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# Farming Into the Unknown – What COVID-19 Has Taught Us About Engaging With Greenhouse Gas Emissions

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# Executive Summary

*Industries do not change when new systems are introduced, they change when people adapt to those new systems.*

COVID-19. New Zealand Lockdown. We all lived through not knowing what was coming next. What does this have in common with Greenhouse Gas (GHG) emissions? **Uncertainty and imposed change.**

While as a nation we were unsure how long Lockdown would go for, farmers do not know what regulations will come into place and in some instances if their businesses will survive. For both COVID-19 and GHG system changes, there is no known endpoint, you cannot see the virus or gases and the science is evolving. Both are technical challenges with critical social components. And finally, both have a large amount of imposed change in a pressured timeframe.

*The objective of this report is to build awareness. Awareness of what people are experiencing internally before being able to accept and embody change. Lockdown has given a global lesson in empathy. In my opinion, building a community of support, where people can lean on each other when they are struggling and celebrate with each other when they win, is crucial for achieving decreased GHG emissions.*

*Achieving reduced GHG emission targets is a New Zealand Inc challenge, not solely an Agricultural sector challenge. This report proposes a Team New Zealand approach to achieving national GHG emission targets.*

This report explores the social aspect of a GHG induced system change from two perspectives: a psychological and an imposed change management view. The example of Lockdown is used as is a recent shared lived experience at a national level and as such, one all New Zealander's can relate to. The report proposes increased awareness at a national level of the change farmers will have to undergo. The metaphor of Lockdown is used as all New Zealanders experienced it and as such, it is an efficient way to build empathy for those facing imposed GHG regulations and the resulting on-farm system change.

During Lockdown, uncertainty was great. The end goal of stopping the spread of COVID-19 was known, but the plan to get there could change at any time. Different numbers were reported from various sources internationally. It was confusing. There are elements of contested science including treatment methods, the effectiveness of masks and the Lockdown approach in general. And what does compliance look like? If a vaccine is successfully developed, will we maintain our autonomy, or will vaccination be mandatory?

Consider the above while thinking about farmers facing impending GHG regulations. The end goal to decrease New Zealand's GHG emissions is known. New Zealand's farming practices will have to change. However, the plan to achieve reduced emissions is not confirmed. And when it is, changes to that plan appear inevitable. The numbers are

changing as the science evolves and this leads to confusion. There are elements of contested science including measurement and definitions. And what does compliance look like? How much autonomy will farmers retain and how much will compliance cost?

The psychological Stages of Impact experienced due to COVID-19 have been documented and are applied and compared to facing imposed regulations. The stages are information overload, concern, confusion, panic, fear and end with sadness. This conveys what farmers might experience facing impending GHG regulations.

As a nation, we experienced moving through the Imposed Change Curve; a seven-step change model. Initially there was (1) shock and (2) denial. Blame was bandied about as (3) frustration grew. Energy levels and motivation was low as we navigated the (4) depression stage. The stage where uncertainty about the future is felt the most. But as we started to (5) experiment with the new systems and developed our capability within the new rules, our confidence grew. It is (6) decided to slowly accept change until it becomes fully (7) integrated. People may not agree or like the change, but it is accepted as the way things are.

During Lockdown, there were certain events that helped with the uncertainty: The 1pm updates by the Prime Minister and senior officials with confirmed case numbers and next steps. The fact that we were all working together as a nation to reduce the spread and save lives. Friends and family who provided support through Zoom and messages. The common theme – conversation and community.

To achieve GHG emission targets, this report proposes:

1. *A cohesive Team New Zealand who all understand their role in reducing emission numbers:* A New Zealand Inc. approach is taken. Team New Zealand rises to the challenge, not just New Zealand farmers. Achieving GHG targets also secures trade relationships and the trust of the international consumer. In turn, the Primary Industries contribute to New Zealand's economy and thus the prosperity of the nation. Road transport accounts for a large proportion of emissions alongside agriculture - we all need to work together to make a difference
2. *A trusted face of GHG mitigation with national recognition:* A national GHG representative who the general public recognises and trusts. Like Dr Ashley Bloomfield during COVID-19. This person would communicate quality information, strategies and tactical plans. This role is important for gaining momentum at a national level
3. *Practices and support to build and grow resilience:* Resilience is crucial for enduring times of uncertainty. Creating awareness of what the stages of imposed change feel like and providing tools to better support farmers through those stages. The sector has a mental health issue that needs support. Furthermore, adaptation at the rate that is required requires resiliency

We have a rich history in being innovative and resourceful to solve difficult problems. We have shown the world what is possible when Team New Zealand pulls together. Pulling together to achieve GHG emission targets is the right thing for us to do.

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# Introduction

*Ko ahau te taiao ko te taiao ko ahau - I am the environment and the environment is me*

- Māori proverb

This journey started out as an investigation to understand those dairy farmers who are on the fence about implementing improved environmental practices to mitigate the effect of GHGs. Then COVID-19 happened, and we were put in a place of uncertainty for an extended period of time. What I found interesting was that both events had aspects of imposed change and thus follow a similar psychological journey. And this is where this project focuses its efforts. The known versus the unknown and the behaviours that accompany that. From a report which hoped to help understand and fuel behaviour change to a journey to understand what it is like to experience long periods of uncertainty in a farming context.

This report illustrates the likeness between the uncertainty experienced in Lockdown and when facing GHG regulations. Using a psychological and change model to explain what it felt like transitioning through uncertainty Lockdown, this is used to construct recommendations for transitioning through uncertainty with regard to impending GHG regulations. The purpose of this report is to encourage a Team New Zealand approach to achieving national GHG emission targets. Thus, the study question is: *How might we better understand the behavioural aspect of the technical problem of achieving decreased GHG emissions?*

The psychological reactions to the pandemic are being analysed (Sibley, 2020) and commentary has started to be released (Berinato, 2020; Edwards & Silver, 2020; Haelle, 2020). This report sets out to take this commentary and draw parallels with farmers' experiences in dealing with uncertainty, particularly relating to GHGs. During Lockdown, individuals moved through the stages of change, with groups of the population still at different stages.

The Imposed Change Curve (Harris et al., 2004) is a seven-step change model which provides an indication of the patterns of emotions people may experience when facing change, imposed or otherwise. Initially, there was (1) shock that COVID-19 was in New Zealand. It was here and at levels that instigated a national Lockdown. (2) Denial followed, with some individuals thinking they are exempt or that it will not happen. (3) Frustration grew as did blame, of ourselves and others. Confidence started to decline, and motivation was low. This is the (4) depression stage. The stage where the familiar is held onto and uncertainty about the future is felt the most. But as we started to (5) Experiment with the new systems and develop our capability within the new rules, confidence grew. Case numbers started to decrease. Some individuals may have made the (6) Decision to slowly accept change, where eventually it becomes fully (7) Integrated. People may not have agreed with Lockdown or liked it, but it is accepted as the way things were going to be for the foreseeable future.

Uncertainty is perhaps THE word synonymous when talking about navigating the future of the food and fibre sector. After years of farmers operating in ever-increasing uncertain

environments, high levels of uncertainty made its presence known to the wider Nation through COVID-19 in March of this year (Daalder, 2020). For the Western world, spoiled with relative certainty, the pandemic upended plans and routines, sending us into highly uncertain times. Overnight, cities and nations were put in Lockdown as positive cases numbers grew. Previously, uncertainty was fairly minor in daily life; an uncomfortable feeling that could be eliminated through a beer with mates, purchasing unnecessary material possessions (consumerism band aid on uncomfortable feelings at its finest) or bargained with through purchasing All Of The Insurances.

