

# New Zealand Farming and Climate Change

New Zealanders take immense pride in our farming sector, and so we should. Farming is part of who we are as a nation and it comprises a crucial slice of our economy.

But agriculture also makes up half of all New Zealand's greenhouse gas emissions, with the ongoing corporatisation and intensification of the dairy sector by far our biggest contribution to global climate change.

What's more, these emissions are on the rise, as hundreds of thousands of trees are cut down to make way for high intensity farming. New Zealand's agricultural emissions have increased by 15 per cent since 1990. The dairy sector is responsible for this entire increase. By 2010, these emissions could

be up as high as 40.5 per cent from 1990 levels.<sup>1</sup>

Greenpeace has been working closely with farmers to find solutions to our soaring agricultural emissions. The good news is, solutions do exist. There are smarter ways to farm than the high-input, intensive model currently being used and being further pushed by agri-corporations.

Greenpeace is in no way anti-farming. Far from it. We want New Zealand to be farming into the future and passing on truly sustainable, healthy farms to future generations. This is unlikely to occur, however, if we continue down the road of expansion, intensification and deforestation. This approach comes at proven environmental cost, and poses a real threat to New Zealand's clean green image.

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## Agriculture - changing the climate

Agriculture is a very greenhouse-gas intensive form of land use. Globally, it's responsible for about 18 percent of all human-induced greenhouse gas emissions. Once you add deforestation for agricultural production, it's up to about 30 per cent.

In New Zealand, two-thirds of agricultural emissions come from methane, emitted when cows burp. Methane is a greenhouse gas 25 times more potent than carbon dioxide (CO<sub>2</sub>).

The remaining third of the sector's emissions are from nitrous oxide gas (from livestock urine, manure and artificial fertiliser use). Nitrous oxide is one of the most potent greenhouse gas on the planet (300 times more potent than CO<sub>2</sub>)

## More chemicals, more cows, more climate change

Over time, New Zealand's dairy sector has shifted from traditional pasture farming to a more intensive, corporate model. This is having a huge impact on the environment, rapidly increasing greenhouse gas emissions, eroding the clean and green brand on which New Zealand relies, and lowering economic returns to farmers.

One of the main problems is the increasing use of chemical fertiliser, which has completely changed how farmers work with their pastures. A traditional reliance on legumes (such as clovers) to provide the pasture's main source of nitrogen has been replaced with a reliance on fossil fuel manufactured chemical fertilisers. The more fertiliser used, the more natural sources of soil fertility are destroyed, and the more fertiliser you need each year to maintain production levels for pasture growth. It's a treadmill that's very hard to get off.

Chemical nitrogen fertiliser use in New Zealand has increased 617 per cent since 1990. Since 1990 nitrous oxide emissions have increased by 27 per cent and now account for 16 per cent of all NZ greenhouse gas emissions – more than total road transport emissions.<sup>1</sup>

## Corporate dairy driving chainsaw massacre

It's not just what's happening down on the industrial farms that's causing climate change, it's also what's being destroyed to make way for them. In the rush to convert more land to corporate dairy farming, tens of thousands of hectares of forests are being felled.

According to the Ministry of Agriculture and Forestry (MAF) some 455,000 hectares of forestry land is at risk of being deforested and converted into pastoral use – the majority for dairying.<sup>2</sup> This is over a quarter of New Zealand's entire plantation and over seven times the size of Lake Taupo.

Conversion of forestry land to intensive dairy pasture is a 'double whammy' on the climate. Greenpeace is calling for a moratorium on further conversion of forests to pasture.

