

Food Miles – practical steps for New Zealand exporters

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Discussion about food miles has recently escalated, with increased attention given to the implications of climate change. The distance to market for New Zealand exporters cannot be avoided. Repositioning New Zealand exports as a sustainable option for importing countries represents an opportunity rather than a cost. This briefing paper describes options available to those exporters who believe the food miles issue represents either a threat or an opportunity for their business. It describes practical actions that can be taken to reduce greenhouse gas emissions due to production and distribution.

Food miles or climate change – what is the real issue?

Food miles as a term was first used by the United Kingdom's SAFE Alliance in 1994 to highlight the environmental and social impacts caused by the increasing distances travelled by food. Simply defined as the distance in kilometres or miles that food travels from farm gate to consumer¹, it is easily understood and emotive. It has been adopted by local food movements in several countries and used to promote the growth of initiatives such as farmers' markets.

Whether or not the term food miles is a valid measure, it is being used by overseas markets in their purchasing decisions³ and beginning to appear in government policies.⁴ It is unlikely that the issue will disappear. Indeed, other types of products are also being targeted in the same way with calls for consumers to be aware of flower miles⁵ and clothes miles.⁶

Recent media coverage of the food miles issue has focused on the carbon footprint and hence climate change impacts of transporting food over long distances. In the context of general recognition that greenhouse gas (GHG) emissions⁹ from human activities need to be reduced to reverse the impacts of climate change, "foodmiles" is being used as a surrogate measure⁹ for the GHG emissions due to food transport. The Stern Review¹⁰ calls for urgent action to reduce emissions globally by at least 60% by 2050 and is the first study to clarify the economic impacts of continuing on a "business as usual" trajectory.

Imagine how shocked I was to see onions from New Zealand! Onions are grown in Western Europe for most of the year, so why is it necessary to fly them over 12,000 miles to stock a supermarket in this country?

Paul Willis, 2004²

Given the market share of the supermarkets, it is reasonable to explore what more they can do to 'edit out' unnecessary food miles, packaging and waste, and to prioritise more seasonal produce. ... DEFRA should work to reduce the climate impacts of meat and dairy, by working with retailers, public procurers and the UK livestock sector to develop roadmaps by 2007 for a transition to a more localised supply chain of extensively farmed meat and dairy products.

Sustainable Consumption Round Table, 2006⁷

1 Paxton A (1994). *The Food Miles Report: The Dangers of Long Distance Food Transport*. The SAFE Alliance, London.

2 Willis P (2004). *Food Miles*. Worthing Borough Council. www.worthing.gov.uk

3 Lorek S, Spangenberg JH (2001). *Environmentally Sustainable Household Consumption*. Wuppertal Papers No 117. Wuppertal Institute for Climate, Environment and Energy, Wuppertal.

4 Department for the Environment Food and Rural Affairs (2006). *Food Industry Sustainability Strategy*. DEFRA, London.

5 Hargreaves V (2003). Say it with flowers. *Ecologistonline*. See www.theecologist.org/

6 Purvis A (2006). Greening the catwalk: fast fashion, heavy load. *Green Futures*, Issue 60.

7 Sustainable Consumption Round Table (2006). *I Will if You Will: Towards Sustainable Consumption*. National Consumer Council and Sustainable Development Commission, London.

8 There are six greenhouse gases (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexa fluoride) and for reporting purposes they are converted to carbon dioxide (CO₂) equivalent emissions using internationally accepted conversion factors.

9 Pirog R (2004). Food miles: a simple metaphor to contrast local and global food systems. Hunger and Environmental Nutrition Dietetic Practice Group, Summer 2004. American Dietetic Association.

10 Stern S (2006). *The Stern Review: The Economics of Climate Change*. HM Treasury, London. See 13.2 The need for strong and urgent action.

