



Fonterra Sustainability Fact Sheet CARBON FOOTPRINT



Dairy for life

In March 2010 Fonterra released the results of an 18-month study into the carbon footprint of its major dairy ingredient and consumer products.

Fonterra's work was part funded by the Ministry of Agriculture and Forestry, and was undertaken by the University of New South Wales, SCION and AgResearch.

The study is being used to drive emissions reductions in the business and on-farm.

In addition to identifying opportunities to reduce emissions, the study is an important step in getting agreement among global dairy producers on a common methodology for measuring the carbon footprint of dairy products produced in different geographies.

This will enable the dairy sector globally to contribute to reducing climate change and give consumers an accurate way of comparing the relative footprints of different products from different locations.

A standard method for measuring the carbon footprint of dairy products is nearing finalisation by the International Dairy Federation.

Globally, dairy emissions account for 2.7% of total greenhouse gas emissions.

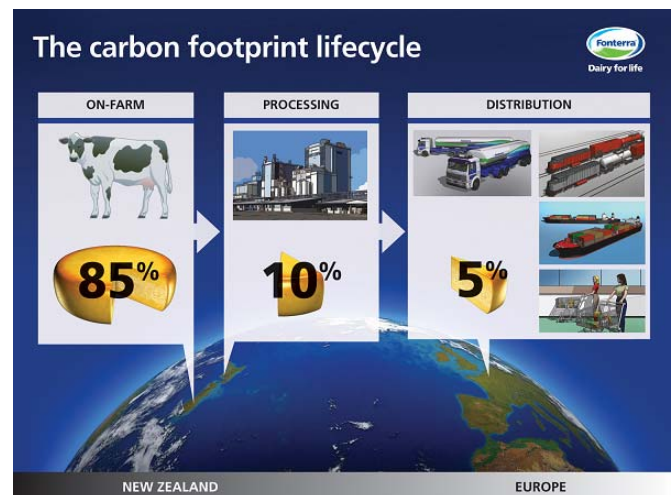
Our Carbon Footprint

The three independent research institutes commissioned by Fonterra to carry out the research calculated the carbon footprint of five selected products distributed to 12 international markets:

- Butter – Belgium, Denmark and Egypt
- Milk Powder – Philippines, Sri Lanka, Malaysia, Venezuela, Nigeria, and Canada
- Milk Protein Concentrate – USA
- Cheese – Belgium and Japan
- Caseinate – Germany.

Key findings of our Carbon Footprint research are:

- The carbon footprint was 940g of CO₂ equivalent per litre of liquid milk
- Around 85% of the greenhouse gases are emitted on the farm (59% of these are methane, 17% are carbon dioxide, and 24% are nitrous oxide)
- Processing/manufacturing accounts for 10% of total emissions
- Distribution accounts for 5% of total emissions
- Products requiring larger quantities of milk have a larger carbon footprint.





Fonterra Sustainability Fact Sheet

CARBON FOOTPRINT



Dairy for life

Methodology

The methodology used is consistent with the ISO and PAS2050 standards. Fonterra has released our methodology for open scrutiny.

The life cycle was broken down into three modules:

- On-farm
- Processing
- Distribution.

The on-farm module covered the extraction, transportation and use of all raw materials associated with the dairy farm and the land used to grow dairy cow replacements and supplementary feed sources.

The processing and distribution modules covered all material and energy emissions required for manufacturing and transporting the products.

All modules made use of the latest available data.

NZ's GHG Profile – reducing agricultural emissions

New Zealand's greenhouse gas profile is heavily influenced by agricultural emissions and this research confirms that.

It also confirms that our best opportunities to reduce greenhouse gas emissions and our carbon footprint lie in continued efforts to develop practical tools and techniques for farmers to adopt.

A good example is the nutrient budgets which are now being used by 99% of farmers, whereas six years ago only one in five farmers used them.

Through the NZ Pastoral Greenhouse Gas Research Consortium, Fonterra is working alongside the Government and other agricultural groups to research and discover innovative ways to reduce the production of methane and nitrous oxide from agricultural activities.

In total \$47 million is being invested in this research. Funding is 50% industry and 50% from government. Fonterra's share of the industry investment is 23%.

The agricultural sector has already managed to achieve reductions in GHG emissions by farming animals more efficiently.

Incremental improvements in the quality of New Zealand herds and farming systems have already reduced on-farm emissions per kg of milksolids produced by about 1% per year since 1990.

These reductions have occurred through the constant drive for efficiency by dairy farmers.

Other opportunities for emissions reductions relate to reducing nutrient loss and include:

- The use of nitrification inhibitors
- Use of standoff pads to capture more effluent
- Avoiding pugging wet pasture soils.

Reductions in on-farm CO₂ emissions can be achieved through electricity efficiency and conservation in the farm dairy.

Preferred farm dairy technology contributing to lower emissions includes:

- Variable speed drives for vacuum pumps
- More efficient pre-cooling heat exchanges.

Fonterra, in partnership with ECCA, is currently piloting a programme aimed at reducing farmer barriers to energy efficiency improvements and technology uptake.

Reducing emissions in the business

Emission reductions are being achieved by using renewable energy, by co-generating heat, steam and electricity and by our energy efficiency programme.

Since 2003 we've reduced our energy consumption by 13.9% per tonne of product.

That's equivalent to the energy required to power 100,000 homes and, relative to 2003, represents a 320,000 tonne reduction in CO₂e (carbon dioxide equivalent) greenhouse gas emissions in 2010.

Reductions are also being achieved by constantly improving the efficiency of our milk tanker fleet and by seeking out more opportunities to use regional ports and rail.



Fonterra Sustainability Fact Sheet

CLIMATE CHANGE



Dairy for life

Fonterra is committed to a long term sustainable future. Our vision is to provide consumers with nutritious dairy products in a way that is environmentally sound, economically sustainable and socially responsible.

Fonterra is acutely aware of growing international recognition for the need to address climate change. We recognise that achieving sustainable outcomes requires both farming and manufacturing to invest in practices, technology and decision making that strikes the right balance between economic growth and environmental management.

