%** OF ALL THE MILK IN THE WORLD.

New Zealand is the world's largest exporter of dairy products, but is only the **7th** largest milk producer worldwide.

*Numbers employed in the dairy industry in New Zealand*

	Number employed
On-farm	30,409
Processing and wholesaling	19,508
<b>Total dairy employment</b>	<b>49,917</b>



dairyatwork.co.nz

Source: NZIER, New Zealand Dairy Statistics, Ministry for Primary Industries Statistics New Zealand, DairyNZ Economics Group, January 2020

\*Not including meat industry earnings from cull cows which are counted in the beef industry contribution.

**DairyNZ**



## Scholar Bio

DairyNZ Director and Nuffield Scholar, Tracy Brown has been leading environmental change for dairy through previous roles as Chair of the DairyNZ Dairy Environment Leaders Programme, Chair of the Ballance Farm Environment Awards Alumni, and as farmer representative on the Dairy Environment Leadership Group (DELG) which oversaw the Water Accord. She was also appointed by Cabinet to the Essential Freshwater Independent Advisory Panel.



Tracy was involved with setting the future direction for dairy as a farmer rep on the Dairy Industry Strategy Refresh Working Group for Dairy Tomorrow.

Currently she is involved in Māori/iwi governance as Chair for Te Rarawa Farming Ltd, in the Far North and as a Trustee for Te Mahere Whakauka (The Hope Project). She is a past Trustee of Dairy Women's Network, St Pauls Collegiate School and Matamata Intermediate School.

Tracy, originally from Northland (Te Rarawa, Ngai tupoto) is married to Wynn. She lives near Matamata on their 700 cow, 310ha (240ha milking platform) system 3 farm 'Tiroroa' (extensive view or view to the future) which won the Waikato Ballance Farm Environment Supreme Award in 2010 and the Fonterra Farm Source Responsible Dairying Award in 2018. An Agri-Women's Development Trust 'Escalator' Alumni, she won the 'Sustainability Superstar' Award in the 2018 Sustainable Business Network Awards and was a finalist in the 2017 Westpac Women of Influence Awards.

Tracy was an Economist at the NZ Meat and Wool Boards Economic Service (now Beef + Lamb New Zealand) prior to entering the dairy industry. Tracy has a BAgSci (Hons) from Massey University, is a Kellogg's Rural Scholar (Lincoln University) and has a postgraduate Diploma in Management Studies (Waikato University). Tracy's strengths are in strategy, collaboration and connectedness and is a member of the Institute of Directors. Tracy has four teenage/adult children age 16 to 21yrs and enjoys gardening, walking mountain biking and anything to do with the sea!

***"My earlier career as an agricultural economist, combined practical farming knowledge and experience as an environmental change leader has driven me to try and connect and help others understand the macro forces going on in the world with the change we are faced with and some thought leadership on how we will think our way through these challenges".***