To stimulate further action to reduce GHG emissions in the transport sector, the European Union (EU) has agreed to bring aviation into the EU Emissions Trading Scheme¹¹, thus setting a cap on airline emissions. All domestic and foreign flights within the EU will be covered from 2011 and all international flights to and from EU airports from 2012. The EU is also exploring policy options to reduce emissions from shipping.¹² Although maritime transport is far more fuel efficient than air freight, overall emissions are rising due to increased volumes of sea freight.¹³ The implications for exporters is a potential reduction in access to overseas markets due to higher costs, carbon taxes based on freight tonnage and higher landing fees.¹⁴

In reality, the food miles debate is about more than GHG emissions. It is part of a wider debate about globalisation versus localisation, and about sustainable systems of production and consumption. Accusations of protectionism by exporting countries are not helpful in this debate, as most people “share the common human inclination to support their own local community ahead of outsiders”¹⁶. In New Zealand, this is recognised through the Buy New Zealand Made and proposed Buy Kiwi Made programmes.

From an economic standpoint, we do need to be prepared for a future in which consumer preferences may shift towards low-carbon goods and services. It’s not difficult to imagine the “food miles” campaign extending beyond a focus on Anchor butter, to the carbon footprint of any New Zealand produce.....Firms are going to have to think about how products are marketed and differentiated in response to a potential change in consumer preferences....

John Whitehead, Secretary to the Treasury, 2006¹⁵

New Zealand exporters need to develop a proactive strategy to put food miles in an appropriate context, i.e. in the context of the significance of environmental impacts along the whole value chain, including transport to market. As we subsequently describe, there is a range of practical measures producers and exporters can take to reinforce the “clean green” New Zealand brand, reduce emissions, gain cost savings, maintain access to overseas markets, and add value to export products.

Redefining food miles – a sustainable development perspective

It is widely acknowledged that food miles is not an adequate measure for the environmental impacts associated with bringing food to market.¹⁷ Indeed, some people have questioned whether a reduction in food miles does lead to more sustainable foods and farming systems.¹⁸ Instead, it is important to consider the interrelated economic, social and environmental aspects of food systems, i.e. to view the food miles debate from a sustainable development perspective. It is then possible to discuss some of the advantages, as well as disadvantages, of consuming imported foods; examples include the health benefits of imported fresh foods at certain times of the year, strengthened cultural links with other countries, and supporting the economies of developing countries.

A sustainable development perspective also requires a life cycle approach to products. Figure 1 shows that a life cycle approach includes consideration of the upstream production of materials, manufacturing, and downstream distribution of products including export to overseas markets. To address overall environmental impacts, such as climate change, all relevant inputs and outputs through this life cycle must be considered, including transport. In the case of climate change, relevant inputs and outputs are direct emission sources plus any indirect sources considered to be material.¹⁹

11 European Commission (2006). Climate change: Commission proposes bringing air transport into EU Emissions Trading Scheme. *Europa Rapid Press Releases* IP/06/1862, December 20.

12 Harvey F (2005). Brussels targets CO₂ emissions in maritime sector. *Financial Times*, November 21.

13 Wit R, Kampman B, Boon B et al (2004). *Climate Impacts from International Aviation and Shipping: State-of-the-art on Climatic Impacts, Allocation and Mitigation Policies*. Report for the Netherlands Research Programme on Climatic Change, Scientific assessments and policy analysis (NRPCC). CE, Delft. See 2.3 Marine.

14 Stern S (2006). *The Stern Review: The Economics of Climate Change*. HM Treasury, London. See 22.8 Interactions with the international trade regime.

15 Whitehead J (2006). *Beyond 2010: Preparing for Tomorrow's Economic Challenges Today*. Simpson Grierson Policy Maker Seminar Series, Wellington.