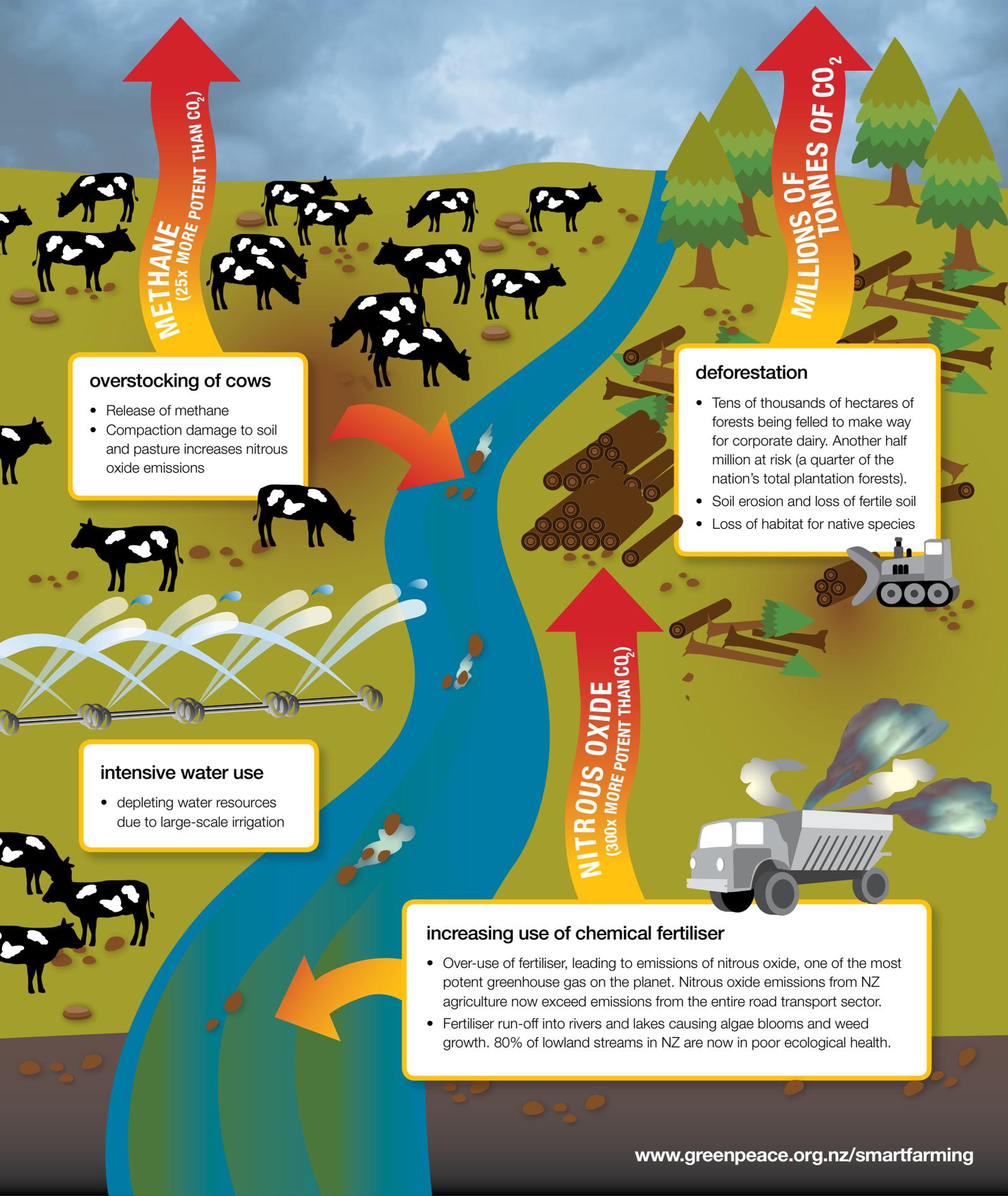


*Landcorp is clearing 25,000 hectares of forest to make way for 10 corporate farms in the Central North Island*  
© Greenpeace/Cowpland.

<sup>1</sup> <http://www.mfe.govt.nz/publications/climate/nir-jul07/nir-jul07.pdf>

<sup>2</sup> MAF, Area of forest 'at risk' from deforestation, August 2006, <http://www.maf.govt.nz/climatechange/forestry/ets/area-at-risk/page-04.htm>

# Corporate dairy - killing the climate



## overstocking of cows

- Release of methane
- Compaction damage to soil and pasture increases nitrous oxide emissions

## deforestation

- Tens of thousands of hectares of forests being felled to make way for corporate dairy. Another half million at risk (a quarter of the nation's total plantation forests).
- Soil erosion and loss of fertile soil
- Loss of habitat for native species

## intensive water use

- depleting water resources due to large-scale irrigation

## increasing use of chemical fertiliser

- Over-use of fertiliser, leading to emissions of nitrous oxide, one of the most potent greenhouse gas on the planet. Nitrous oxide emissions from NZ agriculture now exceed emissions from the entire road transport sector.
- Fertiliser run-off into rivers and lakes causing algae blooms and weed growth. 80% of lowland streams in NZ are now in poor ecological health.