In New Zealand, the initial two week wait post Lockdown to determine how far the virus had spread was uncomfortable, as was the thought of the state of the economy. Not only was there uncertainty about the health of ourselves and our loved ones, but also our financial stability. Modern Western civilisation came to a standstill to flatten the curve and not overwhelm health care facilities.

The urban New Zealand population were shook. Daily supermarket runs were no longer, no cafe stops, no popping into the local dairy without eerily quiet long lines. The fear was palpable. Conversely, during Lockdown not much changed for some farmers. These are people who are used to working long hours in remote parts of New Zealand, where a trip into town may be done by only one person in the household for a number of weeks. As the period of uncertainty drew on in Lockdown, I realised that this is similar to what farmers may experience when facing impending GHG regulations. Not in an absolute sense perhaps, but there are clear psychological events that occur. In both situations there is a change of large magnitude, followed by a long period of time where uncertainty prevails. Lockdown provided a shared experience of commonality - the whole of New Zealand now knows what it feels like to live through a time of great uncertainty.

What do COVID-19 and GHG regulations have in common? They are uncertain. There is no known endpoint, both the virus and gases are invisible to the naked eye and the science is evolving. We do not know what the end point looks like for GHG emissions. There are targets and intent but no clear path of how to get there. How will we farm? How much autonomy will farmers have deciding the way they farm within restrictions? What will improved on-farm practices look like? The tools that are available to help us get there are not yet fully understood or developed. Both Lockdown and achieving national GHG targets are social problems with a large amount of imposed change required in a pressured timeframe.



# Background

## New Zealand's Greenhouse Gas Targets

Reducing GHG emissions is a global challenge. The New Zealand Government has made international commitments to take action against climate change (Ministry for the Environment, n.d.). New Zealand's GHG emission targets are:

- An unconditional target to reduce emissions to 5% below 1990 levels by 2020
- A conditional target to reduce emissions to between 10% and 20% below 1990 levels by 2020
- A reduction to 30% below 2005 levels by 2030
- A reduction to 50% below 1990 levels by 2050

(Ministry for the Environment, n.d.)

GHG projections show that New Zealand's current downwards trend in emissions is not enough to meet our 2030 goals under the Paris Agreement (Ministry for the Environment & Stats, 2020).

At a national level, efficiency gains to date account for a reduction in emissions intensity by 1% per annum since 1990. However, output increases have exceeded any gains made, resulting in an overall increase in absolute emissions by approximately 10% since 1990 (Ministry for the Environment, 2019). Efficiencies in the Agriculture sector have seen emissions reduced from a possible 40% to an actual of 15% since 1990 (Ministry for Primary Industries, 2020).

Agricultural activities account for just under half of New Zealand's gross GHG emissions, at 47.8% (Ministry for the Environment, 2020). The Energy sector accounts for 40.5% of gross GHG emissions (Ministry for the Environment, 2020). In combination, these two sectors account for 90% of New Zealand's gross GHG emissions (Ministry for the Environment, 2020). Figure 1 illustrates New Zealand's emissions by sector.

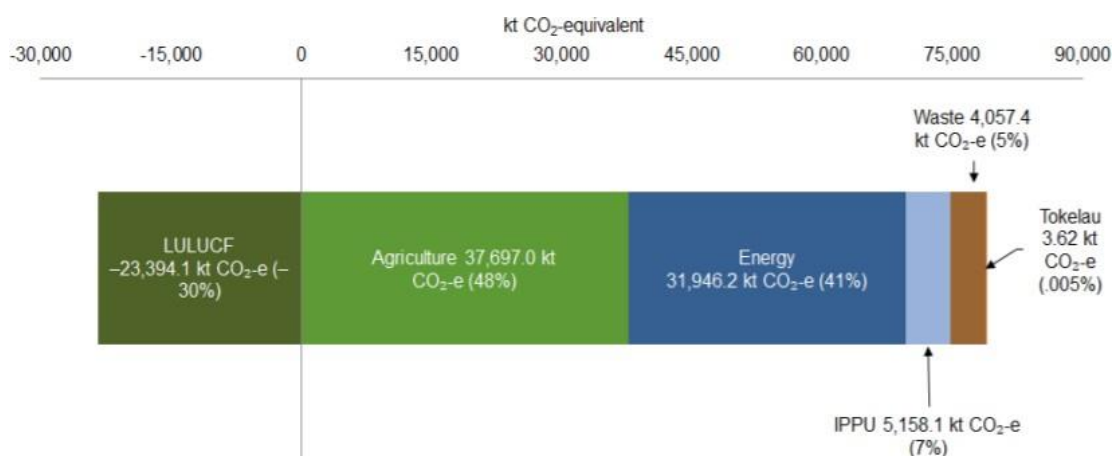


Figure 1: New Zealand's GHG emissions by sector in 2018 (Ministry for the Environment, 2020)

Note that percentages may not add up to 100 due to rounding and the Land Use, Land-Use Change and Forestry (LULUCF) sector is depicted as negative as it is not part of gross emissions.

Efficiencies in both the Agriculture and Energy sectors are required to achieve New Zealand's targets. But what activities contribute to the Energy sector emission figures? Road transportation and public electricity and heat production activities are the two largest, accounting for 47.2% and 10.4% respectively (Ministry for the Environment, 2020). Gross emissions from the Energy sector have increased by 34.3% since 1990, compared to Agriculture which has increased 17.1% (Ministry for the Environment, 2020). Increases in the Energy sector are largely due to road transportation (Ministry for the Environment, 2020) which accounts for 19% of New Zealand's gross emissions (Ministry for Environment & Stats, 2020). Importantly, transportation and energy use decisions by New Zealanders every day impact our national emission levels. In my opinion, it is a New Zealand challenge to decrease gross emissions and secure New Zealand's competitive advantage as an exporter of premium food and fibre.

Comparatively, New Zealand has some advantages over other countries in achieving reduced emissions including our high percentage of renewable energy, efficient food and fibre sector and lack of corruption. Additionally, leadership in sustainability is important in protecting New Zealand's potential competitive advantage of high value and quality products as international customers value safe and sustainable food products (Ministry for Primary Industries, 2019).

Achieving reduced emission targets requires unprecedented transformation of societies, economies, and governance institutions (Ministry for Environment & Stats, 2020). A reduction in absolute emissions from the Agriculture sector requires a coordinated approach, using a number of different activities and technologies. Activities include:

- Farm system changes, e.g. lower input system with lower stocking rate
- Farm system diversification e.g. increasing biodiversity to improve sustainability
- Planting trees both on and off farm
- Adoption of new technologies that directly target reductions in emissions such as a methane vaccine or inhibitor (Ministry for the Environment, 2015)

With the spotlight on agricultural activities, farmers are coming under public pressure to change farming practices and secure social license. While farmers seek a stable environment to farm in, they also have to work to secure social license and the trade of our products overseas through responsible and sustainable farming practices. As a result, pressure for environmental compliance comes from the whole supply chain, from processors through to the end consumer.