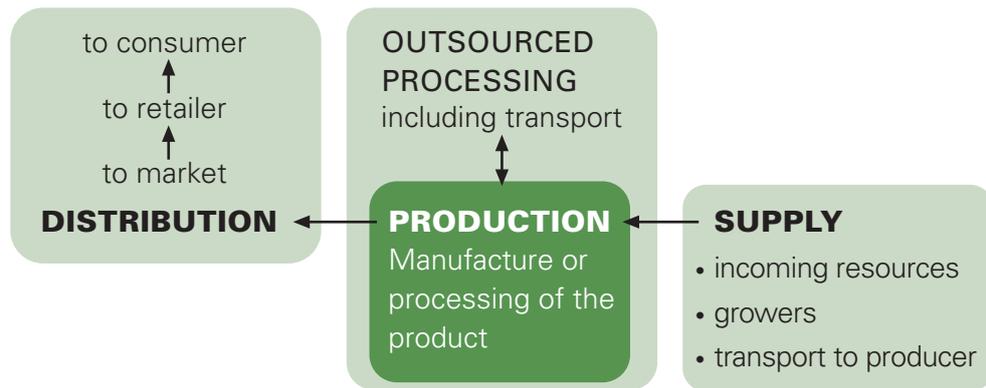
16 Quote from Buy New Zealand Made. See www.buynz.org.nz/about/

17 Smith A, Watkiss P, Tweddle G et al. (2005). The validity of food miles as an indicator of sustainable development: final report produced for DEFRA. *Report number ED50254*, Issue 7. AEA Technology, Didcot, Oxfordshire.

18 Hinrichs CC (2003). The practice and politics of food system localization. *Journal of Rural Studies* 19, 33–45.

19 An emissions source is material if: 1) its cumulative total is a significant proportion of total emissions; 2) it is important to stakeholders; 3) opportunities are available to reduce those emissions.

Figure 1: Emissions sources showing direct (production) and indirect (supply, outsourced processing, distribution) impacts along the whole value chain including transport (indicated by the arrows).



Once direct emissions due to production and transport have been addressed, a producer can in turn encourage and assist its suppliers and contractors to take action to reduce their emissions. Although transport to market is often at the buyer's expense, and therefore an indirect impact, the exporter is expected to cover any associated risks and these may come to include mitigation of emissions.²⁰ Whether these emissions are material will depend on consumer perceptions and the policies of the retailer.

Emissions caused by transport to and from ports are often overlooked and may be more significant than for port-to-port transport.²¹ Whether these emissions are material to the exporter or the retailer will depend on consumer perceptions and the policies of the retailer. Research has shown that the environmental impacts of both maritime and air freight for imports into the United Kingdom are trivial when compared with domestic transport, especially when transport of food to the home and to the landfill are accounted for.²¹ Even though port-to-port emissions may be proportionally very low, they still need to be included in the overall carbon footprint as these emissions are material to consumers and the general public as evidenced by the current food miles discussion.

Measuring the impacts of transport – an equal basis for comparison

Measuring the environmental impacts of bringing food to market is complex. Distance travelled is not an accurate measure of environmental impact. For example, the fuel efficiency, and hence GHG emissions, for a vehicle is dependent on factors such as the type of vehicle, its age, the type of fuel used, maintenance and driver behaviour. Driver training, vehicle specification and transport logistics have the greatest influence on fuel efficiency.²²

Maritime transport of goods over identical distances will have more or less GHG emissions depending on:

- the type of transport
- the type of fuel used
- weather conditions during transport
- weight load factor
- whether the produce is held at ambient temperature, cooled or chilled
- other operating conditions and storage requirements during transport.

International measures of freight emissions are generally based on freight tonnage and distance (tonne-kilometres); however, emissions factors need to be based on kilometric performance and factors such as those listed above.²³

The distance to market may be only a small fraction of the total environmental impact because:

- some of the ingredients may come from one or more other countries
- some of the processing steps may take place in other countries.

²⁰ Stern S (2006). *The Stern Review: The Economics of Climate Change*. HM Treasury, London. See 22.8 Interactions with the international trade regime.

²¹ Pretty JN, Ball AS, Land T *et al* (2006). Farm costs and food miles: An assessment of the full cost of the UK weekly food basket. *Food Policy* 30, 1–19.

