Sustainability in the agribusiness sector

This KPMG Agribusiness green paper is the first of a two part series which highlights the importance for New Zealand's agribusiness sector of understanding the drivers of a sustainable supply chain approach. It provides an overview of the role regulation and compliance will play in doing so.

Following on from this, the second paper will focus on the practicalities of implementing a sustainable supply chain approach. Examples and case studies will be provided for the reference of New Zealand's agribusiness sector in order to assist with the development and implementation of this approach.

Who defines what is sustainable?

One of the first questions we received from an industry executive on releasing the KPMG Agribusiness Agenda was "what do you think sustainability really means?" On the face of it a relatively easy question to answer, but on reflection the answer any individual gives will depend on their personal perspective on what they consider sustainable behaviours to be.

One perspective on sustainability we have found to be fairly compelling is that a sustainable agribusiness model is one that produces sufficient food to meet the demand existing both now and in the future. The argument is that for an agribusiness to be sustainable it must produce food with regard not only to the environment (to ensure production can continue on an indefinite basis) but also to generating sufficient production to meet the demand and producing an adequate return for growers to support the lifestyle they and their next generations require.

It is fair to say that not all commentators would subscribe to this view, placing greater focus on either the environmental or profitability aspects of the equation and potentially giving no consideration to managing current resources to assure our ability to meet future demand.

The wide range of perspectives give rise to an obvious question – Who is defining what constitutes a sustainable business model? There has been little in the way of governmental regulation around the world into the actions a business needs to take to be able to call itself sustainable, thus companies have created their own standards of sustainability to fill the regulatory void. For instance, Tesco, Walmart, Carrefour and other major retail chains have separately defined the sustainability standards that they require suppliers to meet and by default have established a baseline set of behaviours for businesses who strive to win business contracts with these major retail chains.

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Leading retailers have identified that sustainability has become a significant business issue rather than a moral issue. It is important that New Zealand agribusiness, a major supplier of primary products, accepts that sustainability is a business issue and treats it as such and acknowledges that our customers are taking the issue very seriously.

One of the main challenges these suppliers face is that the requirements of each retail chain is different and not always consistent, mainly because the requirements have been driven by the marketing positions of the retail chain rather than being based on best practice science and research. Thus the standards a business needs to meet to supply Marks & Spencer (the UK retailer that has based its whole marketing strategy around its 'Plan A' – a goal to be the most sustainable retailer in the world) differ to those you need to comply with to supply other UK retailers. Suppliers are left having to meet the highest standard in each case to enable them to supply more than one customer, potentially adding cost to their business without necessarily resulting in a provable environmental, social or financial advantage to the farmer or the retailer.

This piecemeal approach to sustainability currently being adopted by businesses around the world comes with a number of significant concerns, including:

- Firstly, the practice of substituting one material, production step, vendor, location or mode of transportation for another, while appearing worthwhile on the face of it may have other unintended financial, social or environmental consequences creating supply chains that are potentially less sustainable than the original supply chain[1]. For example, food producers in the UK and Europe still use the food miles argument for substituting produce from New Zealand for locally grown production, despite scientific research that shows that the carbon footprint of NZ produce in store can be lower than domestic production due to the production techniques adopted here in New Zealand. Retailers that have, and continue to respond to pressure to increase local sourcing on the grounds of enhancing the sustainability of their supply chains could be having detrimental environmental and economic effects through their actions.
- Another issue that has been raised in many of our conversations since the *KPMG Agribusiness Agenda* was released is the concern that the requirements being imposed by retailers are at best based on scientific work undertaken overseas and at worst are based on an initiative that a marketing department believes will play well with customers. The need for producers, and the wider New Zealand industry, to have regular and comprehensive dialogue with customers to ensure that they understand our production systems and the science driving them has never been more important. We need to demonstrate the sustainability of our agricultural systems to customers to mitigate the risk of unilateral measures being imposed on our producers, increasing cost without a demonstrable benefit to the environment, and it is important that relevant New Zealand science is brought into these discussions.
- A final issue worth highlighting is the impact that the separation between urban and rural populations could potentially have on the requirements that retailers adopt. As urban consumers become ever more distant from the sources of their food, the realities of agricultural production become increasingly hard for them to accept. With most customers being in urban areas there is a risk that standards imposed around sustainability may also be designed to minimise the risk of the retailers brand being linked to some of the more 'unsavoury' aspects of agricultural production in the media. The onus falls on the rural sector to ensure that they are engaging and educating the urban population on where their food comes from to mitigate the impact of incremental compliance requirements.

There is likely to be a time when a tipping point is reached which will see the sustainability of a product being given equal weighting to more traditional buying factors.

However, it is important that we in New Zealand realise quickly that the measures global retailers are introducing are in response to real changes in societal thinking that is happening, not just in European and North American markets, but throughout the world. Continuing to seek evidence that the ordinary consumer really wants to eat sustainably produced food only continues to demonstrate that some sectors of our industry are failing to recognise the fundamental rule of business, that the customer's requirement is paramount, even if it appears outlandish to us.