## Farmer Engagement with Greenhouse Gases

There is increasing pressure on the food and fibre sector to decrease its environmental footprint, particularly through clean waterways and GHG emissions, prior to national regulation coming to fruition. However, this requires widespread change to on-farm practices. A request to change behaviour challenges the practices a farmer has carried out to date, and thus, their belief that they are a good farmer. It is also important to note that

what appears as a small change on-farm, is complex and multifaceted. Farm systems are complicated, with many factors intertwined. Implementation can be difficult which is why it is important that industry remain working closely with the government to ensure smart actionable plans are developed. And more importantly, it is why an understanding of how farmers feel about the imposed change is crucial for success.

## Resistance

Within the farming community exists a diverse range of attitudes towards climate change. While there are farmers who are at the forefront of balancing environmental responsibilities with profitability, there are a group of farmers who are resisting with legitimate concerns. Coined 'resistors', this group understands that there are environmental targets but are not compelled to change current practices. This is due to several reasons, listed below. Some reasons could be argued against, but all are valid from that farmer's point of view. GHG targets are difficult to engage with and, together with increased compliance costs, make on-farm system changes unappealing and unmotivating.

Resistance to partaking in improved practices can exist for several reasons. GHGs are by nature complicated and difficulty to engage with the topic may include the following reasons:

- They are invisible. It is hard to feel compelled to change when you cannot see the state something is in, nor any improvements. This differs to rivers and streams where quality comparatively has more visibility. It brings into question if GHGs are as bad as reported, as there are no visible indicators that there is a problem at a farm level
- How GHG emissions are measured is under development which means reported numbers continue to change. A recent news article stated that New Zealand's nitrous oxide emissions have been overestimated since 1990 (Federated Farmers, 2020)
- There is no national approach yet
- Compliance comes with a price tag. Farmers could take the perspective that there is not much to be gained but a lot to lose in terms of income
- Engaging with new practices puts stability into question - the status quo is known

While the end goal is vague and science is not well established, it makes it easier to not engage. Changes in information being reported fuels farmers bias to distrust the quality of information available (Berentson-Shaw, 2018). Furthermore, farmers may only seek and read information that aligns with what is already known and their beliefs. 'Confirmation bias' has a lower mental workload than when considering new information that conflicts current beliefs (Berentson-Shaw, 2018). Conflicting new information can cause negative emotions and can result in rejection or doubt of new information because it does not feel good (Berentson-Shaw, 2018).

Take the perception of decreased profitability when committing to environmental improvement for example. This is being challenged. In a review of the Sustainable Land Use Initiative in the Hawkes Bay region in 2015, it was found that in the 10 years since its implementation, it had delivered resilience in environmental and economic sustainability in the region (Brown et al., 2019). *This is significant as it demonstrates that well designed*

*initiatives which consider the human aspect of change result in resilient, long-term sustainable gains for both the environment and financial goals.* In fact, the factors are not at odds with each other.

## Survey Insights

It is well understood in the context of human social behaviour, that values are the best prediction of attitudes and behaviour (Berentson-Shaw, 2018). Factors that influence intentions or how people interact with new information include values, beliefs, attitudes and capability. To determine the most impactful actions that can be taken to drive behaviour change in farmers, farmers values, beliefs, attitudes and capability towards GHGs must be understood. An understanding of these factors provides a measure of the intention to change. The more positive the factors are, the higher the intention to change and the closer to the desired behaviour.

Attitudes are defined as the individual's beliefs regarding the desired behaviour; the reduction of GHGs. Attitudes also drive motivation, both positive and negative. Social norms are what surround the farmers such as social networks and group beliefs. A farmer's decision will be influenced by what they perceive others to be doing. Capability is the farmers belief of how easy or hard it is to achieve the desired behaviour.

In a recent survey carried out by DairyNZ, dairy farmers rated attitudes neutral and capability low in relation to reducing their GHG production (A Fraser, personal communication, 2020). Overall, dairy farm owners value the importance of farming in a way that reduces their impact on the environment. These results show that while farmers are aware of what others think they should be doing, GHGs compete for space in their top priorities and they view their capability to change as low. This is due to a scarcity of information and knowledge of the technology to be utilised in the future. Unfortunately, the requirement to find and understand difficult information results in a decrease in motivation for change. Other barriers include a perceived high financial cost to become compliant and increased paperwork. Farmers do not enter the profession because they love compliance activities and time spent here takes them away from doing what they enjoy.

DairyNZ also confirmed that dairy farmers had found it easier to engage with practices that improved water quality (A Fraser. personal communication, 2020). Here, attitudes, social norms and capability score positively. This results in higher motivation for change because the desired outcome is perceived to be achievable. Farmers can see that they are capable of making the required changes and so progress is made.

# Uncertainty: A Shared Human Experience

## COVID-19 and Greenhouse Gases

Lockdown and GHG regulations are both experiences with a high degree of uncertainty - how we as individuals interact with and react to it. There is a likeness between the uncertainty the nation experienced in Lockdown and what farmers face when farming with increased environmental responsibility into the future.

How we all behaved and continue to react throughout the COVID-19 situation continues to evolve. Alessandra Edwards and Dr Amy Silver (2020) published a book April this year documenting the Stages of Impact - typical human behaviour reactions to uncertainty. This is applicable and comparable to how farmers feel facing impending GHG regulations as reactions. While the situation causing uncertainty is different, humans have ingrained reactions to perceived danger that evolved over many years. Below outlines how uncertainty experienced through COVID-19 is comparable to farmers facing GHG regulations.

During Lockdown, uncertainty was great:

- *End Goal:* There was a firm goal of stopping the spread of COVID-19. However, the plan to achieve that could change at any point in time. For the first two weeks, it was unknown how far the virus had spread nor how sharp the increase in case numbers would be. Beyond that, when will this end for good? Multiple sources have stated that pandemics should be expected to be a normal part of the future
- *Reporting:* The numbers kept changing at a global level. Different numbers were being reported and there was speculation of non-COVID-19 related deaths being reported as COVID-19 related. And vice versa. This leads to confusion
- *Contested Science:* There are elements of contested science including treatment methods, the effectiveness of masks and the Lockdown approach in general
- *Compliance:* Should a successful vaccination be developed; will individuals have the right to proceed as they wish? Or will vaccination be mandatory?

Now consider the above with regard to farmers experience of impending GHG regulations:

- *End Goal:* There is a firm goal to decrease New Zealand's GHG emissions. When will the plan to achieve this be defined? When it is defined, how long will it stay unchanged for? What is known is that farming practices will have to change
- *Reporting:* The numbers are changing as the science evolves. This leads to confusion
- *Contested Science:* There are elements of contested science including measurement and definitions. Will the technology that is currently under development be successful? Will there be new discoveries that upend all of the work done to date?
- *Compliance:* How much will compliance cost? Will farmers still have an income that supports their family? How much say will farmers get in how they farm?

The above demonstrates that uncertainty, no matter the source, raises questions about the future and leaves it difficult to make a long-term plan. Humans reactions to uncertainty are well known and this next section outlines them.

## Brains and Uncertainty

Brains do an amazing job of keeping beings alive and safe. One way they do this is to make sense of what is coming next and plan for how individuals will interact with it and move through it. Recent uncertain events do not provide brains the certainty they require, and as a result trigger anxiety and panic. These reactions can stick when the period of uncertainty is prolonged.