²² Coyle M, Whiteing AE, Murray W (2002). *Fuel Saving Interventions: Facts and Fiction*. Transport and Logistics Research Unit, University of Huddersfield.

²³ Kolb A, Wacker M (1995). Calculation of energy consumption and pollutant emissions on freight transport routes. *The Science of the Total Environment* 169, 283–288.

More importantly, perhaps we should ask whether the proposed alternatives to imported foods are preferable. If locally sourced food is to be made available out of season, then there will be further GHG emissions due to additional energy needed to provide lighting, heating, water and nutrition. Growing exotic crops near consumer markets may require even more energy and resources. For example, efficient production methods in season in New Zealand may result in less overall GHG emissions even when including distance travelled to market.²⁴

Mitigating climate change impacts – taking proactive action

With respect to climate change, the Stern Review²⁵ emphasises that the longer action is delayed, the higher the costs and penalties. There are, however, many practical measures and techniques that can be adopted now to mitigate production and transport emissions.

If exporters see climate change as a major strategic issue, before taking action they first need to increase their understanding and respond to markets and customers' positions on climate change. Customers' environmental concerns may be obvious from supply chain questionnaires or corporate sustainability reports. Industry organisations or sector bodies may offer guidance on environmental best practice.

There are many environmental improvement schemes that producers can join and some of these offer third party assessment allowing the use of certified brands and seals of approval on products – eco-labelling.²⁶ Eco-labels are important tools for communicating to the market and consumers the environmental attributes of the product including production practices. Other overseas countries are also being targeted by those concerned about food miles. The standards and labels being used by peers and competitors may indicate how they are responding to these issues.

While you might feel virtuous that your organic blueberry has reduced the amount of chemicals flowing into the world's soil and waterways, you could be disappointed if you realise it's flown thousands of kilometres from Chile on a carbon dioxide-emitting aeroplane.

Sarah White, 2004²⁷

The whole concept of food miles is really getting to me – I don't want my apples airlifted from South America or brought over on the Eurostar from France. I could pretend that I'm environmentally offended but in truth I'm just jealous – I don't like my fruit to be better-travelled than I am.

Susan Grossey, 2006²⁸

When faced with food miles as an issue, we propose that comparisons are made with goods from overseas countries on the basis of the carbon footprint for the product life cycle, taking into account production and distribution including seasonal differences.

Three practical steps (see Figure 2) can then be taken:

- The first step is to MEASURE emissions. This involves identification of all direct and indirect sources of GHG emissions that are considered material, i.e. including those that are significant as a proportion of total emissions, important to stakeholders, and those emissions that can be reduced easily.
- The second step is to MANAGE or reduce emissions. This involves identifying and implementing opportunities to reduce emissions and reporting on progress. Simple calculators and guidance are available for small businesses to measure their GHG emissions. Assistance such as energy audits may be available through various government programmes.²⁹ For larger businesses with more complex production activities, more sophisticated software tools and external expertise may be needed.

24 Saunders C, Barber A, Taylor G (2006). *Food Miles: Comparative Energy/Emissions Performance of New Zealand's Agriculture Industry*. University of Lincoln.

25 Stern S (2006). *The Stern Review: The Economics of Climate Change*. HM Treasury, London. See 5.5 Large-scale impacts and systemic shocks.

26 Smith A, Stancu S (2006). Ecolabels: a short guide for New Zealand producers. *Business & Sustainability Series*, Briefing Paper 2, Landcare Research, Lincoln.