We're taking a lead on the issue and recently completed an 18 month Carbon Footprint study to accurately measure our greenhouse gas (GHG) emissions as well as providing a common GHG assessment methodology for the dairy industry. This is a world first.

Fonterra are part of an international effort to reduce GHG emissions associated with dairy production and played a key role in developing the Global Dairy Agenda for Action on Climate Change which commits dairy organisations around the world to work together to tackle climate change.

In New Zealand we're a partner in the Pastoral Greenhouse Gas Research Consortium which aims to provide farmers with the knowledge and tools to mitigate livestock emissions and conduct our own research to continuously improve environmental performance in our manufacturing operations.

New Zealand Emissions Trading Scheme

Agriculture is responsible for 47% of New Zealand's GHG emissions and from 2015 these are set to be counted under the New Zealand Emissions Trading Scheme (ETS).

The ETS is a market based approach designed to give an economic incentive for achieving reductions in the emission of GHGs.

Fonterra supports an ETS as the most effective way to price emissions, but feels that while our competitors do not also face a price on emissions the ETS must include effective mechanisms to

avoid exposure of efficient New Zealand producers to punitive costs ahead of offshore competitors.

On farm dairy emissions represent around 19% of New Zealand's national GHG total. Globally dairy emissions account for 2.7% of total GHG emissions.

The higher proportion of emissions in New Zealand reflects the role of dairy as the major driver of our economy. Nevertheless, in order to reduce our impact we have to find new and innovative ways to curb these emissions.

Reducing Greenhouse Gas Emissions

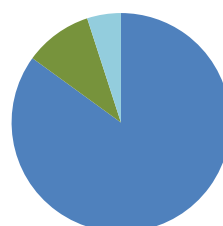
Fonterra's Carbon Footprint study has been an essential first step in assessing our current performance in relation to climate change. The methodology measures and establishes a carbon emission baseline for Fonterra to use as a benchmark against future performance.

The study provided an enlightening view of where our major GHG emissions come from and also looked at the individual footprints of major dairy ingredient products sourced from Fonterra's New Zealand operations. Significant sources of GHG emissions can now be identified and targeted through GHG reduction initiatives and sustainability programs.

Key findings from the study are:

- The carbon footprint is 940 grams of carbon dioxide equivalent per litre of liquid milk (over five commodity products measured)
- Approximately 85% of the greenhouse gases are emitted on the farm
- Milk collection and processing accounts for 10% of total emissions
- Distribution accounts for 5% of total emissions.

Fonterra's Greenhouse Gas Emissions



■ On-farm Emissions 85%

■ Process & Manufacturing Emissions 10%

■ Distribution 5%



Fonterra Sustainability Fact Sheet CLIMATE CHANGE



On-farm emissions

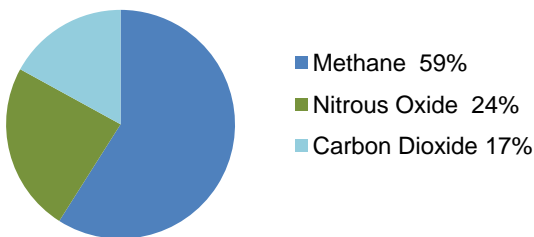
The Carbon Footprint study highlighted the fact that 85% of our emissions are generated on the farm and the majority of these come from the cows themselves.

Methane is released as a by-product of cows digesting their feed. Under the Kyoto Protocol methane is adjudged to have 21 times the global warming potential of carbon dioxide. At 59% this is the greatest contributor to GHGs on the farm.

The main sources of nitrous oxide, which makes up 24% of farm GHG emissions, are animal dung and urine deposited to pasture. A significant percentage also comes from urea based fertiliser.

Carbon dioxide which contributes 17% of on-farm emissions is associated with the use of urea based fertiliser plus lime and other fertilisers, land use change and farm energy use.

On-farm Greenhouse Gas Emissions



Options to reduce methane and nitrous oxide fall into two camps.

Improving the quality of the feed required to produce a litre of milk will reduce the methane per litre of milk (for example producing more milk for the same amount of cows).

Better nutrient management will result in less nitrogen lost as nitrous oxide.

Simple methods for on-farm GHG reductions include:

- Increasing genetic merit
- Increasing production per cow
- Reducing replacement rates
- Increasing fertility rates
- Capturing more effluent through use of a standoff pad

- The use of nitrification inhibitors to slow and reduce Nitrous Oxide release
- Nutrient management plans to optimise the use of fertilisers
- Avoiding pugging wet pasture soils
- Electricity efficiency and conservation in the farm dairy.

Incremental improvements in the quality of New Zealand herds have already reduced on-farm emissions per Kg of milksolids produced by about 1% per year between 1990 and 2009.

Processing emissions

Fonterra's Energy Reduction Project is one of the largest energy efficiency programmes in the New Zealand industrial sector.

It sets targets for a reduction in energy use per unit of product, which has resulted in a 13.9% reduction in energy consumption and last year saved 320,000 tonnes of carbon dioxide equivalent relative to 2003 levels.

Fonterra's Emissions Account compiles data about each manufacturing site's carbon dioxide emissions every quarter, assigns a hypothetical dollar value to them and incentivises their reduction.

It is sent out to all managers and energy efficiency champions at each site for display on staff notice boards and to encourage friendly competition between sites.

Emission reductions may be achieved by using renewable energy and by cogenerating heat, steam and electricity.

Distribution emissions

We have in recent years made much greater use of New Zealand's regional ports, significantly reducing the footprint associated with land-based transport and when we do transport over land about half of our movements use rail.

Our transport team uses a state of the art scheduling system called Genesis which utilises GPS installed in all our trucks to optimise milk collection around the country.



Fonterra Sustainability Fact Sheet COMMUNITY



Dairy for life

Fonterra is proud of our New Zealand roots. We are committed to sustainable dairying and to the communities where we live and work.