As a species, we are hardwired to survive and reproduce. The brain's response to keep humans safe is fast and non-selective, enabling humans to react quickly to life threatening situations. Less threatening situations can also trigger the stress response, such as traffic jams and work or family pressures (Harvard Health Publishing, 2011). Brains recognise there is a stressor and we need to be kept safe, but cannot distinguish whether you need to run for your life from a tiger or sit with the uncomfortableness of not knowing what the future will look like. In essence, the triggers in modern society, from impending regulatory additions, elicit the same stress response as more serious when we had to literally fend for our lives.

## The Stages of Impact - A Timeline of Reactions to Uncertainty

Edwards and Silver (2020) give a timeline of how we are likely to react to each stage of the COVID-19 pandemic. This timeline is presented below with examples for both COVID-19 and GHGs. The model is applicable as it takes a human being experiencing uncertainty point of view. We are all humans. We all experience our body's reaction to uncertainty.

- 1. Information Overload:** The first stage is information overload. Information is available on both news and social media, from multiple and sometimes opposing points of view. Statistics on the number of COVID-19 cases vary between sources, as do predictions on what tools will be available to help farmers achieve the GHG targets. The sheer mass of information overwhelms us - there is too much for our brains to process.
- 2. Concern:** As awareness of potential outcomes grows, so too does worry. In the case of COVID-19, we may worry for the health of our loved ones or future employment and income, the latter also being true for increased environmental compliance on farms. Farmers may begin to worry about the future of their business and think about how to best prepare, or if they will even remain in the profession. They may worry for their children who have indicated that they would like to take over the farm one day, thinking that the pressures and hours are not worth it.
- 3. Confusion:** As uncertainty draws on, we begin to experience 'loss of the known.' We start to notice biases and misinformation in news sources. This is absolutely true for both experiences. As New Zealand waited for 1pm updates from Jacinda and Ashley with new rules, we tried to incorporate them into our daily lives; keeping up with what we should and should not be doing. We may also start to notice those around us having different reactions. For GHGs it can be difficult to wade through news articles who blast farmers for the damage they do to the land. Are those same reporters

drinking a flat white made from cow's milk? Sorting fact from fiction from national and international information can be tedious and consuming.

In assessing dairy industry media generated in September 2020, DairyNZ found favourability for the sector was close to 20% higher than a year ago, with unfavourability down 12% (A. Fraser, personal communication, 2020). Reasons for this are likely to include the sector's continued economic contribution through COVID-19, improved Fonterra financial performance, and absence of issues surrounding winter grazing and the Essential Freshwater rules.

- 4. Panic:** Toilet Paper. All Of The Toilet Paper. We all saw people behave at their worst while securing this household commodity. Irrational choices prevail, much like the perms of the eighties. With the flight, fight or freeze response in full swing, panic drives acts which appear selfish, but are actually mis-guided attempts of self-preservation. While the same height of panic in response to GHG targets may not be experienced like in the case of COVID-19, panic still ensues on-farm. There are sleepless nights, it becomes a natural topic of conversation and slowly it is top of mind more so than not.

In a recent DairyNZ survey, dairy farm owners rank family and personal life balance, profitability, mental and physical health and animal health and welfare above the environment (A. Fraser, personal communication, 2020). Farmers do rate the environment as important, and consideration for it is becoming more entwined in the multitude of farming decisions they make. But it is a complex topic which compounds the competing demands for their mental space.

- 5. Fear:** Acute panic over time leads to fear and in some cases anxiety. 'Surge capacity', a term coined by Ann Masten, describes the ability of humans to draw on a collection of adaptive systems for short term survival in actively stressful situations, such as natural disasters (Haelle, 2020). This reaction works well for the short term, but pandemics and impending regulations are a long-term game. Our bodies are unable to continue to produce high levels of adrenaline and our resilience dwindles, leaving space for fear and anxiety to creep in. For COVID-19 it may see some people unable to leave the house and in the case of GHGs, multiple scenarios are built and tested through conversations with neighbours and consultants.
- 6. Sadness:** As we lose parts of our lives and routines taken for granted before COVID-19, we experience loss. Some losses may be physical and concrete - the loss of a loved one, income or a home. We also may experience ambiguous loss. The loss of something that is not concrete and something we can touch, but a loss that is "unclear and lacks a resolution" (Haelle, 2020). A loss of a way of life - of things that were or might have been.

During Lockdown in New Zealand many of us lost our routines and connections. Small things that we took for granted like sitting in our favourite cafe or chatting face-to-face with friends. Being able to get on a plane and visit family and friends overseas should we choose to. We may not have had plans to jump on a plane, but we had the choice to and now we do not. For environmental compliance, this is a loss of the way farming used to be. Things will

never be the same and the way people have farmed for generations is at question and will be lost. Some farmers may respond to this by feeling a loss of hope for this and the next generation of farmers. Others may initially feel that and move to seeing it as an opportunity to rise to the challenge. Farming has never been without its challenges and recognising and responding to pressure in a sustainable way has been identified as beneficial for the farming community (Sowman, 2020).

Farmers are farming under pressure. This is due to the magnitude of change they face, judgement, compounding problems and lack of time to solve them (Sowman, 2020). Sowman (2020) found recognising and responding to pressure to be important in maintaining logic-based thinking for good decision making. Farmers were found to have a heightened stress response compared to the general population when facing a perceived threat (Sowman, 2020). Equipping farmers with the tools to come back to logic-based thinking would benefit the industry and prevent burn out and mental health issues.

Long periods of stress and pressure can lead to burnout and other mental health issues. Burnout can be thought of as the brain not getting enough energy. It might feel like wired yet tired, constantly anxious and may eventually culminate in depression. In men, where the period of stress/uncertainty is prolonged, such as being weeks into a pandemic or waiting to know the outcome of proposed regulations, this can result in a decrease of testosterone and a sense of identity or purpose (Edwards & Silver, 2020). For women it may feel like brain fog, and lack of ability to focus and remember things (Edwards & Silver, 2020).

The aim of this section is to provide some context of what people are experiencing internally before being able to process external factors and embody the required change. In my opinion, it is important to understand that stressful situations start with a trigger outside of ourselves that becomes an internal experience. Widespread awareness of what individuals are experiencing internally in stressful situations is beneficial to progressing through the Imposed Change Curve as an individual or support person. Overall, I hope we can support each other better through uncertainty and reflect on whether the system changes proposed are easy to navigate for those feeling overwhelmed.

## Managing Imposed Change

*What happens for me, but without me, is against me.*

- African Proverb

Change research gained momentum post WWII (Elrod & Tippett, 2001). Many behaviours were forced to change, including women in the workplace and the concept of rationing certain goods. The initial resulting change model documented was 1) unfreezing, 2) moving and 3) freezing, with acknowledgement that each step has its own challenges to overcome (Elrod & Tippett, 2001).

Individuals and communities move through a number of stages when change is imposed. There is an initial reaction, a transition, and a final landing place. Kubler-Ross (1969) looked at the biggest change we face in life, death, and documented the stages people go through



when dealing with grief, trauma or serious illness. These also hold true for less serious change transitions and are applicable in the context of COVID-19 and GHG emissions.

While the original grief model had five steps, this has been modified into a seven step Transition or Change Curve for change outside of grief. In this report, the Change Curve will be referred to as the Imposed Change Curve to reflect the type of change being experienced. The Imposed Change Curve gives an indication of the patterns of emotions people may experience when facing change, imposed or otherwise (Figure 2).