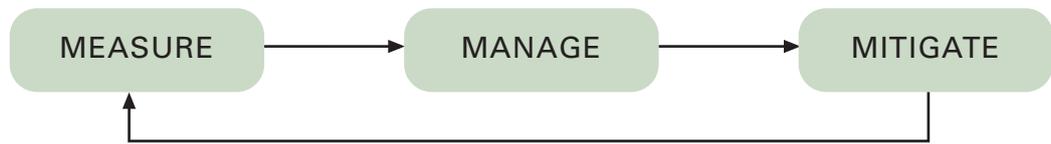
27 White S (2004). Going organic. *TheSite.org*. See www.thesite.org

28 Grossey S (2006). Flying apples and carbon footprints. *Cambridge Evening News*, 16 October.

29 For example the Energy Efficiency and Conservation Authority, EECA. See www.eeca.govt.nz

- The last step is to MITIGATE or offset the remaining unavoidable emissions. This can be done through the purchase of carbon credits. A carbon credit³⁰ is equivalent to one tonne of CO₂ emissions that has been sequestered in a forest sink project, saved through an energy efficiency project, or avoided through alternative energy generation, e.g., windfarms, landfill gas or biofuels.

Figure 2: Three practical steps for reducing emissions and gaining carbon neutral status



Depending on company expectations or the demands of customers, it may be necessary to gain third-party endorsement for actions taken to reduce emissions. Stakeholders will be concerned about the credibility and integrity of environmental claims³¹; in particular, that significant emissions have been identified, that remaining emissions have been tested for materiality, that reliable data have been used to produce the emissions profile, and that a reputable third party has undertaken the assessment. Calculators and software tools for preparing carbon footprints or emissions profiles should be based on standards for GHG measurement and reporting such as the Greenhouse Gas Protocol³² and ISO 14064.³³

In turn, it is wise to check the credibility and integrity of the carbon credits purchased. Carbon credits generated through forest sink projects (e.g., Permanent Forests Sink Initiative³⁴) and non-forest projects (e.g., Projects to Reduce Emissions³⁵) should be third-party verified. Internationally recognised endorsement is available for non-forest projects through the World Wide Fund for Nature (WWF) Gold Standard³⁶ scheme. The type of credit chosen may bring added value because it is co-related to other issues such as community involvement, conservation, biodiversity, or watershed protection.

Environmental credentials – building on “clean green” New Zealand

The “clean green” New Zealand image has helped build the reputation of New Zealand products in overseas markets as environmentally responsible. When energy intensity is compared for a range of food products, research shows that New Zealand production is more efficient than for the same products produced in the UK.³⁷ However, as pressure increases on overseas retailers and buyers to address the environmental risks associated with their supply chains, producers will face more demands to implement standards and meet specific certification requirements that verify environmental claims.

Proactive producers have been building on their New Zealand identity by taking their products through both home-grown and international certification processes to strengthen their position in these markets. Research is needed to evaluate the cost effectiveness of these environmental standards for New Zealand products in international markets. It is important to exporters that domestic standards and brands gain international recognition. There is a role for the New Zealand government to endorse and promote domestic credentials where they demonstrably add credibility and integrity to products.

³⁰The carbon credits held on national registries are third-party verified Kyoto-compliant offset units. They meet rules set by the Kyoto Protocol that require the projects generating the emissions to be Additional or beyond business as usual, an Equivalent amount of CO₂ must be sequestered, saved or avoided to the amount offset, and there must be minimal Leakage or other unaccounted emissions generated by the project. The producers of voluntary or “grey market” carbon credits set their own rules but they are generally consistent with the Kyoto Protocol.

³¹ Brignall M (2006). ASA clamps down on companies’ green claims. *The Guardian*, Wednesday October 11.

³² World Business Council for Sustainable Development and World Resources Institute (1998). *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard*. WBCSD, Geneva.

³³ International Organization for Standardization (2006). *ISO 14064-1:2006, Greenhouse Gases – Part 1: Specification with Guidance at the Organization Level for the Quantification and Reporting of Greenhouse Gas Emissions and Removals*.