For most end consumers, the price, quality and safety of food will continue to be key influencers of buying decisions but we need to be very careful not to offend consumers by publicly challenging and belittling the influence that sustainability is having on the purchasing decisions of many. There is likely to be a time when a tipping point is reached which will see the sustainability of a product being given equal weighting to more traditional buying factors, at least in the premium markets that New Zealand product needs to be targeted towards.

New Zealand's remoteness can make it hard for us to grasp societal changes happening around the world, but visiting a supermarket in North America and observing the profile being given to local produce confirms that the locavore movement is moving from niche to mainstream. Add to this the recently elected Conservative led coalition government in the UK publicly stating that it will be the 'greenest' government that the country has ever seen, together with the Chinese government highlighting the importance of improving the country's environmental performance in its latest five year plan, confirms the world is changing and we must be seen to be doing our part.

This shift in thinking makes the Emissions Trading Scheme a necessity for New Zealand. While the scheme as implemented is a badly designed tax, with the point of obligation in the wrong place to cause any substantial change in behaviour, it does enable us to truthfully say we have mechanism in place to meet our obligations under the Kyoto protocol. The tax system can (and hopefully will) be reformed to improve its effectiveness, as has happened to many new tax systems in the past. But the ETS is already helping to maintain export market access as we can hold our heads high in international circles and say we are serious about meeting our commitments on emissions. There has been much said and written about the burden that ETS is placing on the New Zealand economy, particularly after the Australian government abandoned its plan to implement a similar scheme, but an alternative view is that we cannot afford not to have a scheme given how thinking is developing around the world.

The views of customers in markets that we have traditionally sold into are changing and it is apparent that the affluent consumers we must target in Asia are also thinking along similar lines. Retailers are looking to ensure that their end-to-end supply chain meets acceptable standards for sustainability from an environmental, economic and social perspective. Momentum and pressure is growing for businesses to recognise the importance of meeting their customer's definition of sustainability if they wish to continue to act as a supplier. Increasingly, it is looking like there will be little or no premium for supplying sustainably produced products. However there is unlikely to be anything more than a base commodity market available for a product if we fail to take our customer's concerns seriously.

The trend of substituting sustainable requirements into a supply chain will progressively be superseded by companies redesigning their end-to-end supply chain on a fully sustainable basis and it is important that New Zealand is seen as being integral to the sustainable supply of agricultural products. Our clean, green brand positions us well as the world starts coming to terms with the next industrial revolution – the sustainable revolution. We need to understand that our customers will drive the extent of the changes we see and work to influence their thinking rather than continuing to view sustainability as nothing more than an inconvenient compliance cost.

Overview

The agribusiness sector is vital to New Zealand's economy. Agricultural and horticultural products accounted for approximately 55% of New Zealand's total merchandise export earnings in 2009[2]. New Zealand needs to ensure the sector's sustainable growth.

Concern about product safety and quality is the largest driver in changing consumer demand both internationally and domestically. Traceability from "pasture to plate" is fundamental to upholding consumer confidence. A sustainable supply chain approach must be adopted by New Zealand's agribusiness sector to provide the traceability and accountability demanded by consumers, in order ensure the sector's long-term viability.

A number of issues arise in the context of sustainability in the supply chain which must be effectively managed in order to build ongoing resilience. These issues can be grouped into three broad areas: on-farm; processing/manufacturing; and end consumer engagement.

One of the key inhibitors, but also potential enabler that the New Zealand agribusiness sector faces in implementing a sustainable supply chain, is our regulatory and compliance framework. When compared to Australia and the United Kingdom, we believe there is a benefit in having regulation and compliance requirements that assist the agribusiness sector to create a sustainable supply chain and maintain product integrity, thereby enhancing the sector's ability to generate growth.

Our clean, green brand positions us well as the world starts coming to terms with the next industrial revolution – the sustainable revolution.

Sustainability and a sustainable supply chain

While international and domestic consumers of New Zealand agribusiness products have different purchasing criteria, the general theme is shifting from being safely price based to demanding a sustainable supply chain designed from "pasture to plate".

This sophistication of purchasing criteria necessitates New Zealand's agribusiness sector to focus on sustainability and the sustainable supply chain.

Sustainability is a broad term that encompasses a range of issues. In essence, sustainability is about meeting the needs of today, without adversely impacting on the needs of tomorrow and is about balancing environmental, social and economic concerns in doing so[3].

A sustainable supply chain is a whole life cycle approach and involves:

Management of raw materials and services from suppliers to manufacturer/ service provider to customer and back with improvement of the social and environmental impacts explicitly considered[4].

A number of issues arise in the context of sustainability in the supply chain. They represent issues that must be effectively managed in order to build ongoing resilience.

For the agribusiness sector, the key supply chain issues for consideration include:

- Water use
- Packaging and labelling
- Water pollution
- Food safety
- Waste treatment and disposal
- Nutrition
- Methane and transport emissions
- Genetic modification
- Profitability
- Biodiversity
- Animal welfare
- Product freshness, quality and integrity
- Ongoing supply
- Healthy, balanced diets

These key issues can be grouped into the three key steps in the agribusiness supply chain:

1 On-farm;

2 Processing/manufacturing; and

3 End consumer engagement.

Assisting with driving the necessity for the agribusiness sector to embrace and implement a sustainable supply chain in these three categories are the international food retailers and consumers.