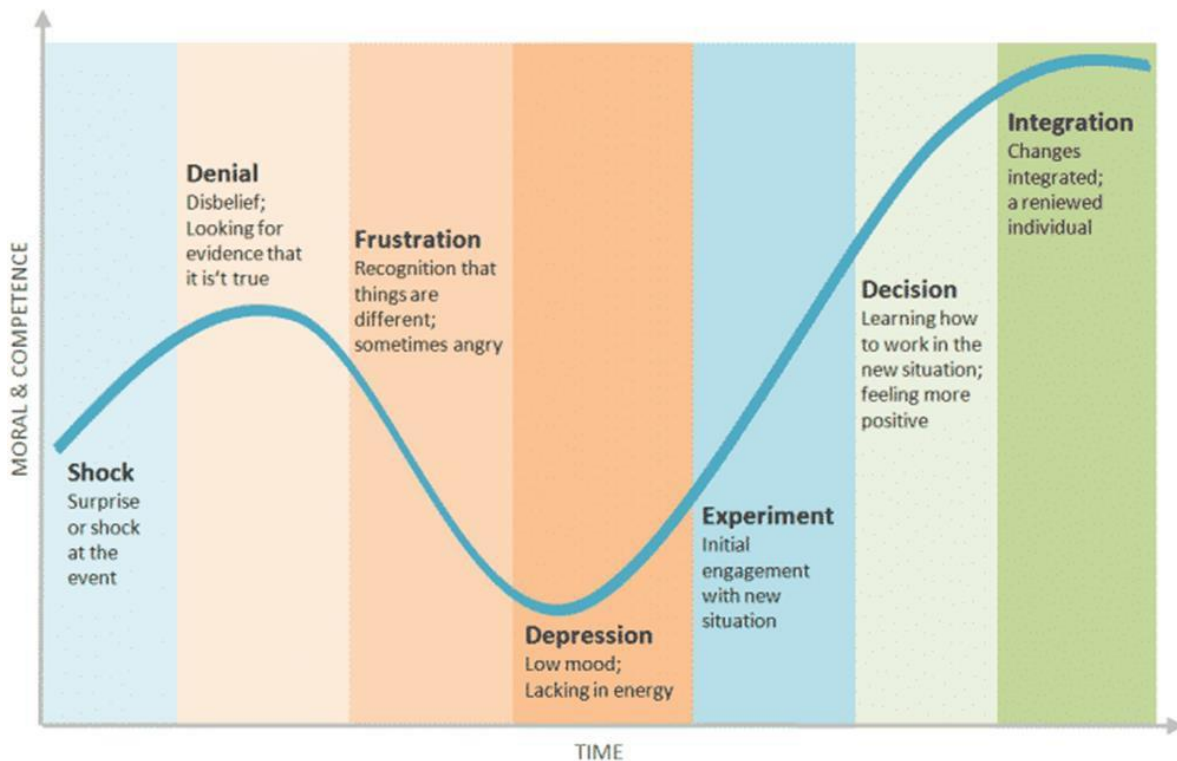


Figure 2: The change curve model. Source: [www.cleverism.com](http://www.cleverism.com) (2020).

Kubler-Ross (1969) proposed that when faced with grief, people first go into a state of denial, transition through anger, bargaining and depression to come to a state of acceptance. The seven steps of the Imposed Change Curve are outlined below (Harris et al., 2004):

- 1. Shock:** The need for change can elicit a shock response. Surprised by the events, individuals may question their ability to achieve the change in front of them. When Lockdown was announced, there was a moment of stunned silence. For GHGs, farmers had the realisation that big changes to on-farm practices would be required and be costly.
- 2. Denial:** Individuals may distance themselves from the change, convincing themselves it is not happening. They feel better about the change at this point, given their mindset that it is not happening to them. They may blame others which gives them a small self confidence boost.

Individuals may believe that Lockdown is not for them, it is for everyone else. Farmers may think regulations will never come to fruition. And that international consumers will still buy our products even if we lack world leading sustainability practices.

- 3. Frustration:** Individuals start to understand that they are going to have to change. They may transition to blaming themselves, resulting in a decline in self-confidence. Awareness of the need for change grows through conversation with others and recognising that the old way no is longer fit for purpose.

In both instances, individuals may feel like this will never work. Lockdown will not be successful in stopping the spread – it is too late. Hands are sore from hand sanitiser. Food items are sold out. Farmers may feel like they are already doing everything they can. And that they have too many competing demands currently.

- 4. Depression:** Individuals grapple with letting go of the familiar and feel unmotivated and uncertain about the future.

Explored further below in 'Regulation Fatigue', this stage was reported on social media (Santor, 2020). The part of the process that is the crux of the transition from what was to what is and feels difficult. People in both examples may feel isolated.

- 5. Experimentation:** Confidence starts to build as people begin to test out the new system. Ideas start happening and people start to get excited and engaged with where the change is heading.

Daily new case numbers start to decline. People might buy groceries online or use Zoom for the first time. Farmers might start to test solutions on their farm.

- 6. Decision:** People start to find their stride in the new way of doing things and build their confidence. They look forward to what could be and slowly leave behind what they have lost. The imposed change is slowly accepted, and the benefits start to show. Individuals may understand why some experiments worked and others did not.

People adjusted. Zoom parties were held. People were out doing more physical exercise due to the lack of traffic. Farmers might see their neighbours being successful and decide to try the same practice change.

- 7. Integration:** The imposed change is fully embraced and is the new normal. This can be an acceptance or a resignation that things will not be the same again. A period of reflection is important to understand how an individual reacted and what can be done better next time.

In both instances, efforts are successful, and people are proud to be Kiwi.

Little (2014) created a series of simple steps (applicable at steps 2-6 above) leaders could take to help lead people through the Imposed Change Curve. In my opinion, these steps are crucial in building a community of support, where people can lean on each other when they

are struggling and celebrate with each other when they win. Given the rural sector is a community, these steps are to help leaders remember that farmers should be in the centre of this imposed change and that listening is the glue that holds community and change together.

2. *Denial* - **Create Alignment**: Leaders can help individuals here by providing an environment to create alignment between individuals by outlining why the change is happening, who is affected and what the benefits are.
3. *Frustration* - **Communicate**: Listen to the frustrations with no preconceived outcome. Just listen.
4. *Depression* - **Spark Motivation**: Deeply understand what is holding people back from moving forward and trying new things. And do something to try and help people move forward.
5. *Experiment* - **Develop Capability**: Make it known that it is safe to fail as people get their heads around new skills.
6. *Decision* - **Share Knowledge**: Share stories so people can learn from each other.

The above frameworks provide insight into the stages of impact people may feel during periods of uncertainty and unresolved stress, moving through to acceptance in the grief cycle and the Imposed Change Curve. Little (2014) extends this further to provide a socially integrated model. This provides a positive co-design approach and framework which would be greatly beneficial to use in the future.

Meeting GHG emission targets presents the opportunity for co-design and co-innovation. These behaviours were not seen between government and the public during Lockdown due to the life-threatening urgency and global economic implications. Experts made decisions and the nation responded accordingly. While both Lockdown and GHG targets require imposed change, climate change, rightly or wrongly, does not carry the same urgency for the public. Having farmers as part of the conversation is beneficial for successful extension, where positive behaviour change is fostered (Payne & Percy, 2019).

## Regulation Fatigue

In the above sections we have covered how periods of uncertainty can result in us feeling flat. Many individuals reported feeling tired and flat during Lockdown, not understanding why. That doing the simplest of tasks seemed impossible. That having a shower and getting dressed was an achievement worth celebrating. We know that this was due to the brain's response to uncertainty.