To demonstrate this, we support projects which align with our vision and values and fall within the following key areas:

- **Community:** We are dedicated to supporting current and future generations in the communities where we operate
- **Environment:** We are committed to sustainable business practices from our farms to our end products
- **Science and Education:** We are dedicated to encouraging science and education as it is vital to not only Fonterra's long term sustainability but also to the success of our economy
- **Nutrition and Wellbeing:** We are passionate about helping people become stronger, healthier and more active in their everyday lives, through the goodness of dairy.

Helping to maintain healthy, vibrant communities is an important aspect of building a truly sustainable business.

Our main sponsorship initiatives are KickStart Breakfast, Fonterra Science Roadshow, Catchment Care – Waterways for Tomorrow and our NZ Site Community Relations Programme.

KickStart Breakfast

KickStart Breakfast is our breakfast in schools programme and is a joint partnership between two leading New Zealand businesses – Fonterra Co-operative Group Limited and the Sanitarium Health Food Company.

The programme is based on a community partnership model - Fonterra and Sanitarium provide milk and cereal, and each school community takes responsibility for preparing and delivering this to the students.

Up to twice a week over 15,000 students in over 400 schools nationwide enjoy a KickStart Breakfast of Anchor Mega Milk and Weet-Bix.

These products are the perfect combination for children's breakfast as they are high in protein, calcium, vitamin D, B vitamins, iron and wholegrains to provide strength and energy to aid learning.

We are helping kids experience the power of a nutritious breakfast to provide both strength and energy for maximum learning at school.

Schools say that KickStart Breakfast is not only helping students nutritionally, but also making a positive impact on their learning behaviour.

Literacy and numeracy levels are improving, children are happy and able to concentrate longer in class and many student leaders are developing through the breakfast clubs.

We will serve a million breakfasts in 2010 and are aiming to reach 500 decile 1-4 schools. Currently around 60% of the schools are rated decile 1 and 2, with the balance in the decile 3 and 4 range. The majority of schools on the KickStart Breakfast programme are primary schools (60%).

The KickStart Breakfast team are proud recipients of the Prime Minister's Social Heroes Award – New Initiative 2009 and Sustainable 60 Awards – Community Category 2009.

Visit www.kickstartbreakfast.co.nz for more information.



Fonterra Science Roadshow

The Fonterra Science Roadshow is New Zealand's premier national science and technology education programme.

Every year the Fonterra Science Roadshow travels to over 700 schools throughout New Zealand helping to instill a passion for science in over 45,000 young children.

Aimed at 8-13 year olds these children don't simply want to be 'told' science they want to touch and feel and learn through experiences, which is exactly what the Roadshow delivers through over 70 hands on interactive exhibits and live science demonstrations.

Research indicates positive attitudes towards science and technology are formed early in school however teachers are reporting less hours teaching science as the curriculum continues to focus on numeracy and literacy.



Fonterra Sustainability Fact Sheet COMMUNITY



Dairy for life

Science, technology and innovation is at the core of Fonterra's business, we are proud to be the major sponsor of the Science Roadshow which takes an active approach to science education.

And as Fonterra is a significant employer of people with science and technology backgrounds – researchers, food technologists, chemical engineers, nutritionists for example, we see encouraging science education as vital to our long term sustainability.

Visit www.roadshow.org.nz for more information.

Catchment Care – Waterways for Tomorrow

Catchment Care – Waterways for Tomorrow is a partnership with not-for-profit organisation Conservation Volunteers New Zealand. We are working with communities throughout New Zealand and supporting projects that protect our natural environment.

We connect people keen “to make a difference” with local councils, community groups and environmental agencies to assist local communities protect and restore our valuable waterways and wetlands.

Starting in August 2009 we have already improved 521,536 square metres of land and want to see this figure grow to a million by July 2011. This has been achieved by:

- Improving landscapes and creating biodiversity corridors
- enhancing habitats and food sources for native fauna by improving vegetation cover and water quality
- increasing vegetation cover alongside streams and improving water quality by intercepting nutrient and sediment flows into streams
- reinvigorating wetlands
- removing invasive weed species to enhance the growth of native plants and trees.

Visit www.catchmentcare.co.nz for more information.



NZ Community Site Relations

Our Community Site Relations programme was established in 2007 to say thanks to our communities and to show our support for community groups and activities that share our vision and values.

The programme consists of 16 hubs around New Zealand and each hub has an allocated budget that they use to support their local communities.

Support to our local communities must have a close association with the dairy industry and what Fonterra stands for, particularly in the following four key areas: education, environment, emergency response and health and wellbeing.

We've provided worm farms and recycling facilities for schools, provided safety vests for school children crossing busy roads, donated seedlings and staff time to riparian planting programmes, sponsored regional science fairs, fundraised for equipment for rescue services, and helped out with rural events like calf club days.

Last year we supported over 230 local initiatives and recent efforts include:

- A contribution from the Clondebroye site to the local Clondebroye Kindergarten. Most of the children in the kindy are the children of shareholders and the donation went a long way to keeping the doors open
- The Whareroa site's latest donation helped the Taranaki Rescue Helicopter Trust buy vital emergency equipment. The donation gave the rescue helicopter a spinal vacuum mattress, a portable suction unit, an air compressor and a high powered LED torch which will help the team save lives in the local community
- Our Pahiatua, Longburn and Whareroa sites joined forces to help house the Ashhurst Volunteer Fire Brigades new rapid response vehicle. Workers pitched in after work and over weekends to help with concrete laying, electrical work, carpeting, wall lining and painting to help save costs on extending the kitset garage they helped to buy the previous year.

Keep NZ Beautiful

- All our New Zealand sites are invited to participate in the Keep New Zealand Beautiful cleanup week in September each year where we make a difference by picking up litter on the roads, parks, reserves and beaches around processing sites.



Fonterra Sustainability Fact Sheet

EMISSIONS TRADING



Dairy for life

Fonterra is part of a global effort to help reduce greenhouse gas (GHG) emissions, which are acknowledged as the major cause of climate change, and New Zealand is one of a number of developed countries adopting or considering an emissions trading regime as part of their mitigation strategy.

Emission trading is a market based approach designed to give an economic incentive for achieving reductions in the emission of GHGs.