The role of international food retailers and the consumer

International food retailers, such as Walmart (the world's largest retailer[5]), Tesco, Sainsbury's and Marks & Spencer to name a few, are driving the sustainability trend for food products.

With more government and media attention given to climate change and its causes, many of the largest international food retailers have made sustainability commitments. Initially these retailers have tackled areas where they can make an immediate and relatively easily quantifiable difference. These include reducing the carbon and energy use associated with stores, cutting transport emissions, using greener packaging materials and methods, and publishing annual corporate social responsibility reports detailing their "carbon credentials". However, longer term strategic goals in respect of sustainability have also been articulated.

Tesco has set targets of becoming a zero-carbon business by 2050, carbon labelling all own brand products (500 by the end of 2010) and achieving a 30% reduction in the carbon impact of the products in its supply chain by 2020[6]. Tesco specifically uses the recently developed "PAS 2050", which has been developed to measure greenhouse gas emissions from goods and services[7].

Woolworths Australia has publically committed to having a long term goal to be recognised as the Australian leader in sustainable retailing. As a result, integrating corporate responsibility and sustainability into day to day business practices is a high priority. Sainsbury's has recently pledged to cut its packaging by a third over the next six years. The move is part of a broader vision recently outlined by Sainsbury's to send no waste to landfill and to re-process all food and non-food waste by the end of 2010.

Illustrated by the examples above, there has been a shift from the "green consumer" to the "responsible retailer". Retailers are assuming responsibility for ensuring that consumers can buy products with confidence and that the product's source and manufacture is consistent with their expectations and values[8].

In order to discharge this responsibility, food retailers are necessarily considering their suppliers' sustainable practices. For example:

- Walmart has committed to a target to reduce supply chain greenhouse gas emissions by 20 million tonnes in the next 5 years in key categories[9].
- Tesco acknowledges that milk makes up a large proportion of all agriculture-related emissions and has been working alongside the United Kingdom dairy industry to reduce emissions.
- Sainsbury's has committed to help suppliers reduce carbon output, setting up a Dairy Development Group carbon foot-printing model in 2007 and now extending this to beef, pork, lamb, poultry, eggs and cheese. Also, Sainsbury's meat and poultry suppliers use a Carbon Trust-certified carbon foot printing model to measure greenhouse gas emissions[10].
- Marks & Spencer has had a sustainable fishing policy for over 10 years and there are steps being taken to become the United Kingdom's first company to sign World Wide Fund for Nature's Seafood Charter. This is aimed to ensure that by 2012, all of Marks & Spencer's wild fish are Marine Stewardship Council ("MSC") certified or where MSC-certified sources are not available, the fish comes from fisheries that have sustainable practices in place that respect the natural environment11.

Walmart's sustainable product index works by using three "index steps". Firstly Walmart provides its suppliers with a survey to evaluate and make transparent the sustainability of the suppliers and the products. Secondly, Walmart collaborates with suppliers, retailers and the government to develop a global database of information on the lifecycle of products from raw materials to disposal. Finally, to complete the index steps, Walmart provides consumers with product information in a rating, so that consumers can make choices and consume in a more sustainable way. Walmart hopes the index will one day become a global standard[13].

- Walmart has a worldwide sustainable product index, which aims to lead to higher quality, lower costs and measure the sustainability of products. It intends to bring a more transparent supply chain, drive product innovation and, ultimately, provide consumers with the information they need to assess the sustainability of products[12].

The "responsible retailer" does not merely follow consumer preferences. As evidenced in a recent Christmas pudding example, the "responsible retailer" remains business savvy. Although there has been backlash in the United Kingdom in the past regarding concerns over "food miles" which lead to New Zealand products being disliked from United Kingdom supermarkets, Tesco has remained open to New Zealand's Hansells Food Group supplying Christmas puddings for the supermarket's own label saying:

> *Carbon emissions associated with a product can paint a complex picture – there are a number of factors that determine the carbon emissions associated with a product. It can often be more carbon-efficient to source products from places that have further to travel to our stores… than from sources that are closer[14].*

Both the "green consumer" and "responsible retailer" necessitate New Zealand's agribusiness sector to develop and implement a sustainable supply chain. Merely claiming that sustainable practices have occurred (commonly known as "greenwash") will not be enough. Rather, the consumer and the responsible retailers' are demanding increased creditability, greater accountability and traceability in their suppliers' supply chain.

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New Zealand advertises itself with a clean, green, pure image in the global market place. Access to international markets for New Zealand's primary products is based on this positive image. As a result, there is a need for New Zealand exporters to ensure its supply chain practices are of an acceptable standard to the consumers and food retailers in those international markets. Not doing so creates the risk of losing our international reputation for the quality and integrity of our products.