Uncertainty zaps us of our energy and creativity due to the brain being in a state of flight, fight or freeze and kills motivation. Low motivation was documented during the March Lockdown on social media (Santor, 2020). While there was an explosion of posts about using this time to write that manuscript you have always wanted to, these posts were counteracted by messages around the psychological response to uncertainty. Alexis

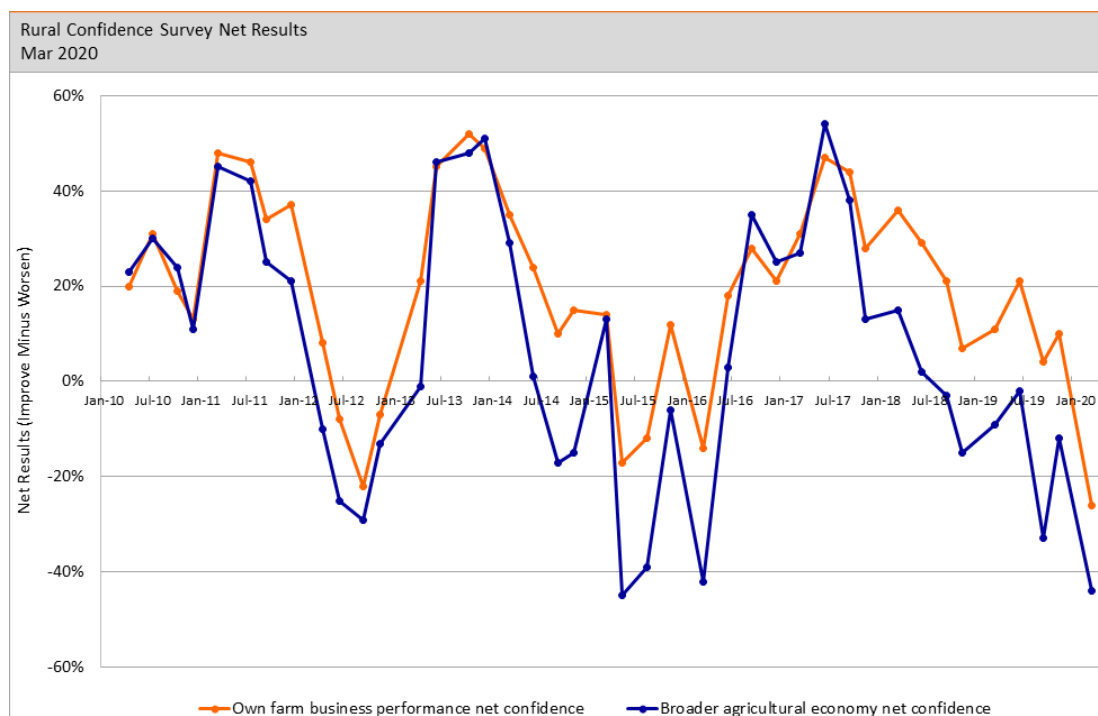
Rockley, a business coach, had her twitter thread on why many were feeling unmotivated explode (Santor, 2020). People took comfort in the fact that this was not something they were experiencing in isolation. Rockley outlined how much extra energy the brain uses in times of uncertainty, that it is ok to do 'nothing' and that that is achieving in itself.

The prolonged period of uncertainty takes from resilience accounts and makes no deposits. It is normal to feel exhaustion and, in some instances, burnout. Farmer mental health has been reported to be on the decline in recent times. In a survey carried out in areas of importance to the New Zealand rural community, it was found that of the 260 respondents, 70% had felt stress had increased over the past five years, preceding 2018 (Bayer, 2018). Environmental factors were ranked second to financial pressures affecting their work and livelihoods. How many of our farmers are sitting in the sixth Stage of Impact - sadness? Or the fourth stage of the Imposed Change Curve - depression? It is plausible to conclude that those farmers with poorer mental health are less likely to be early adopters.

We are also seeing less young folk enter the industry, with regulations being one of the many stumbling blocks. Additionally, there is a perception that the younger generation are more equipped to deal with uncertainty and change, making it easier for them to navigate this uncertainty compared to the older generation. In my opinion, no one is immune to mental health issues and burnout. Age does not make navigating change any easier and mental health issues can arise at any point in one's lifetime.

## Farmers Confidence in the Sector

How did the addition of another unknown factor, COVID-19, affect farmers confidence in the sector? Rabobank conducts a quarterly survey, assessing the confidence of the rural sector. The two surveys conducted since COVID-19 saw a decrease, with recovery evident. Note that the results for the June survey are not shown in Figure 3 below.



*Figure 3: Rabobank rural sector confidence results from January 2010 to March 2020 (Rabobank, 2020a)*

The mood of the sector in late 2019 was less than ideal, with farmers feeling the pressure of environmental issues and the perceived rural urban divide growing in tension. While the divide has been proven to be not 'real' and the dislike is for farming and not farmers, some farmers received death threats while others reported their children being bullied. The survey conducted in September 2019 saw a significant decrease in confidence, from net -2% to net -33% in a 3-month period. Uncertainty around environmental policies was noted as the largest contributing factor, with farmers concerned about both reaching the targets and the associated costs (Brett Kelly, 2019).

The March 2020 survey results showed a near record low of -44% following COVID-19. An improved June result of -26% was due to favourable demand and commodity prices (Rabobank, 2020b). Concern regarding environment related Government policy has decreased, back from a record high of 91% in December 2019 (Rabobank, 2020b).

COVID-19 changed the narrative of the rural urban divide which was reflected in the June 2020 survey. Rabobank CEO Todd Charteris states "in this survey there were also a significant number of verbatim responses from farmers flagging the country's increased economic reliance on agriculture and general public appreciation for the industry as a key reason for optimism" (Rabobank, 2020b).

# Adjusting to the ‘New Normal’

Adjusting to the new normal is a phrase that has been bandied about. But what is the new normal? In my opinion it is constant change which is not new. Change has always been here but our awareness of it has increased due to connectedness through social media and the internet. This increased awareness results in information overload and flows through the Stages of Impact response detailed previously. The flight, fight or freeze response limits the ability to think logically move through the Imposed Change Curve effectively. Increased awareness of farmers as individuals and communities of the flight, fight or freeze response and how to successfully navigate it would be beneficial to the sector.

## Focus & Adapt

*When you can't change a situation, the only thing you can change is your perception of it.*

Global Lockdown gave the world a snippet of what reduced emissions looks like. The rapid reduction in air pollution resulted in the Himalayas being visible from India for the first time in 30 years. In New Zealand, the significant decline in transportation contributed to a reduction of air pollutants in Auckland (Ministry for the Environment & Stats, 2020). Worldwide, Lockdown activities resulted in a temporary reduction of emissions (Ministry for the Environment & Stats, 2020). Permanent reductions require structural changes to economic, transport or energy systems (Le Quéré et al., 2020).

The pandemic is a call to action to overcome our preconceived ideas of doing what has always been done. We need to innovate; we need to pivot. And to do that, we need to overcome our own biases and look at things through fresh eyes.

GHGs are an era-defining issue and innovation in this area remains critical post-Lockdown for New Zealand (Proudfoot, 2020). The COVID-19 situation has instigated re-prioritisation of numerous activities globally. However, the zero-carbon future needs to remain our focus and innovations need to accelerate for New Zealand to take the opportunity of being a market leader (Proudfoot, 2020).