Emitters are required to surrender permits equivalent to the amount of GHGs they release into the atmosphere. Reducing their emissions reduces their liability to source permits, and vice versa. In New Zealand these permits are called New Zealand Units (NZUs).

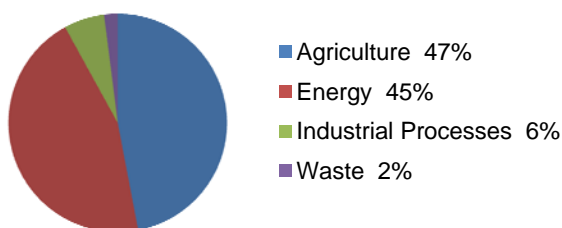
New Zealand's Emissions Trading Scheme (ETS) differs from others around the world as it will be the first to include agricultural GHG emissions when they start being counted by the scheme from 2015.

The exposure of emissions associated with the production of export focused goods, such as dairy products, to carbon costs by the ETS has been the subject of much debate. Concerns have been raised that the international competitiveness of our agricultural producers could be harmed as they will face costs that overseas competitors potentially do not.

The argument for the inclusion of agricultural GHG emissions points to the fact that in New Zealand they make up a far more significant proportion of our overall emissions than for other countries – 47% compared to typically around 10%.

Fonterra supports an ETS as the most effective way to price emissions, but feels that while our competitors do

New Zealand's Greenhouse Gas Emissions



not also face a price on emissions the ETS must include effective mechanisms to avoid exposure of efficient New Zealand producers to punitive costs ahead of offshore competitors.

Current status of the ETS

The forestry sector was first to participate in the ETS when it began in 2008. Since then transport fuels, energy emissions and industrial processing joined in July 2010. Waste disposal is set to join in 2013 with agricultural emissions coming on board in 2015.

The ETS is subject for review in 2011 giving an opportunity for further public consultation on the scheme design. Fonterra will be part of this process to help develop an ETS policy that will make the best possible contribution to global emissions reduction whilst maintaining an environment that sustains economic well being of both the dairy industry and New Zealand.

How does the ETS work?

Participants in the scheme are required to monitor, calculate and report the emissions they generate to the government. Under current legislative settings Fonterra (not farmers) will be responsible for reporting on-farm agricultural emissions.

Some sectors of industry, especially those that are heavy emitters and whose international competitiveness may be affected, will be allocated a proportion of NZUs free of charge by the government to allow time to adjust.

Currently, most dairy manufacturing activities do not qualify for allocations due to not meeting thresholds of emissions per million dollars of revenue. The government has, however, reduced the initial burden on emitters and until the end of 2012 they are only required to retire half of their required NZUs.

Participants in the scheme are also able to receive NZUs for undertaking activities that absorb carbon from the atmosphere such as planting trees.

So, for example, the ETS will put a dollar value on the GHG emissions from dairy farms. The dairy industry will need to "pay" for those emissions with one NZU for every tonne of greenhouse gas emitted.

How will the ETS affect dairy farmers?

Electricity prices rose 5 per cent due to the ETS in July 2010, and will rise a further 5 per cent from January 1 2013.

Petrol and diesel increased by 3.5c per litre due to the ETS in July 2010 and will rise a further 3.5c per litre from January 1 2013.

For the average dairy farmer these cost increases will result in increased operating costs of about \$2,500 every year after 2013.

Agricultural emissions produced by cattle (methane and nitrous oxide) enter the ETS in 2015, which will cost the average farm an additional \$2,500 a year.



Fonterra Sustainability Fact Sheet

EMISSIONS TRADING



Dairy for life

Fonterra is also facing increased costs due to the ETS, to the tune of an additional \$25 million per year since July 2010 and over \$50 million per year after 2013.

This equates to another \$5,000 per farm. Therefore, in total average costs per farm will increase by about \$10,000 by 2015.

Annual costs per farm from:	July 2010	Jan 2013	Jan 2015
Fonterra costs	\$2,392	\$5,004	\$5,174
Farm fuel and electricity	\$1,162	\$2,496	\$2,606
Agricultural Emissions	-	-	\$2,425
Total	\$3,554	\$7,500	\$10,204
Costs per Kg MS	\$0.028	\$0.056	\$0.073

Under the ETS there are also costs associated with converting land (greater than two hectares) that was forested in 1989 into pasture land.

The Ministry of Agriculture and Fisheries (MAF) is currently working on regulations that will allow farmers who own less than 50 hectares of 'pre-1990' forest to apply for exemption from this obligation.

Farmers who have planted forest land since 1990 have the option to earn emissions credits for the carbon stored in these forests. However, if the forest is harvested the credits will need to be paid back.

For more information on forestry rules, see the Fonterra Guide to Climate Change on Fencepost or alternatively refer to the MAF website (www.maf.govt.nz) and Government helpline on 0800 CLIMATE (0800 254 682).

Point of obligation for dairy emissions

Under the current scheme, with a processor point of obligation for on-farm emissions, dairy cow emissions associated with milk production will be estimated as milksolids produced multiplied by an emission factor in order to provide an average figure for emissions across the sector.

This figure will be applied to all farms irrespective of whether they produce emissions above or below the average.

The point of obligation falls on the processor to report emissions and to settle permits on behalf of suppliers and to then recover that cost from farmers.

This approach does not reward individual farms for employing emission reduction strategies that could lower their liability under the ETS. A farm with lower emissions per kg of milksolids will have the same liability as farms with higher than average emissions.

Fonterra supports the view that in order to drive on-farm innovation to reduce emissions and to be fair to farmers who are able to produce milksolids at a lower emission intensity the point of obligation should be on-farm.

ETS allocations

Under the ETS, the Government will provide allocations of NZUs to participants whose activities are deemed to be both 'emissions intensive' (emissions per \$million of revenue) and 'trade exposed' (that is, at risk of competition from overseas).

These allocations will be based on the volume of production of eligible activities undertaken by each participant.

Allocations will begin at either 90% or 60% of the industry average emissions, depending on the level of competitiveness risk for the activity. They will then be reduced by 1.3% per year.