A wake-up call in that regard was the article in the United Kingdom's Guardian – "New Zealand was a friend to Middle Earth, but it's no friend of the earth[15]". In that article, New Zealand was noted as committing "commercial greenwash" on the basis that its clean, green image, on the climate change front at least, "increasingly defies reality[16]".

With comments like these being made on the international stage and the trend towards increased creditability, accountability and traceability within the supply chain, it is essential that New Zealand walks the talk with respect to its "100% Pure" brand and clean, green image. By focussing on adopting a sustainable supply chain approach, the agribusiness sector can provide substantive action to support these claims and leverage off New Zealand's global brand.

The role of regulation and compliance in the sustainable supply chain

During his recent visit to New Zealand, Lord Nicolas Stern reinforced the importance of using policy (regulation, compliance or otherwise) to ensure that the cost of environmental damage is borne by those that cause the damage[17].

He noted that policy should be developed in light of the "market failure" that it is trying to fix and in some cases, it is likely that a variety of policies will be required for a particular failure. Take for example the "market failure" of greenhouse gas emissions that severely damage consumption and the productive prospects of others. Lord Stern considers that it is likely a combination of policy such as carbon taxes, cap-and-trade and regulation is required to control the emissions that cause the failure[18].

Whatever the failure is, it is important that the policy implemented to address the failure enables a "scale of action" and is flexible, targeted at the appropriate level, encourages collaboration, risk sharing and "beyond simply economics[19]".

Like Lord Stern, we believe that policy has an important role to play in addressing "market failures" and will assist in the development of a sustainable supply chain for New Zealand's agribusiness sector.

Accordingly, we believe that one of the key inhibitors, but also enabler, that the New Zealand agribusiness sector faces in trying to implement a sustainable supply chain is New Zealand's regulatory and compliance framework.

Regulations imposed for "regulations sake"

There is a perception that regulations and compliance requirements have been imposed in New Zealand for "regulations sake" without full consideration being given to their costs and associated benefits. While there seems to be a lack of sufficient analysis behind key pieces of legislation (such as the New Zealand Emissions Trading Scheme ("NZ ETS")[20]), it could also be said that there is a benefit in having regulation and compliance requirements that assist New Zealand's agribusiness sector create a sustainable supply chain, maintain product integrity, thereby enhancing the sector's ability to generate growth.

The theme that regulations have been imposed for "regulations sake" and there is too much "red tape" is evident in a review of the United Kingdom's environmental policies. These policies have evolved over the years through the country's own domestic demands but also increasing pressure to comply with European Union regulations. Requests for the statute book to be cleared of the "swathes" of legislation which is surplus to requirements have been numerous.

These concerns have lead to a push for environmental policy reform that reduces the regulatory burden of the sector by carrying out a major review of the exiting regulatory regimes and simplifying regulation to achieve a more streamlined and proportionate approach[21].

In carrying out its review, the United Kingdom has found the most challenging issues in the policy reform as being:

- A past lack of policy evaluation, making it difficult to establish firmly which environmental regulations and compliance requirements are most effective in meeting environment objectives; and
- Existing evidence indicating that no single environmental policy style or mechanism is necessarily appropriate to all participants in all sectors.

The United Kingdom's environmental policies have commonly taken the "command and control" approach. That is, standards have been specified with which potential polluters must comply (the command), and then stringent monitoring and enforcement (the control) has been undertaken. This approach has been seen to have achieved some success, especially in reducing air and water pollution[22].

However, this type of regulation is widely seen as inflexible and raises concerns as to whether it inhibits innovation. It also involves high costs to implement and enforce, and cannot readily control releases from diffuse sources (such as agricultural fertilisers that may affect drinking water).

As a result, new environmental policy instruments have been emerging, which intend to be more flexible than command and control regulation. Such policies include the Climate Change Levy, Climate Change Agreements and the UK's emissions trading system (which has been superseded by the European Union system).

For the United Kingdom's environmental policy reform, it is a case of wait and see.

An analysis of United Kingdom's environmental policies indicates that the regulatory and compliance framework impacting the agribusiness sector is extensive.

An analysis of United Kingdom's environmental policies indicates that the regulatory and compliance framework impacting the agribusiness sector is extensive. A review of the existing environmental regulatory regimes and a simplification of environmental policies to achieve a more streamlined and proportionate approach are considered to be valid and logical approaches for the United Kingdom.

How does New Zealand compare? Is the New Zealand regulatory and compliance regime impacting the agribusiness sector in need of reform also? While the scope of this question is beyond the remit of this paper, we believe that New Zealand's regulatory and compliance regime may be a key inhibitor, but also enabler facing the agribusiness sector when trying to implement a sustainable supply chain.

Regulation and compliance impacting New Zealand's agribusiness sector

The following outlines some of the key regulation and compliance requirements that exist in New Zealand which impact some of the agribusiness sector's key supply chain issues. These are considered under the categories of on-farm, processing/manufacturing, and end consumer engagement. Due to the similarities with New Zealand's legal system, examples from the United Kingdom's and Australia's statute books are provided for comparison.