With the knowledge that uncertainty is here to stay, the best course of action is to get really good at adapting. The latter three steps in the socially integrated model developed by Little (2014) are spark motivation, develop capability through experimentation and share knowledge. Together, these embody adaptation and are behaviours that are deeply aligned with a healthy and thriving community. The rural sector is an extraordinary community with these behaviours present and supported by a number of sector good groups. Further support of these behaviours to increase resilience and efficient adaptation is a positive way to approach the future.

Efficient adaptation can be explored by thinking of it as an infinite game. Sinek (2019) defines an infinite game as one with known and unknown players, the rules are changeable, and the objective is to keep the game going. Finite language was used during the Lockdown 1pm announcements. New Zealand had to beat the numbers for guaranteed safety. The players were known, the rules were fixed, and the goal was to end the spread of COVID-19

as fast as possible. As an industry, we are playing the infinite game of sustainable farming. There is no known endpoint, the rules are always changing, and players come and go. Awareness of this is helpful for producers and growers as they pioneer into the future.

While a finite style of leadership was appropriate for Lockdown, it is not appropriate for climate change. Infinite leadership in this context requires the sector to ask, '*How can we make New Zealand's environment a better version of itself than it was yesterday?*' every day for years to come. This will secure New Zealand's social license and the right to market a premium product on the international stage. We are our own competition, and we need to focus on beating ourselves.

Ireland's Origin Green programme is an example of what can be achieved when a country focuses on beating themselves, ignoring the competition. The result is a cohesive national "cross sector collaborative approach to market [Ireland's] environmental credentials" (Wilkes, 2020). In 2019, Irish farmers featured in the country's response to climate change, showing a united team (Oram, 2019). In combination with adept integration of the voice of the customer, Origin Green is a strategy that is reaping rewards for the Irish Agriculture sector. It has successfully incorporated open mindedness into a traditional sector and the results are positive.

During Lockdown, New Zealand ignored what the competition were doing as the nation worked through the process for eliminating the spread of the virus. This team of five million worked together to save lives.

## Team New Zealand

Lockdown reminded New Zealand that the Primary Industries are the backbone of New Zealand's economy. The next 24 months are going to be unstable for many individuals, businesses and nations. In the longer term, New Zealand is facing increased superannuation in the next 30 years (Edmunds, 2020). Export earnings from New Zealand's premium food and fibre products will assist in meeting this financial demand. Sustainable farming practices and meeting reduced GHG targets are fundamental in securing overseas trade.

Jacinda's response to the pandemic and during Lockdown received positive international recognition, supporting her for putting the health of the nation above economic success in the short term, for long term gains. However, this pandemic is not a one off with pandemics predicted to occur more frequently (Murdoch, 2020).

Success in the face of a pandemic relies on a coordinated and timely national approach. This is also applicable to systems change required for GHG emissions and climate change response in general. New Zealand epidemiologist David Murdoch (2020) advised that New Zealand needs to improve its coordinated approach with people and systems working in cohesion before the next pandemic. Improved collaboration across the science fields and improved integration of science into the health system is also required (Murdoch, 2020).

Achieving a coordinated approach requires solid leadership at all levels across multiple sectors including Health, Research and Politics (Murdoch, 2020). This is also applicable to the food and fibre sector and its response to climate change - steady and grounded

leadership in the Agricultural, Science and Political disciplines. Murdoch (2020) stated that leaders who are “systems thinkers and comfortable working with multiple disciplines and across the human-animal-environment interface” were required.

‘Network stars’ were found in a recent social network analysis, assessing who talks to who about environmental farm practices in New Zealand (Payne & Percy, 2019). These individuals are perceived as an authority on the topic, tend to be agribusiness professionals, industry or researchers and have a large and diverse network, compared to the average (Payne & Percy, 2019). A ‘network star’ can be used to “disseminate new ideas, foster collaboration and promote behaviour change” (Payne & Percy, 2019). A nationally recognised GHG ‘network star’ would be beneficial for encouraging the behaviour change required to achieve GHG targets.

The same social network analysis found industry and agribusiness professionals were frequently contacted as go to sources of information for sustainable farming practices (Payne & Percy, 2019). Interestingly, no farmers listed the following entities in their top three contacts: the Ministry for Primary Industries (MPI), the Ministry for the Environment (MfE), the NZ Agricultural Greenhouse Gas Research Centre or several large research bodies (Payne & Percy, 2019). This indicates that government and researchers are not go to sources of information for sustainable farm practices. Given the governments goals within sustainable farm practices, further efforts into bridging the connection between government and farmers would be positive.

Murray (2020) investigated the characteristics of effective on-farm teams which are applicable at an industry level. Ultimately, what defines effective and successful teams is the way they work together. Joy (2020) recently stated that “New Zealand’s Government has been praised for listening to health experts in its pandemic response, but when it comes to dealing with pollution of the country’s waterways, scientific advice seems less important”. Witnessing respected industry leaders unable to have a constructive discussion about regenerative agriculture at a recent industry event was disappointing. It indicates a lack of shared understanding of the purpose of New Zealand’s goals and a finite mindset with absolute thinking.

A recent opinion piece on leadership in the Agriculture sector stated, “we continue to recycle the same leaders with the same thinking” (Jones, 2020). Improved leadership behaviours with diverse thinking and courage to make decisions are required for progress to be made (Jones, 2020). An infinite mindset requires the sector to be open to new ways of thinking. In my opinion, there is no one right way to achieve a goal. Success comes from taking parts of existing concepts or practices and putting them together in new and novel ways.

Honouring the inherent knowledge Māori have of Aotearoa is fundamental to our success as a nation. Māori have interacted with this land for hundreds of years and there is an opportunity to combine mātauranga Māori with western science to “provide new ways of thinking and alternate pathways to explore” (Ministry for the Environment & Stats, 2020). Our investments today will see returns in the future, by focussing on what is important and knowing that there is a market for it. A 300- or 500-year vision, also used within Māori culture, shows that doing what is right for the long term, gives clarity for today’s actions.



# Conclusions

In managing imposed change, the social aspect is crucial in successfully solving the technical problem. Below are the two models explored in this report, outlining what would benefit farmers facing GHG regulations. Learnings from Lockdown have been utilised to provide grounded observations.

## Stages of Impact for Greenhouse Gases

- 1. Information Overload:** Farmers receive conflicting sources of information regarding GHGs in the letterbox and via email and social media. Establishing few trusted sources of information at a national level would decrease confusion and help eliminate the negative effects of biases regarding GHG information and messaging.
- 2. Concern:** Farmers have many concerns regarding GHG regulations including their autonomy to make decisions for their farm, financial security and managing system change implementation while juggling competing and related priorities. Regular communication from a trusted source and an environment created where questions can be asked, trepidations raised, and people listened to would alleviate concern during transitioning through imposed farm systems change. Note that government bodies are not approached by farmers for environmental practice information and as such, the levy bodies or similar industry bodies would be well placed to lead this and build on the networks they have already created.
- 3. Confusion:** Loss of the known way of farming, incorporating the new with the old and hearing conflicting messages. These all contribute to confusion. Clear, concise messaging at a national level and with a clear plan and end goal was positive in Lockdown and applicable here.
- 4. Panic:** This stage may not be witnessed to the same extent as that experienced during Lockdown. However, mild flight, fight or freeze may be observed. During Lockdown, strong local relationships where people feel listened to and supported provided comfort. Alternatively, some farmers may view achieving GHG targets as an opportunity and thus have a positive experience.
- 5. Fear:** Farmers may experience anxiety, low motivation and a lack of self-confidence driven by an extended period of uncertainty. Self-awareness of how one thinks and behaves to identify when an individual is feeling anxious is helpful. Awareness of tools and support bodies such as FarmStrong help farmers navigate this stage.
- 6. Sadness:** A loss of a way of farming and life, a loss of a way things were. People may lose their farms. People may choose to exit the industry. Some may not stay in this stage long and others might get stuck. Professional help is recommended from bodies like FarmStrong and widespread industry awareness and empathy for the magnitude of what farmers are working through.