# Smart farming - low input, low impact

Low-input farming systems are shown to increase farm profitability

winter housing for stock during bad weather

higher milk solid production per cow

renewable farm energy

methane digester turns manure into fuel for electricity

native reforestation to preserve soil

no urea use

rest paddocks

natural soil conditioners replace urea

lower stocking levels (maximum 2 cows per hectare) reduce compaction and nitrous oxide and methane emissions

on farm forest offsets emissions

clover for natural nitrogen source

healthy soil is drought and flood resistant

in healthy soil, micro-organisms produce a natural nitrogen source

healthy soils can absorb and deal with animal waste, and help reduce emissions

less nitrogen run-off means healthy rivers

healthy soil removes carbon dioxide from the atmosphere



*This bio-logical farm in Te Awamutu was not affected as severely as neighbouring farms during the Waikato drought. © Greenpeace/Dean Sewell*

## Healthy environment means healthy economy

Agriculture is the industry most reliant on a healthy environment and most at risk from the effects of climate change in New Zealand. The drought of the late 1990's for example cost our economy \$1 billion, and according to MAF, the 2008 drought in the Waikato cost the farming sector over \$1.24 billion, while Fonterra estimated the cost to dairy farmers alone would be over \$500 million.

Agriculture generates the bulk of our export earnings and has an international reputation not only for quality products, but also for being clean and green. This image - along with the sector's economic sustainability - is under threat. Consumers in key overseas markets are becoming more concerned with where their food comes from and the climate impact of its production. Agriculture in New Zealand must stay ahead of the game, and to do so, it must improve its environmental performance.



*Overstocking on farms leads to increased methane and nitrous oxide emissions. © Greenpeace/Suzette Jackson*

## Market and brand risks

New Zealand's low emission, energy efficient farming methods have traditionally helped counterbalance the 'food mile' concerns of foreign market consumers. But we're losing our edge. Reports indicate that even in the early part of this decade, low emission farming in Sweden and the Netherlands was already starting to draw equal to (and in some cases ahead of) New Zealand in terms of emissions performance.

More worrying is that New Zealand's performance is now uncomfortably close to that of the UK. This increases the risk of future market erosion, particularly given UK supermarkets' recent initiative to implement "carbon lifecycle" labelling on products. As intensification of New Zealand dairy continues, the carbon footprint advantage that New Zealand dairy produce has historically held over the world is being lost.

## Lower input, better output

There are solutions to current agricultural emission rates in New Zealand; solutions that are not only better for the climate and the environment, but also good for farmers' bottom lines

It's smart farming, or what's known globally as 'bio-logical' farming.

Smart farming is about reverting back to more traditional farming practices that involve less input and better output. It's about cutting down on chemicals, cutting back on herd numbers and looking after soil so that pasture thrives and lasts.

Bio-logical farming takes advantage of natural processes, which promote good soil, healthy crops, and healthy animals. These natural processes include: best tillage methods; proper livestock manure use; promoting soil life; reducing compaction from overstocking of livestock; using rotational grazing to maintain pasture root health through leaving residual pasture cover, and balancing the soil's minerals through the use of soil conditioners.

Sounds too good to be true. Does it actually work? Yes. Lower stocking per hectare has indeed been shown to increase milk and meat production from each animal. As well, lower costs for inputs such as fertilisers and the resulting reduction of expensive animal health problems allows farms to become more profitable and sustainable.

This was all outlined in a study by AgResearch<sup>3</sup>, which was based on studying different demonstration farms in New Zealand.

It found that cows produced more milk per year under a low-input (less fertiliser, less supplementary feed) system. This system also recorded the lowest impacts per kilogram of milk and per hectare for global warming potential, acidification, nitrogen contamination of water and energy use.

## Price on emissions - incentive to change

Currently nothing is being done to prevent the rapid expansion and industrialisation of the dairy industry. The agricultural sector is exempt from taking real action to reduce its greenhouse gas emissions until 2013, as it is not until this time that the sector comes into the Emissions Trading Scheme (ETS).

Even when it is brought into the ETS, the sector will be subsidised by the taxpayer to the tune of 90 per cent of its emissions (due to the amount of free permit allocations given to it by the Government).

Under the Kyoto Protocol, New Zealand must buy credits to cover any increase in emissions over 1990 emission levels. A recent Sustainability Council report<sup>4</sup> estimated the likely cost to the New Zealand taxpayer of covering agriculture's increased emissions would be around \$1.3 billion up until 2012; a direct subsidy to the sector.

Without a price on agricultural emissions, there's no incentive to reduce them and invest in mitigation solutions.

Greenpeace is calling for farming to be brought in under the ETS before 2013, and for a range of other measures to be put in place to encourage low-input, less intensive farming.

3 Eco-efficiency of intensification scenarios for milk production in New Zealand, Claudine Basset-Mens, Stewart Ledgard, Mark Boyes, AgResearch Limited, Ecological Economics, In Press 2007.

4 <http://www.sustainabilitynz.org/docs/TheCarbonChallenge.pdf>