1. On-farm

On-farm activities with respect to the agribusiness sector include, but are not limited to, water use, water discharges (effluent, waste water), nutrient run-off, emissions (methane and on-farm transport emissions), waste management (discussed further under "Processing/Manufacturing") and resource use. Similar regulation and compliance obligations exist in New Zealand, the United Kingdom and Australia to control the impact of these activities.

Resource Management Act 1991

The Resource Management Act 1991 ("RMA") is New Zealand's primary environmental statute and it governs how New Zealand manages its resources based on the idea of the sustainable management.

Relevant to the agribusiness sector, the RMA seeks to manage:

- Point source pollution (effluent discharges into waterways, leakage or spills of fuel oil or pesticides near waterways);
- Non-point source pollution (runoff from pastures, build up of contamination in soils, discharges of greenhouse gases); and
- Depletion or deterioration of natural resources.

Under the RMA, resource management decision making is given to local government. Councils (i.e. regional councils, city and district councils and unitary authorities) deal with the day-to-day responsibility for managing the effects of

activities on natural resources, including pollution or discharges, and depletion or deterioration of natural resources, by preparing plans to help manage the environment in the area. When an action is not provided for under a district plan or a regional plan mandates that consent must be obtained, there is a requirement to obtain resource consent under the RMA.

There are also national level planning instruments that have been set up under the RMA which include National Environmental Standards (which cover air quality, sources of human drinking water, telecommunications facilities and electricity transmission), National Policy Statements and Water Conservation Orders. New Zealand's government relies on these tools to provide guidance and direction to the management of natural resources.

Similar to the RMA, Australia has the Environment Protection and Biodiversity Conservation Act 1999 ("EPBCA") which is a key piece of environmental legislation. The EPBCA aims to provide a national scheme of environment, heritage and biodiversity conservation by focussing on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of state and local significance. This approach reflects an assumption that plans that are owned by regional communities have a greater chance of achieving good natural resource management outcomes, rather than a "top down" approach.

The RMA and EPBCA are "effects-based" legislation, which means that instead of an activity being required to be on a list of approved or permitted activities (similar to the United Kingdom's approach), if it can be proven that the effects of the activity on the environment correspond to the purpose of the legislation, the activity can go ahead.

Under both New Zealand's RMA and Australia's EPBCA, two key issues have been identified:

1 The role of interpretation.

2 Coordination difficulties arising between the levels of government and regions to ensure that appropriate mechanisms are in place to deal with economic and environmental tradeoffs.

With respect to the second issue, in New Zealand, it has been acknowledged that the RMA has been a "handbrake on growth[23]" due to the "hodgepodge" of RMA rules. In response, the RMA has been undergoing reform with the aim of simplifying and streamlining this key piece of environmental legislation and "future-proofing New Zealand's regulatory framework and dealing with the red tape[24]". These reforms have now entered into the second phase, which focuses on providing greater central government direction and closer alignment of legislation[25].

Water

One of the key supply chain issues for the agribusiness sector regulated by the RMA is water. Currently, water use permits and discharge permits are issued by regional councils under the RMA. These permits are allocated using the resource consent process.

The Resource Management (National Environmental Standards for Sources of Human Drinking Water) Regulations 2007 require regional councils to consider the effects activities have on drinking water sources when granting water permits or discharge permits and including or amending rules in a regional plan in relation to permitted activities.

These regulations also require regional councils and territorial authorities to impose a notification requirement on certain resource consents in the circumstance where an event occurs that may have a significant adverse effect on a drinking water source.

Overriding the resource consent process for water use and discharge permits are Water Conservation Orders, which aim to preserve the natural state or characteristics of a water body. Water Conservation Orders have the same status as National Environmental Standards and National Policy Statements. Essentially, Water Conservation Orders prohibit or restrict a regional council from issuing new water and discharge permits with respect to a water body depending on consistency with the terms of the Water Conservation Orders.

In comparison with the RMA, both Australia and the United Kingdom have specific water legislation to manage their water resources. Although Australia has the EPBCA, it specifically manages its water resources through the Water Act 2007.

In particular, through its regulatory framework, Australia's agribusiness sector gains access to irrigation water from bores or river systems through licensing by the states. Distribution of irrigation water from state owned facilities is mainly by private irrigation companies to which users pay fees. Australia is finding that the increased trading of water (usually on a temporary basis) is contributing to a more economically efficient allocation of the resource between competing users[26].

As around 75% of the water used in Australia is in irrigated agriculture, Australia has begun to focus on water resource management through legislative and institutional change, attempting to allocate water in a more economically efficient and socially and environmentally acceptable manner.

In contrast, New Zealand is currently managing its water resources solely through the RMA. With water being New Zealand's "liquid gold", the question has been asked whether in fact the RMA provides sufficient protection and means of management. It seems Australia has recognised that the EPCBA must be supplemented by more specific water regulation, what about New Zealand?

