

FREE RANGE IS NOT THE ANSWER

Submission in response to
Ceres Application for
Free Range Pasture Finished Certification Trade Mark



Paul Mahony
in conjunction with

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“Free Range is Not the Answer: Submission in response to Ceres Application for Free Range Pasture Finished Certification Trade Mark”

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For animals and the planet | Terra: "Earth" | Ostendo: "To clarify, show, reveal"



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Disclaimer:

No information in this booklet is intended to represent nutritional, dietary, medical, health or similar advice, and should not be relied upon as such.

Part 3 “Environment” contains information from the author’s booklet, *The Low Emissions Diet: Eating for a safe climate* (2016).

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“If cattle were to form their own nation, they would rank third behind China and the United States among the world’s largest greenhouse gas emitters.”

World Resources Institute, 2016¹

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Introduction

Ceres Agricultural Company Pty Ltd (Ceres) has applied to the Australian Competition and Consumer Commission (ACCC) to register a Free Range Pasture Finished certification trademark (CTM).

Ceres intends that the CTM will provide a certification to verify the manner in which cattle, intended for slaughter within the food system, have been raised, including in relation to the health, welfare and management of animals, their access to pasture, the impact of production on the environment as well as the safety and quality of the meat produced.

Ceres has indicated the proposed CTM rules seek to ensure:

- cattle are individually identified and are fully traceable throughout their entire life;
- health and welfare of cattle is maintained including the way in which grain is introduced into their diet, the way they are handled, and management of disease pressure;
- cattle are allowed to roam in a free range environment with stocking rates being appropriate for the region;
- the risk of harmful residues or hazards being present is minimised; and
- on-farm systems foster environmental responsibility and do not negatively impact resources and natural habitats.

Meeting these requirements will entitle the user to use the *“Certified free range pasture finished”* mark.

The ACCC is required to assess whether the CTM raises consumer protection, competition or associated concerns. In addition, the ACCC will assess the requirements the goods must meet in order to have a CTM applied to them. It has invited interested parties to comment on the application before it issues an initial assessment.

This submission outlines concerns in the context of: (a) the health and welfare of animals; (b) the safety of red meat in terms of human health; and (c) the environment (including climate change).

Executive Summary

General

- Whether produced in free range or more intensive systems, red meat is extremely detrimental to animals, human health and the environment.

Animal Health and Welfare

- Many exemptions in favour of the livestock sector apply to Prevention of Cruelty to Animals legislation in Australia (and similar legislation elsewhere), thereby permitting cruelty.
- There are no legislated free range standards, and the standards proposed by Ceres offer only limited protection to animals.
- Free range animals are usually slaughtered at the same abattoirs as more intensively farmed animals. Regardless of the effectiveness or otherwise of different stunning methods, the sights, sounds and smells of an abattoir create a terrifying experience for animals awaiting their fate.

Safety of Meat

- The evidence of red and processed meat's adverse health impacts is overwhelming, whether or not produced in a free range system.
- Oxford University researchers have estimated that that if the global population were to adopt a vegetarian or vegan diet, more than 7 million lives would be saved per year by 2050 due to reductions in the rate of coronary heart disease, stroke, cancer, and type 2 diabetes. More than half the avoided deaths would be due to reduced red meat consumption.

Environment

- Beef production is a key contributor to global warming, land degradation, air and water pollution, introduction of invasive pasture grasses, loss of biodiversity, and destruction of the Great Barrier Reef.
- In addition to dealing with coal-fired power, we will not achieve a critical threshold level of 350 parts per million of CO₂ in the atmosphere without massive reforestation. The only way to meaningfully reforest in the context of the climate emergency is to reduce the extent of animal agriculture.
- Beef from grass-fed cattle is far more emissions intensive than beef from mixed feed systems, involving grain and grass.

What is the Answer?

- Ceres' proposed CTM certification may cause consumers to wrongly believe that critical problems involved in red meat production do not exist in relation to the relevant products.
- As such, we believe the proposed certification should be considered unacceptable in terms of the spirit, and potentially the letter, of consumer protection regulations.
- A general transition from animal-based to plant-based diets is essential if we wish to maximise our effectiveness in protecting the environment, avoiding catastrophic climate change, preventing animal cruelty, and achieving optimum human health.