The methodology for testing if an activity is emissions intensive is based on one developed for the Australian Carbon Pollution Reduction Scheme (CPRS) which has now been put on hold at least until 2013.

Under this methodology almost all dairy processing activities do not pass the 'emissions intensive' test.

For a manufacturing activity to be eligible for an allocation under the NZ legislation, an activity must reach a threshold for emissions per NZ\$ of revenue.

The high value of dairy products means the vast bulk of Fonterra's products fall well short of the threshold for even a 60% allocation.

As a result most Fonterra processing activities will not receive allocations which recognise they are at risk of competition from overseas. The total allocation Fonterra will receive for manufacturing activities is likely to be only around 3.5% of actual emissions.

Throughout the consultation period Fonterra advocated for a methodology that would better address the competitive concerns of the unique New Zealand economy. We noted that most of our overseas competitors do not face obligations under a similar ETS.

Primary agricultural activities (farming) that cause emissions of methane (CH₄) and nitrous oxide (N₂O) will be granted allocations of emissions units to cover 90% of emissions, reducing by 1.3% per year.

For dairy farmers this will mean that once agricultural emissions enter the scheme in 2015, NZUs will need to be sourced for approximately 10% of the emissions of nitrous oxide and methane on their farms, with that percentage increasing by 1.3% annually, ie the next year the farmer will be liable for 11.3% and so on.



Fonterra Sustainability Fact Sheet ENERGY



Dairy for life

While our suppliers' cows do the work of turning fresh green grass into milk, we at Fonterra turn the nutrient rich milk into highly valued products recognised here at home and exported all around the world - this requires a lot of energy!

The efficient use of energy is therefore a key factor in our drive to create a sustainable dairy industry.

Our future depends on being able to harness renewable forms of energy, reducing our greenhouse gas emissions and mitigating the rising costs of energy consumption.

In response to these drivers Fonterra run one of the largest energy efficiency programmes in New Zealand and in 2007 this programme won the EECA Contact Energy Management Award for our achievement in reducing energy consumption by 10%.

Since 2003 we've reduced our energy consumption by 13.9% per tonne of product.

That's equivalent to the energy required to power 100,000 homes and, relative to 2003, represents a 320,000 tonne reduction in CO₂e¹ greenhouse gas emissions in 2010.

The improved energy use is driven by initiatives such as:

- Systematic analysis of energy needs at each plant
- Installation of heat recovery loops
- Attention to operating practices
- Monitoring and reporting on energy use.

Energy Use

Fonterra processes 14 billion litres of milk each year in New Zealand and the energy requirements to turn all this milk into value added products is correspondingly high.

At our New Zealand manufacturing sites in 2010 we consumed more than two and a half times the annual energy output of the Clyde dam, which is a

¹ Carbon dioxide equivalent - the internationally recognised measure for greenhouse gas emissions allows gases such as Methane (CH₄), Nitrous Oxide (N₂O) and Carbon Dioxide (CO₂) to be compared on a like for like basis.

staggering amount but one that is brought into perspective when considering that dairy accounts for 25% of NZ's export earnings.

The overall mix of energy sources is dominated by coal, gas and oil (59%) which reflects the fact that producing milk powder requires a significant amount of heat.

Milk is made up of 12% solids and 88% water. After collection the raw milk goes through a process of evaporation and drying to turn it into a powder that is 97% solids and contains almost all the nutrients.

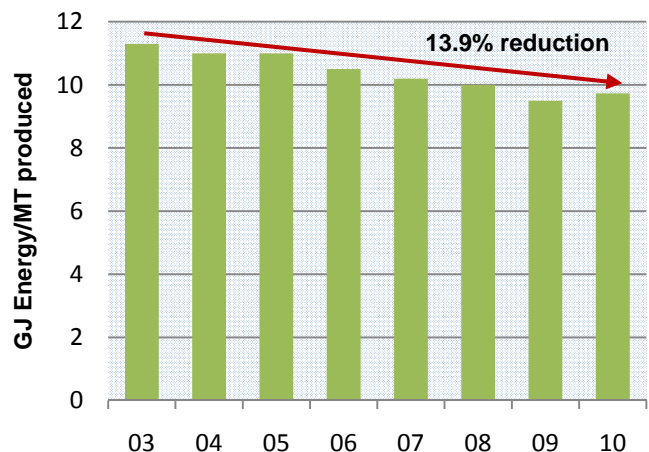
Removing the water takes a lot of energy but also provides substantial efficiencies when transporting the product.

Each litre of water removed saves a kilogram of weight and the amount of water removed from the milk each year in New Zealand, much of which is recycled, would weigh around the same as 33,000 fully laden Boeing 747s.

Coal is used at eight of our sites and five of these are in the South Island where there are no piped gas supplies or other viable forms of alternate energy supply.

Wood pellets have been trialled as an alternative fuel but have not been found to be economically sustainable. Until their price comes down they are best suited to domestic and institutional uses.

New Zealand Manufacturing Energy Consumption





Fonterra Sustainability Fact Sheet ENERGY

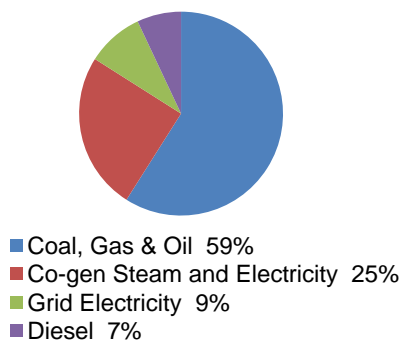


Improving Energy Performance

A quarter of our energy needs is now supplied by cogeneration (sometimes referred to as 'combined heat and power'). This is a highly efficient form of energy generation and a better alternative to obtaining electricity from the grid and thermal energy from steam generators.

Our mix of energy sources has remained relatively static for the past five years and we're constantly looking for innovative ways to optimise this mix towards cleaner, more efficient forms of energy, whilst continuing to reduce consumption.

Fonterra Energy Mix 2010



The use of biomass from forest residues and biogas from the anaerobic digestion of effluent and waste offer potential alternative sources of energy.