The recently released report from the Land and Water Forum 2010, "Report of the Land and Water Forum: A Fresh Start for Freshwater"[27], has reiterated that the traditional principle of "first-in first-served" for allocating water under the RMA works while there is plenty of water for all. However, as this is no longer the case in many of New Zealand's water catchments, and this problem is likely to spread, a "first-in first-served" allocation basis does not adequately ensure New Zealand's natural water resources are used by their highest and best use, or in the public interest. Further, the report notes that under the current water allocation system, economic opportunities are being lost through the failure to recognise limits on water use. Full allocation combined with an inflexible water permit transfer system, reduces availability for other uses[28].

The Land and Water Forum 2010 recommends that limits for quantity and quality are defined nationally through the RMA, with regional councils giving effect to these national objectives at a catchment level. In order to achieve the targets and limits set by regional councils at catchment level, they should employ a range of instruments, including voluntary schemes, codes of good management practice, regulation and funding.

With water being the agribusiness sector's "liquid gold", we agree a first-in-first served system for water use which is currently provided for under the RMA will not be sufficient to adequately ensure natural water resources are used sustainably. The minimisation of New Zealand's water footprint should be achieved through specialised regulation and/or compliance mechanisms like that of Australia and the United Kingdom. In addition, the use of water pricing models which allow for better allocation of water should be encouraged.

Emissions Trading Scheme

Another key, and particularly controversial, piece of environmental regulation for New Zealand is the Climate Change Response Act 2002, which along with its amendments, establishes the NZ ETS.

The NZ ETS is New Zealand's primary climate change policy tool for reducing the country's greenhouse gas emissions and enabling the country to meet its international commitments under the Kyoto Protocol.

New Zealand has not been a world leader in introducing an emissions trading scheme. The United Kingdom implemented its emissions trading scheme in 2002, which is said to have been the world's first economy wide greenhouse gas emissions trading scheme. The scheme was a voluntary scheme that was created as a pilot prior to the mandatory European Union system. The United Kingdom's scheme closed to direct participants in 2007 and the Emissions Trading Registry was re-branded to reflect the Climate Change Agreement focus of the Registry.

New Zealand has not been a world leader in introducing an emissions trading scheme.

Similarly, the European Union and regions within the United States have emissions trading systems currently in action.

Recently the United Kingdom has implemented the Carbon Reduction Commitment Energy Efficiency Scheme, which is not likely to directly affect the agribusiness sector, but it is likely to have flow through impacts on this sector. As an example, Water UK considers users of large quantities of water like farmers and manufacturers within the agribusiness sector, whose waste water contains large amounts of pollutants that require costly treatment, should share some of the burden under the scheme[29]. In such situations, a flow through of cost from direct participants such as Water UK is likely to impact the agribusiness sector.

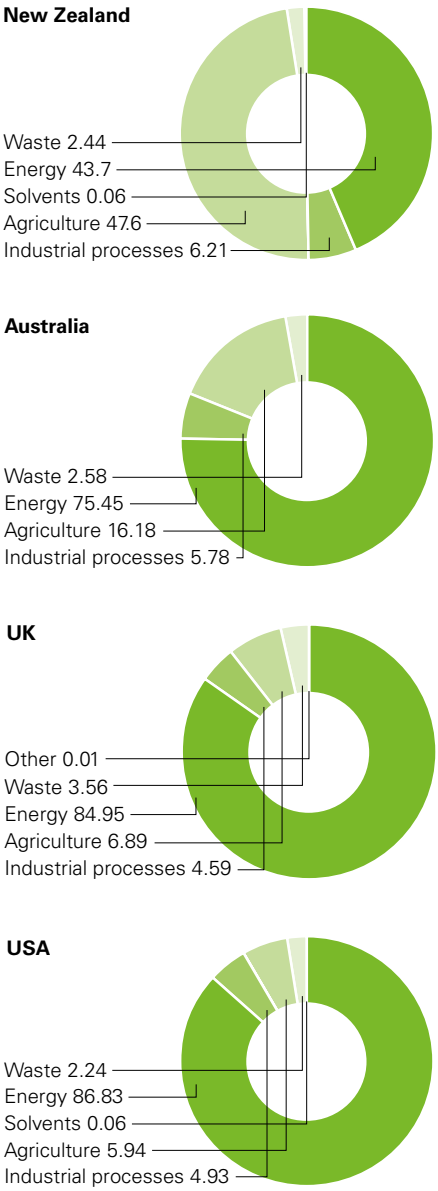
Although Australia does not have a legislated emissions trading scheme, the National Greenhouse and Energy Reporting Act 2007 ("NGER") introduced a national framework for the reporting and dissemination of information about the greenhouse gas emissions, greenhouse gas projects, and energy use and production of corporations.

Corporations that meet an NGER threshold must report their:

- Greenhouse gas emissions;
- Energy production;
- Energy consumption; and
- Other information specified under NGER legislation.

The impact of NGER compliance would most likely be felt in the processing/ manufacturing category of the agribusiness sector.

The above examples show that emissions trading schemes and similar regulation and compliance are not new concepts. They are tools to help regulate emissions produced by putting a price on carbon.



Methane emissions

For the agribusiness sector, mandatory participation in the NZ ETS will be through emissions produced by the agricultural sector. At this stage, entry has been deferred by two years to 2015 due to technical difficulties regarding agricultural emission calculations. Further research is required in order to "nut out" these difficulties.