PART 1: ANIMAL HEALTH AND WELFARE

Free Range versus Feedlot Cattle

In respect of cattle bred for meat, the distinction between free range and more intensive farming systems is not as stark as in (for example) pig or chicken farming. In those cases, the animals generally live their entire lives indoors, often in cages of various types. In conventional beef production, if feedlots are used, it is generally only for the final two to four months of an animal's typical fifteen to eighteen month lifespan (although they would naturally live for more than ten years). Importantly, a feedlot is a far more open environment than a pig or chicken shed.

Although the proposed CTM would allow the animals to be fed grain, it would not allow this to occur in a feedlot.

No cattle are exclusively grain-fed for their entire lives, as they have not evolved to consume grain and would not survive. Rather than being fed grain for the animals' benefit, it occurs in order to produce more palatable meat.

Livestock Industry Codes of Practice versus Ceres Certification

Many exemptions in favour of the livestock sector apply to Prevention of Cruelty to Animals legislation in Australia, thereby permitting cruelty.

There are no legislated free range standards, and the standards proposed by Ceres offer only limited protection to animals.

In respect of cattle, the livestock industry codes of practice (endorsed by legislation) permit²:

- castration without anaesthetic if under six months old or, under certain circumstances, at an older age;
- dehorning without anaesthetic if under six months old or, under certain circumstances, at an older age;
- disbudding (prior to horns growing) without anaesthetic. Caustic chemicals may be used for that process under certain circumstances, including an age of less than fourteen days;
- hot iron branding without anaesthetic.

The only practices specifically prohibited under the proposed Ceres standard are as follows:

- dragging by hair, wool, head, neck, horns, ears or limbs;
- application of an injurious object or irritant substance and especially not to sensitive areas such as eyes, mouth, ears, anogenital region or belly;
- pressure applied to eyes, ears or genitalia;
- whipping, tail twisting and pulling;



- nose twitches;
- dragging, tripping, dropping or throwing;
- hitting or kicking;
- forcing livestock to walk over the top of others;
- use of livestock handling tools in a manner that causes harm, distress or injury to the animal;
- use of equipment that causes suffering which includes but is not limited to:
 - large sticks;
 - sticks with sharp ends;
 - lengths of metal piping;
 - fencing wire;
 - heavy leather belts;
- causing injury such as cutting or severing the spinal cord (e.g. using a puntilla or dragger), breaking legs or leg tendon;
- forcing water into an animal's stomach by placing a hose down the throat; and
- forcing water into an animal's mouth or up its nose in an attempt to make it stand or move.

If a practice such as (for example) hot iron branding is intended to be prohibited, then why not specifically state that intention, particularly when the practice is permitted by the relevant industry code of practice? Terms such as "injurious object" and "irritant substance" may be open to interpretation.

Forced Breeding

The forced breeding of animals is common in free range production systems, often involving artificial insemination. Such practices cause the animals to be sexually violated, and may be considered illegal outside the food production system.

Slaughter

Importantly, free range animals are usually slaughtered at the same abattoirs as more intensively farmed animals. According to advocacy group, Aussie Farms³:

"Most animals killed at Australian abattoirs are supposed to be rendered unconscious by various stunning methods before having their throat cut open to be bled out (referred to as the 'sticking' process; a slash across the throat for sheep, a stab into the throat for pigs and cattle), however this is not always the case.

As of 2011, at least 15 abattoirs in Australia have permission from state governments to slit the throats of fully conscious animals, as part of the religious practices of 'halal' and 'kosher' slaughter.

Due to the high demand for meat and other animal products, abattoirs are required to kill very large quantities of animals per day, resulting in a typically rushed environment where ineffective stunning can easily occur. Animals that reach the kill floor without first being properly stunned are then 'stuck' and bled out while still conscious."

Regardless of the effectiveness or otherwise of different stunning methods, the sights, sounds and smells of an abattoir create a terrifying experience for animals awaiting their terrible fate.

PART 2: SAFETY OF MEAT (HUMAN HEALTH)

The evidence of red and processed meat's adverse health impacts is overwhelming, with no distinction between free range production systems and others.



For example, a study published in 2012 in Archives of Internal Medicine involved 121,342 men and women over the period from 1980 through 2006.⁴

The researchers found that eating red meat was associated with a sharply increased risk of death from cancer and heart disease. The lead author, Harvard University's Dr. Frank B. Hu, said, *"When you have these numbers in front of you, it's pretty staggering"*

In another example, World Cancer Research Fund International (WCRF International) published its Second Expert Report in 2007, titled *"Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective"*. The report was issued jointly with one of WCRF's network members, the American Institute for Cancer Research.⁵

The report contained recommendations relating to red and processed meat (Recommendation 5, Chapter 12).