At our Tirau plant we have an anaerobic digester operating on the factory wastewater which provides 30% of the gas requirement for the boiler. This is a great example of turning a waste stream into a valuable resource.

The drive to reduce consumption has resulted in a recent 'energy blitz' at our Hautapu, Whareroa, Edendale and Clandeboye sites. Results from Edendale and Clandeboye have yet to be finalised but the other two sites produced over 100 ideas for improving energy efficiency.

At Hautapu some 40 ideas have been identified with the potential to generate annual savings of 57,000 gigajoules of gas and 2,800 MWh of electricity.

At Whareroa, the team identified some 46 ideas with the potential to deliver annual savings of 8,500 gigajoules of gas and 4,300 MWh of electricity. Combined that's equivalent to saving over 15,000 barrels of oil each year.

Fuels

Our tanker fleet travels over 81 million kilometres each year to collect milk for our New Zealand manufacturing sites and that's about the same distance as making 100 roundtrips to the moon.

Fuel consumption is therefore a key concern. We monitor this very carefully and it plays an important part in scheduling – both from a cost and environmental impact perspective.

Recent initiatives to improve our milk collection efficiency include:

- Pre-concentrating milk prior to transport
- Increasing rail transportation
- Progressively upgrading our tanker fleet to Euro 4 emissions standards (currently 15% meet these standards)
- Installing state of the art scheduling software to optimise tanker journeys.

Energy On-farm

We are targeting energy efficiency on farm through the Dairy Energy Action Programme, a joint initiative from Fonterra, the Energy Efficiency and Conservation Authority (EECA) and the Ministry of Agriculture and Forestry.

Launched in early 2010 it involves energy audits on 150 farms, with the findings used to develop energy savings tools and information for the wider dairy community.

The pilot aims to help farmers cut their energy spend by at least 10%. If achieved throughout the sector, this would be worth around \$16 million annually.

Dairying is an energy-intensive business - the average farmer spends \$14,000 a year on electricity alone.

Dairy farms also account for nearly 2.5 per cent of the country's electricity use and also slightly more than all of Fonterra's New Zealand manufacturing sites combined.

Reductions in consumption could lead to significant national electricity savings – and with these savings come reduced costs and reduced greenhouse gas emissions.

Pilot results will be available in June 2011.



Fonterra Sustainability Fact Sheet

WASTE MANAGEMENT



Dairy for life

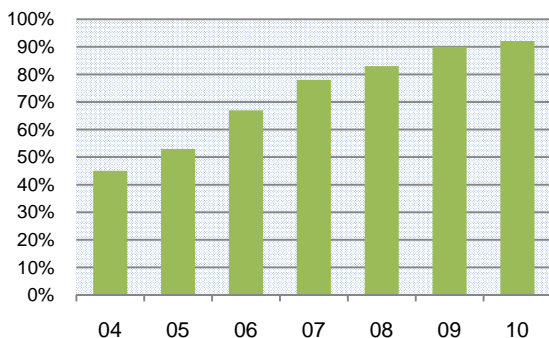
Fonterra has an Eco-Efficiency Programme which focuses on reducing the environmental impact of manufacturing through redesigning operational systems, re-using non-recyclable materials and recycling.

Each of Fonterra's New Zealand manufacturing sites has an "Eco-efficiency Champion", who runs the programme for their site, identifying waste streams for potential elimination or reduction.

Fonterra's New Zealand manufacturing sites have exceeded their target of recycling or reusing 90 per cent of the total solid waste produced, achieving 92.11% in the last season.

This resulted in 7,841 tonnes of cardboard and plastics being reused or recycled.

Proportion of total waste diverted from landfill



Eco-Efficiency Programme

We have implemented an eco-efficiency programme across our New Zealand production sites, stores and offices to reduce the environmental impact of manufacturing waste through elimination, reduction, recycling, re-designing operational systems and re-using non-recyclable materials.

Examples of waste reduction initiatives from Fonterra's Eco-Efficiency Programme include recycling of many types of plastic that had previously been sent to landfill, such as:

- Petri dishes which are now washed and shredded so that the expanded polystyrene can be recovered

- Bag house filters and socks containing both stainless steel and polypropylene are now collected, separated and recycled
- Vacutainer sampling needles are shredded and run through a water bath to separate the outer plastic container from the inner stainless needle
- Mixed grade sampling bottles that used to be sent to landfill are now collected and recycled
- Used powder and cheese bags are now recovered and recycled for a variety of uses such as underground cable covers, culvert pipes and bags.

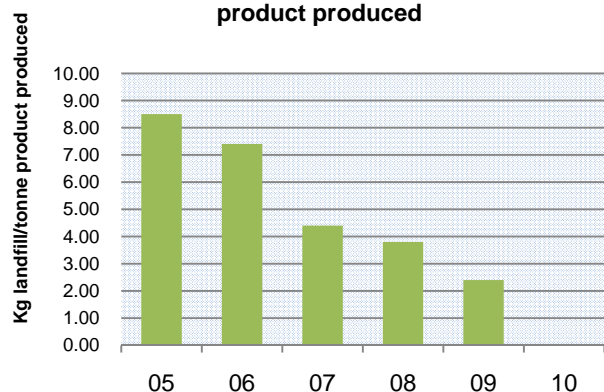
Fonterra has installed balers at its sites to sort and compact cardboard and plastic for recycling, leading to greater transportation efficiencies and lower costs.

We're now recycling approximately 100 tonnes a year, or 50-60 truck loads, of plastic bottles through the use of a new polypropylene milk sample bottle.

The sample bottles are all sent to the testing laboratory, where the milk is automatically sampled, the electronic data chip removed for reuse and the bottle is then shredded and sent to Auckland to be reprocessed into pots and planters – doubly benefiting the environment.

Fonterra also has eight worm composting units throughout its New Zealand sites. Food scraps from lunchrooms are munched up by the worms, and the resultant fertiliser is used to grow plants and trees around the factories.