## Achieving Imposed Change

- 1. Shock:** The initial shock that GHG regulations will exist has been moved through by most farmers. However, a secondary wave when regulations are announced is likely. Support from farmers own social networks, agribusiness professionals, industry bodies, and entities such as FarmStrong to ensure individuals know that help is available and where to get it from is a given. The inclusion of farmers in the design of on-farm system changes and the widespread knowledge of this inclusion would be beneficial.
- 2. Denial:** Due to the urgency of Lockdown, the majority of people got on board quickly. The industry has an opportunity to lead cohesive and effective imposed change through creating an aligned Team New Zealand, led by an individual who is recognised as a trusted source of information. A clear call to action, strategy, and tactical plan, with clear benefits communicated is recommended. Acknowledgement of the challenge ahead should be balanced by looking at how far the industry has come and achievements to date.
- 3. Frustration:** Everyone had moments of frustration in Lockdown to various degrees. Acknowledging this frustration through listening and understanding is crucial for individuals to move through this stage. During Lockdown, social networks provided this support for most individuals. In my opinion, the government could have provided better support for individuals through running campaigns to increase awareness of what feelings are normal, activities to maintain good mental health in isolation and where to go for help. This builds resilience and equips individuals with relevant tools.
- 4. Depression:** By creating an environment of trust through open conversation during the denial and frustration phases, the learnings can be used here. A deep understanding of farmers concerns and what is holding them back can be used to spark motivation.
- 5. Experimentation:** People tried their hand at new skills during Lockdown - making sourdough bread was particularly popular in New Zealand. Not all sourdough starters were successful and that was okay. Farmers need an environment to test and fail and for that to be normal and accepted. They need to space to decide how they will meet regulations on their farm.
- 6. Decision:** The sharing of knowledge is a powerful way for communities to be strengthened and momentum gained. Discussion groups are well established in the rural community. There is an opportunity for those who would not usually attend to show up and learn about the difficulties of implementation on farm. Their contribution of technical knowledge would be beneficial. Parties include researchers, policy advisors and regional council officials.
- 7. Integration:** The nation has achieved its GHG targets and it is like things have always been done this way Solutions are varied which reflects farmers preferences and the diversity of farming systems. This is where it is necessary to pause and reflect, using learnings for the next challenge.

# Recommendations

The below recommendations were drawn from the above principles, particularly those of Little (2014) and Sinek (2019). These recommended actions are intended to help build empathy and further strengthen the rural community. Aspects of these may already be happening and are intended as additional to or an alternate view of current initiatives.

## Create a Cohesive Team Greenhouse Gas New Zealand

Our daily activities, choices and decisions can increase, or decrease, GHG emissions. Every individual New Zealander.

Origin Green has demonstrated what can be achieved with a cohesive national approach. Achieving GHG targets is not solely a Food and Fibre sector responsibility. It is a shared national goal with a common interest. While approximately half of New Zealand's GHG emissions are created by the sector, this is also the industry that is a large contributor to the nation's prosperity.

The infinite game perspective suggests we need to help each other to achieve our GHG targets. Imagine if we stood together for the environment whether we believe in climate change or not. Creating and supporting an environment and culture where people can experiment to find what works for their operation is a positive step forward. Failing is part of the journey as is sharing what worked and what did not. New Zealand farmers have a well-entrenched discussion group culture where the sharing of information happens regularly and openly.

Leadership through this challenge requires a different set of skills than was previously effective. Leaders with infinite type thinking skills are required to work across disciplines.

Deeply understanding what is holding farmers back is crucial to moving through the depression stage of the Imposed Change Curve. Efforts to spark motivation by focussing on pride and the long-term benefits of the proposed changes. An example of this being done well is DairyNZ's Rise and Shine initiative.

## Appoint a Trusted Face for Greenhouse Gases

Dr Ashley Bloomfield (Director General, Ministry of Health) was a trusted source of health-related information during Lockdown. The nation looked to him in the 1pm announcements for sound guidance and reassurance. He communicated the strategy, the tactics and the next steps for tomorrow and gave clear reasoning for those recommendations.

Farmers have an equivalent position in Ray Smith who currently holds the Director General title at MPI. However, the general public would not be as familiar with Mr Smith, given he has not had the airtime associated with a global pandemic. While the positions are equivalent, in my opinion it is Dr Bloomfield's traits, in conjunction with his airtime next to Jacinda Ardern that has seen him placed in a position of trust by the wider public. Combined with Payne & Percy's (2019) findings that government is not who farmers think to contact with

environmental farm practice related questions and the requirement to co-design solutions with farmers, this position should sit outside of government.

This 'network star', would be beneficial in creating awareness and leading Team GHG New Zealand. A person whose sole purpose is to pull together information and to provide clear communication of the complexities of the situation and how to navigate through. Someone who understands farm systems, the environment and change management intimately. An infinite thinker to their core, who is excited by the future and willing to lead the way there. Just as the Ashley-Jacinda team approach was key to the success of the COVID response, so too will the careful selection of the right frontline team to be the face of GHGs. It is critical for New Zealand in meeting its emission targets and effecting the collective responsibility of the nation in this initiative.

Recent Rabobank rural confidence surveys show that uncertainty decreases farmers' confidence in the sector with record lows recorded following COVID-19 and the announcement of environment related policies. However, the recognition of the increased reliance on the Agriculture sector for economic security from the general public buoyed farmers optimism (Rabobank, 2020b). A trusted face to build on this positive tone and tie it in with the 'Fit for a Better World' vision for the media would be beneficial.

## Build Resilience in the Sector

It is important to put farmers at the heart of industry change. Lockdown showed us that extended periods of uncertainty are difficult to live through. With people being at the core of adaptation, a focus on mindset is a positive future step. This is in support of Sowman's (2020) insight of increased awareness on metacognition in the Agriculture sector.

The Food and Fibre sector has already achieved substantial wins. As an industry, we do not reflect on this enough when setting out what the next challenge is. Awareness of what has already been achieved provides context for how far we have already come in the journey. There will always be the next 20% of improvements that need to be achieved to be the best.

Adding a resilience education piece to discussion groups is one way to start building resilience. Facilitators who are communicating the journey as a whole and breaking it down into actionable pieces would create focus and help support individuals through the Imposed Change Curve. Examples of industry initiative already doing this include FarmStrong and Dairy NZ's Step Change programme.

## Closing Statement

Our coordinated and world leading approach to COVID-19 has taught us many things, and as a team, we have the unique opportunity to apply these to GHG emissions and achieve the targets.

*Ko ahau te taiao ko te taiao ko ahau - I am the environment and the environment is me*  
- Māori proverb

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