Agriculture is a potential mandatory participant due to the sector's high environmental impact with respect to emissions. According to the 2008 greenhouse gas inventory produced under the United Nations Framework Convention on Climate Change ("UNFCCC")[30], New Zealand's agricultural sector[31] alone accounted for 47.6% of the country's total emissions. This proportion is substantially higher than Australia (16.18%), United Kingdom (6.89%) and United States (5.94%) for the same year.

If the agricultural sector becomes a mandatory participant in the NZ ETS, it will have a legal obligation to surrender emissions units to cover the greenhouse gas emissions produced.

On-farm operating costs

As an indirect participant in the NZ ETS, the agribusiness sector is significantly impacted through the supply chain, as a result of the flow-on effect from mandatory participants. This impact will be felt through electricity, fuel and other energy costs increasing.

2. Processing/manufacturing

The key supply chain issues facing the agribusiness sector in the processing/manufacturing step include, water use, water discharges (waste water), emissions (transport emissions), packaging and waste, and energy use. Many of the on-farm supply chain issues flow through to those of the processing/manufacturing step and have been discussed in the "On-Farm" section above.

The key supply chain issue discussed in the following section is waste management. This issue is not limited to the processing/manufacturing supply chain step. With more than 4,000 tonnes of silage wrap – enough to circle the earth 8 times – and millions of plastic containers being used by New Zealand farmers alone every year and only an estimated 10% of these products being recycled nationally, with traditional burn or bury management techniques still being favourable approaches, waste management is an increasingly important issue existing within the sustainable supply chain approach for both the "On-Farm" and "Processing/Manufacturing" steps[32].

Waste Minimisation Act 2008

Similar regulation and compliance obligations exist in New Zealand, the United Kingdom and Australia to control waste management.

In New Zealand, the Waste Minimisation Act 2008 ("WMA") has been implemented with the aim to:

- Encourage a reduction in the amount of waste generated and disposed of through the introduction of a waste disposal levy;
- Lessen the environmental harm of waste;
- Encourage better use of materials throughout the product life cycle; and
- Provide a framework for product stewardship to reduce waste from products.

Although the New Zealand agribusiness sector is not directly impacted by the waste disposal levy set up under the WMA (this is because the operator or person in control of the disposal facility is liable to pay the levy), the processing/

manufacturing supply chain step may be impacted by the indirect flow-on impact of the levy or the establishment of product stewardship for specific products. Under the WMA, priority products may be regulated to ensure producers and others in the supply chain share responsibility for end-of-life products. The WMA also gives the government the ability to recognise and endorse voluntary product stewardship schemes for non-priority products through accreditation.

To date no mandatory product stewardship schemes have been established in New Zealand. However, during 2010 the government put in place voluntary product stewardship schemes for glass, used oil and silage wrap[33]. These schemes involve industry collecting and reusing the products they sell and aim to encourage industry to reduce waste its waste footprint.

Regulation and compliance set around product stewardship is not new. Both the United Kingdom and Australia have regulation in this area.

The concept of product stewardship ensures that producers, retailers, consumers and other parties take responsibility for the environmental effects of their products from "cradle-to-grave". It is consistent with the "polluter pays" principle and includes the costs of a product's environmental impact into the cost of the product. Product stewardship is an important concept for the agribusiness sector to understand and strive to achieve as it is at the heart of a sustainable supply chain.

New Zealand's environmental regulation and compliance requirements generally focus on point sources of pollution (such as parts of the RMA and the waste disposal levy under the WMA). Product stewardship approaches environmental protection from the product point of view. It requires those in the product life cycle, from producers to manufacturers and users, to share responsibility for reducing the environmental impacts of products.

The United Kingdom implemented the European Council Directives targeting packaging and waste, which place responsibility on producers to bear the costs of collection, sorting or treatment and recycling or recovery. As an example, the Producer Responsibility Obligations (Packaging Waste) Regulations 2008 (as amended) have been enacted to encourage the minimisation of packaging and packaging waste, incentivise re-use and increase the recovery and recycling of packaging waste. These regulations place an obligation on certain participants to recover and recycle specified tonnages of packaging waste each year.

In Australia, the National Environmental Protection (Used Packaging Materials) Measure made under the National Environment Protection Council (NEPC) Act 1994 has existed in combination with the National Packaging Covenant. Since 1 July 2010, the Australian Packaging Covenant has replaced the National Packaging Covenant. The purpose of this regulation is to reduce the environmental impacts of packaging used in the supply chain.

In addition to clear goals for design, recycling and product stewardship, an important element of the Australian Packaging Covenant is the Sustainable Packaging Guidelines, which have been developed to assist in the review and optimisation of consumer packaging to make efficient use of resources and reduce environmental impact without compromising product quality and safety.

For New Zealand's agribusiness sector, regulation and compliance requirements (whether voluntary or mandatory) with respect to waste management and product stewardship are integral to assist with developing a sustainable supply chain. This is because a sustainable supply chain is a whole life cycle approach. By thinking from "cradle-to-grave" the agribusiness sector will be automatically taking a vital step towards developing a sustainable supply chain approach.