Kgs of waste sent to landfill per tonne of product produced





Fonterra Sustainability Fact Sheet

WASTE MANAGEMENT



Dairy for life

Collection of On-farm Agricultural Plastics

For the collection of on-farm silage wrap, chemical containers and other agricultural plastics, Plasback (formally Agpac) operates a Ministry for Environment accredited product stewardship scheme, which Fonterra has helped fund and promote. Plasback offers and operates a storage and collection service for all on farm plastics to a growing list of participating farmers.

A growing number of farmers across New Zealand have helped to recover more than 288 tonnes of used silage wrap for recycling last year and already over 100 tonnes in June & July this year that would have otherwise been burnt or buried on-farm.

The network of collectors throughout New Zealand now stands at 33, spread from Kaitaia to Gore. A collection service has begun in Westland and new collectors are being put in place at Wanaka and Alexandra.

Fonterra is also a trustee of the Agrecovery Foundation, which in its first year set up almost 50 container collection sites throughout New Zealand

and collected an estimated 80,000 plastic agricultural containers from farms and orchards.

The next step for the Foundation is to roll out a Chemical Recovery Programme in conjunction with regional councils for the recovery and safe disposal of expired and unwanted chemicals from agriculture.

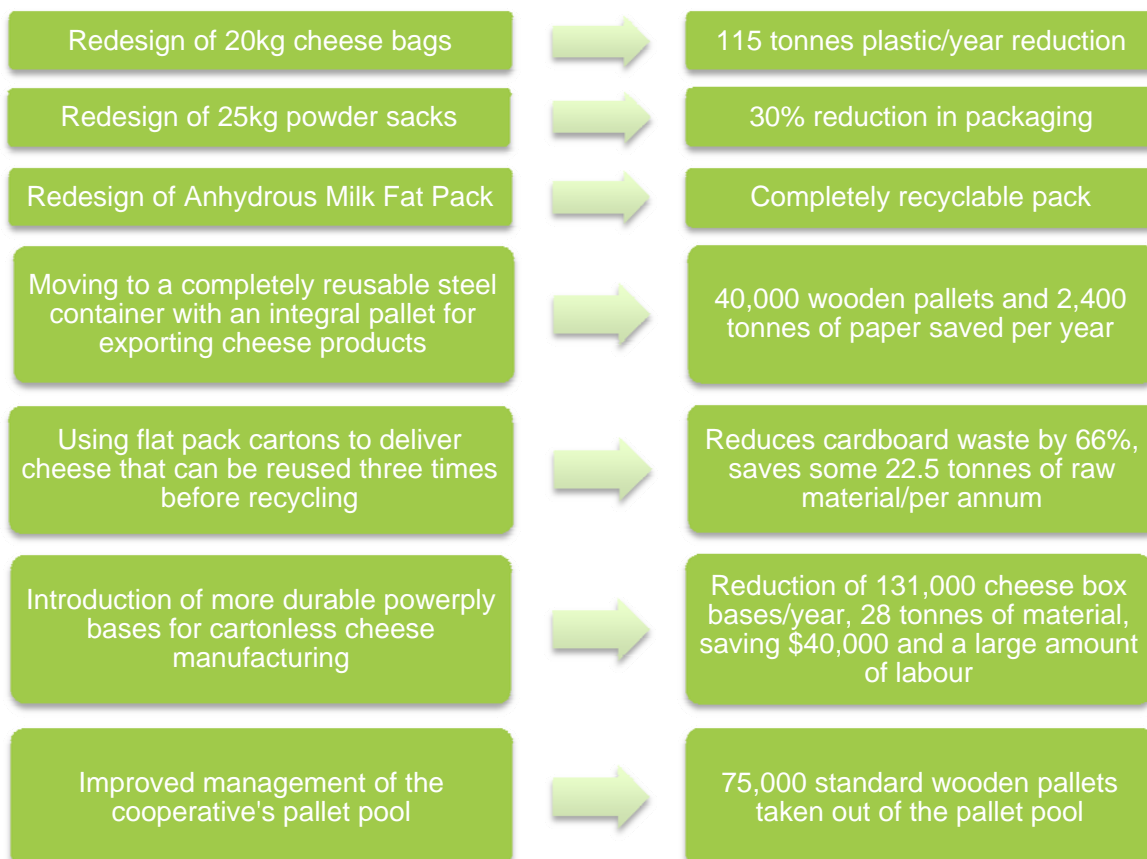
Agrecovery have also developed an alternative nationwide system to recover silage wrap plastic.

Reducing Packaging

Fonterra works closely with our packaging suppliers to reduce quantities of packaging materials while using a packaging type that is robust enough to prevent food spoilage on transit to our customers.

A good example of procurement sustainability in action is the supply of our multi-ply paper milk powder bags which are made and used in New Zealand from sustainable forestation mixed with recycled material from our own paper based waste streams.

Various initiatives have led to large savings in packaging usage including:





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WATER USE AND QUALITY



Dairy for life

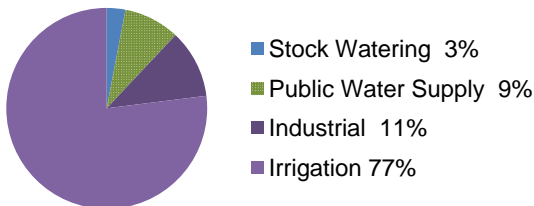
At Fonterra, we know that every drop of water is precious – it's the lifeblood of our dairy industry which now represents 25% of New Zealand's export earnings and a third of the global dairy trade.

New Zealand is fortunate to be blessed with one of the highest per capita fresh water resources in the developed world and on Yale's 2010 Water Quality Index we are second only to Iceland.

Each year we get enough snow and rainfall to fill eight Lake Taupos and that's a very large, deep lake! As a nation we only use a fraction of this, around 5% annually, and of this 80% is used by agriculture.

This provides an outstanding competitive advantage for our country. It's therefore imperative we protect it.

**New Zealand Fresh Water Use
(from 5% of available resource)**



Dairying and Clean Streams Accord

One of the greatest challenges facing the dairy industry is the leaching of nutrients and runoff of effluent and the impacts this can have on waterways.