³⁴ See www.maf.govt.nz/forestry/pfsi/

³⁵ See www.climatechange.govt.nz/policy-initiatives/projects/

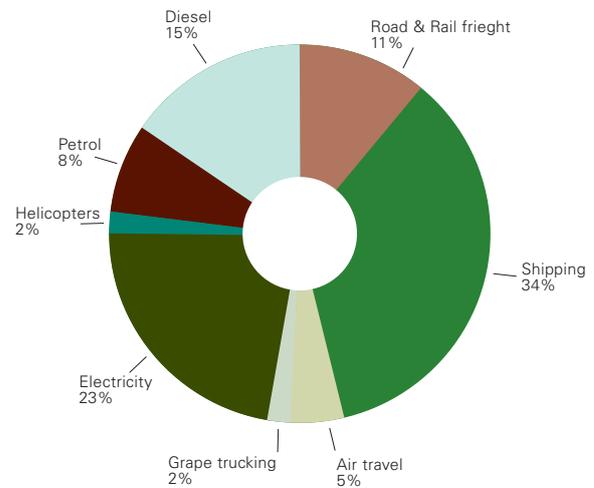
³⁶ World Wide Fund for Nature (2002). *Gold Standard for Kyoto Projects*. WWF Factsheet. WWF, Gland.

³⁷ Saunders C, Barber A, Taylor G (2006). *Food Miles: Comparative Energy/Emissions Performance of New Zealand’s Agriculture Industry*. University of Lincoln.

The New Zealand Wine Company (NZWC) has gained both Sustainable Wine Growing New Zealand (SWNZ)³⁸ and CarboNZero³⁹ certification. Their Grove Mill and Sanctuary wines are among the world's first carbon-neutral consumer products.⁴⁰ All significant aspects of production and distribution to overseas markets were included in the measurements to produce their emissions profile (see Figure 3). In order to meet the requirements of the CarboNZero programme, energy efficiency improvements were made throughout the winery and packaging was redesigned to optimise the use of maritime freight. Remaining unavoidable emissions were offset by investing in the regeneration of indigenous forest through the EBEX21 forest sinks project.⁴¹

Action taken to reduce emissions has been achieved without impacting on product quality; the company has continued to win prestigious wine awards. Additional benefits include bottom line cost savings and value added to the two brands. Since gaining certification, staff have identified more opportunities for emissions reduction, thus ensuring that further improvements can be made before their next CarboNZero assessment. The business benefits were quickly realised when the supermarket chain Sainsbury's, the sole UK distributor of the Sanctuary brand, decided to stock more of the Sanctuary range and insisted that these carry the CarboNZero label because the initiative sat so well with their own environmental ethos.

Figure 3: Emissions profile for the New Zealand Wine Company.



GHG emissions are continuing to rise and urgent international action is needed to avoid serious environmental and economic damage. Failing to take action to address climate change impacts may lead to international sanctions against export products in the form of taxes and other penalties.⁴² New Zealand exporters have an opportunity to build on the "clean, green" New Zealand brand by:

- acknowledging the GHG emissions associated with production and distribution to market of their products, and putting these in the context of GHG emissions associated with alternative supply chains.
- committing themselves to reduction of GHG emissions.
- moving the debate on to a more thoughtful consideration of globalisation versus localisation, and its implication for all countries.

In this way, New Zealand exporters can make their products more attractive in overseas markets where consumers are concerned about climate change. However, robust scientifically based information is needed to report on the GHG emissions and there also needs to be clear evidence of emissions reduction. Offsetting emissions alone may attract accusations of "greenwash" or buying a good emissions profile.⁴³

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38 See www.nzwine.com/swnz/

39 CarboNZero^{Cert}™ is a certified brand owned and administered by Landcare Research – See www.carbonzero.co.nz/

40 See www.grovmill.co.nz/

41 EBEX21®, Emissions Biodiversity Exchange for the 21st century, is a project owned and managed by Landcare Research to assist forest sinks projects based on the regeneration of indigenous forests – See www.ebex21.co.nz.

42 Stern S (2006). *The Stern Review: The Economics of Climate Change*. HM Treasury, London. See 22.8 Interactions with the international trade regime.

43 Climatebiz (2006). *Carbon Offsets: The Big Picture*. Greener World Media Inc. See www.climatebiz.com/