3. End consumer engagement

Management of end consumer expectations and demands is the final key supply chain stage, which New Zealand's agribusiness sector will need to consider. The key supply chain issues facing the agribusiness sector in the end consumer engagement step include resource use and environmental degradation, traceability and nutrition.

In this section particular focus is given to traceability, which is a common issue being addressed through similar mechanisms in New Zealand, Australia and the United Kingdom. Although focus has been placed on agriculture, which is not the sole participant within the agribusiness sector, the traceability issues being faced by the agricultural sector and the role of regulation and compliance to assist with the sector's end consumer engagement is a good case study that the agribusiness sector as a whole should consider when developing a sustainable supply chain approach.

National Animal Identification and Tracing System

Although not yet enshrined into New Zealand's statute books, the National Animal Identification and Tracing ("NAIT") system is being developed and is expected to be mandatory from mid-2011 for cattle, with deer to follow a year later and extension to other livestock over time.

The purpose of the NAIT system is to safeguard the New Zealand brand and the agricultural sector's profitability by protecting market access for New Zealand animal products through enhancing regulatory and consumer confidence in New Zealand's ability to manage biosecurity and food safety risks.

The United Kingdom has a Cattle Tracing System, which is legislation that was developed in response to European Union pressure. Similarly, Australia has implemented the National Livestock Identification System, which is the nationally adopted standard, enforced by state and territory based legislation.

Both the United Kingdom and Australia have made their schemes legislation and at this stage, it seems as though New Zealand will do the same. However, with such strong global pressure pushing for traceability of products, is there a need to legislate the NAIT system, or will external pressures ensure its uptake and compliance? In any case, the agribusiness sector will need to adopt the NAIT system (or the like) in its sustainable supply chain as it is what New Zealand's trading partners and consumers within those trading partners are increasingly demanding[34].

Conclusion

The "green consumer" and "responsible retailers" of today are demanding increased creditability, greater accountability and traceability in their suppliers' supply chain. To meet these expectations, New Zealand's agribusiness sector needs to adopt a sustainable supply chain approach, which entails a whole life cycle analysis from on-farm activities, processing and manufacturing, to end consumer engagement.

New Zealand's clean, green, pure image in the global market place is an advantage for the agribusiness sector. However, substantive action to support this image must be taken in order to leverage New Zealand's global brand and to avoid further "greenwash" allegations.

Regulation and compliance will take a key role in aiding the agribusiness sector in adopting a sustainable supply chain approach. Although too much "red tape" may inhibit growth and innovation in the sector, it is also important to understand that in some cases, without regulation and compliance, a sustainable supply chain may be difficult to obtain. The key will be that the appropriate policy (whether it is regulatory or voluntary) is used. This will be dependant on the underlying concern or "market failure" the policy is attempting to address.

Generally, New Zealand's current regulatory and compliance framework seems fairly similar to that of Australia and the United Kingdom. However, some relevant considerations that can be taken from the regulation and compliance requirements used by these countries are noted as follows:

1 With water being the agribusiness sector's "liquid gold", a first-in-first served system for water use which is currently provided for under the RMA will not be sufficient to adequately ensure natural water resources are used sustainably. Similar to the recommendations put forward by the Land and Water Forum 2010, the minimisation of New Zealand's water footprint should be achieved through forward thinking, specialised regulation and/or compliance policies, whether mandatory or voluntary. .

2 Emissions reporting and trading schemes are not new. They provide a mechanism to assist (whether effectively or not) in the reduction of greenhouse gas emissions. In order for New Zealand's agribusiness sector to develop a sustainable supply chain, on-farm and processing / manufacturing emissions will need to be addressed. This may, or may not be done through the regulatory and compliance requirements imposed by the NZ ETS. However, by having the NZ ETS in place, New Zealand is attempting to reduce its greenhouse gas emissions through substantive action. The flow on effect is that the sectors existing within the New Zealand economy, including the agribusiness sector, are seen to be attempting to mitigate emissions, which assists in the development of a sustainable supply chain.

3 The consideration of waste management and the integration of product stewardship into New Zealand's regulation and compliance framework follow the global trend of a whole life cycle approach. By adopting the "cradle-to-grave" and "product stewardship" concepts, the sector will be automatically taking a vital step towards developing a sustainable supply chain approach.

4 New Zealand's trading partners and their consumers are demanding traceability through the supply chain. Although both the United Kingdom and Australia have regulatory regimes in place to address traceability, it is questionable whether traceability needs to be legislated in New Zealand. Instead, this may be a case where global consumer demands and trends remove the need to develop more "red tape".

New Zealand's actions with respect to developing a sustainable and profitable agribusiness sector will set a strong example for the world. New Zealand is already a leader in this regard. The agribusiness sector is in a prime position to enhance this position by embracing a sustainable supply chain approach.

Although too much "red tape" may inhibit growth and innovation in the sector, it is also important to understand that in some cases, without regulation and compliance, a sustainable supply chain may be difficult to obtain.

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