Nitrates, mostly from cow urine patches and some fertiliser applications, can leach through the soil if not taken up by pasture growth. Nitrates may then enter groundwater or our streams and lakes.

If not properly managed, effluent can runoff the farm, especially in times of high rainfall, and enter waterways. This can cause issues due to increased nutrients and microbes.

Excessive nutrients can boost unwanted weed and algae growth. This may cause amenity issues (e.g. not fun to swim in) or affect the ecosystem. In extreme cases excessive nutrients can result in water that is not safe to drink.

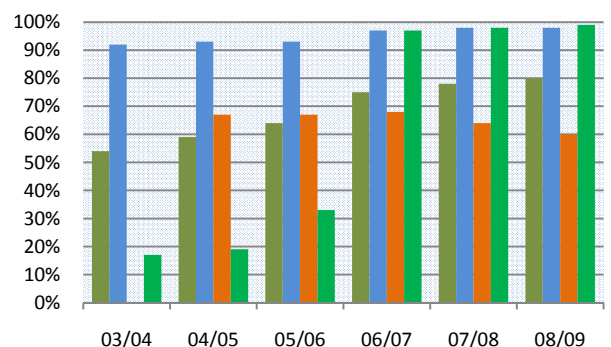
A clean water resource is something New Zealanders take very seriously and Fonterra is taking a lead in helping our farmers keep waterways clean.

The Dairying and Clean Streams Accord (CSA), a non-regulatory agreement between Fonterra, regional councils and the Ministries of Agriculture and the Environment, is our cornerstone initiative in this area.

Five key components of the CSA aim to:

1. Exclude all stock from waterways – 90% by 2012
2. Bridge or culvert all regular stock crossings – 90% by 2012
3. Achieve compliance with effluent discharge regulations – 100% by 2010
4. Nutrient management plans used in the application of nutrients to the land – 90% by 2012
5. Protect regionally significant wetlands – 50% by 2005, 90% by 2007.

Performance Against Clean Streams Accord Objectives



- Farmers totally excluding stock from waterways
- Regular stock crossing points with bridges/culverts
- Farmers with dairy effluent compliance
- Farmers with a verified nutrient budget

Fonterra farmers are performing well on three of these five components with stock crossings and nutrient budgets already close to 100%, well ahead of the 90% target set for 2012, and stock exclusion from waterways is at 80% and on track to meet its 90% target by 2012.

The wetland protection component is still under development with councils identifying wetlands concerned but to date three councils (Taranaki, Horizons and Otago) have met the 2005 target of 50% of regionally significant wetlands to be fenced.

At 60% effluent compliance has a lot of ground to make up to meet its 100% target.



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WATER USE AND QUALITY



Dairy for life

Dairy Farm Effluent Compliance

The recent figures for dairy effluent compliance have been well below par. This is mostly due to increased levels of monitoring but the overall picture has been extremely disappointing.

Fonterra takes effluent management very seriously and in August 2010 we rolled out a new national initiative to help tackle dairy effluent issues – Every Farm, Every Year.

We're checking every farm's dairy effluent system every year as part of their annual Farm Dairy Assessment. Systems at risk of non compliance are referred to a Sustainable Dairy Specialist who helps the farmer develop an action plan to fix any problems before they can potentially harm the environment or cause costly breeches of the effluent rules.

Critical non-compliance must be addressed as soon as practicable, preferably within 24 hours and we've doubled our number of Sustainable Dairying Specialists to 10 in support of the programme.

This proactive approach is already beginning to bear fruit with some farms needing only minor changes to ensure compliance and others getting the specialist assistance they need to get their effluent systems up to scratch.

Water Consumption and Recycling

In 2009, Fonterra's New Zealand manufacturing sites withdrew more than 34 million cubic meters of fresh water. The majority of water comes from rivers and ground water with additional inputs from district councils.

The quantity of water recycled within Fonterra's New Zealand manufacturing sites during the 2009 season was estimated at 2.34 million cubic metres - around 2.5 Olympic sized swimming pools per day and represents 7% of total water consumption.

Recycling reduces the volume of water required for processing and also reduces the wastewater volume.

We're always investigating new and innovative ways we can recycle water and have produced encouraging results with processing plants improving efficiency and awareness of the need to conserve water.

On farm, Fonterra is working with DairyNZ to roll out the Smart Water Use programme across to our supplier farmers. This programme supports farmers in achieving improved water use efficiency for stock

water systems and in-shed (Cleaning and milk cooling).

Fonterra is actively supporting Irrigation New Zealand in lifting irrigation efficiency through extension of information and tools to irrigators.

Waste Water Management

Fonterra's New Zealand manufacturing sites discharged just under 30 million cubic metres of water to rivers and oceans during the 2009 season, which equates to 2.0 litres of water discharged per litre of raw milk processed (excluding cooling water).

To improve the quality of our treated wastewater, Fonterra invests in research to ensure that treatment technology is best practice, meets regulatory requirements and community expectations and minimises any environmental impact.

Many of Fonterra's manufacturing sites throughout New Zealand irrigate treated wastewater onto surrounding land. This recycled wastewater contains nutrients at levels useful to promote pasture growth. Waste Water Management Highlights:

- Our new \$12 million wastewater treatment plant at the Stirling site opened in March 2010 and is already exceeding expectations, treating 3.5 million litres of process water each day. The facility is the first of its kind for the New Zealand dairy industry and is the largest dairy-based biological reactor plant in the world. The treated water resembles tap water and solid matter left over is recycled and used as fertiliser, making it a truly sustainable process
- A new water treatment plant is being constructed at Fonterra's Kauri site to treat up to 3,000 cubic metres of factory effluent daily. All solids removed from the wastewater are made into compost and sold in bulk to contractors planting roadsides. The remaining water is spray irrigated over 200ha of pasture on Fonterra farms at Kauri and Hikurangi
- Water conservation initiatives at the New Plymouth Coolstore site have resulted in a first for Fonterra in New Zealand – a site which is self sufficient for water
- Our Tirau plant has installed an anaerobic digester which operates on the factory wastewater and provides 30% of the gas requirement for the boiler. This is a great example of turning a waste stream into a valuable resource.