For the purpose of the analysis, beef, pork, lamb, and goat were all considered to be forms of red meat.

Processed meat consisted of meat preserved by smoking, curing or salting, or addition of chemical preservatives. Such meat includes corned beef.

WCRF International stated:

"The evidence that red meat is a cause of colorectal cancer is convincing. The evidence that processed meat is a cause of colorectal cancer is also convincing."
(page 382)

WCRF UK has stated⁶:

“The Panel of Experts could find no amount of processed meat that can be confidently shown not to increase cancer risk. That is why WCRF UK recommends people avoid processed meat to reduce their bowel cancer risk.”

As part of WCRF International’s Continuous Update Project, in 2010, a research team at Imperial College London produced an updated systematic literature review of the evidence from 263 new papers on food, nutrition and physical activity.⁷

WCRF International’s Expert Panel considered the updated evidence and agreed that the findings confirmed or strengthened the convincing and probable conclusions of the Second Expert Report for colorectal cancer.

The report also recommended that we eat mostly foods of plant origin to protect against a range of cancers.

Specifically: (a) Eat at least five servings of a variety of non-starchy vegetables and fruits every day; (b) Eat relatively unprocessed cereals (grains) and/or pulses (legumes) with every meal; (c) Limit refined starchy foods; (d) People who consume starchy roots or tubers as staples should also ensure intake of sufficient non-starchy vegetables, fruits, and pulses (legumes).

The problem with red and processed meat (including corned beef)

WCRF has reported that several hypotheses have been tested that may explain why consuming processed meat increases bowel cancer risk, all of which also appear to be relevant to red meat generally:

Nitrites and N-nitroso compounds (NOCs):

Nitrites are preservatives that can react with certain compounds in protein-rich foods to produce NOCs, particularly in the absence of inhibitors such as vitamin C and in the presence of enhancers such as red meat. Many NOCs are carcinogenic. They can be formed during the curing process, and are also formed in the body from ingested nitrites and nitrates in red and processed meat.

Haem in red meat:

Haem is an iron-containing molecule present in animal blood and meat, especially red meat. Free iron can induce the production of free radicals, which can damage cell DNA. Haem can also induce the formation of NOCs in the body.

High-temperature cooking:

Cooking meat at a high temperature, especially frying and grilling, can cause the formation of certain carcinogenic compounds.

Updates

World Health Organization (2015)

Similar findings were reported in 2015 by the International Agency for Research on Cancer (IARC), an agency of the World Health Organization (WHO). In reporting the WHO's findings, Harvard University stated⁸:

“Consumption of processed meat was classified as carcinogenic and red meat as probably carcinogenic after the IARC Working Group – comprised of 22 scientists from ten countries – evaluated over 800 studies. Conclusions were primarily based on the evidence for colorectal cancer. Data also showed positive associations between processed meat consumption and stomach cancer, and between red meat consumption and pancreatic and prostate cancer.”

University of Oxford (2016)

In April 2016, a study by researchers from the Oxford Martin School (University of Oxford) reported on the health and climate change benefits of changing diets, including reduced consumption of animal products.⁹ They estimated that if the global population were to adopt a vegetarian diet, 7.3 million lives per year would be saved by 2050. If a vegan diet were adopted, the figure would be 8.1 million per year. More than half the avoided deaths would be due to reduced red meat consumption. The results would be due primarily to reductions in the rate of coronary heart disease, stroke, cancer, and type 2 diabetes.

Revised National Dietary Guidelines (2016)

In May 2016, the Chinese government's official source of dietary advice, the Chinese Nutrition Society, released new dietary guidelines. Primarily aimed at improving public health, the guidelines called for a halving of meat consumption from current levels. Similar action has been taken over the past two years in the USA, Sweden, UK, and the Netherlands.¹⁰

We do not need to eat meat

The American Dietetic Association has said:¹¹

“It is the position of the American Dietetic Association that appropriately planned vegetarian diets, including total vegetarian or vegan diets, are healthful, nutritionally adequate, and may provide health benefits in the prevention and treatment of certain diseases. Well-planned vegetarian diets are appropriate for individuals during all stages of the life cycle, including pregnancy, lactation, infancy, childhood, and adolescence, and for athletes. A vegetarian diet is defined as one that does not include meat (including fowl) or seafood, or products containing those foods.”

The extent of fortification of foods with nutrients such as vitamin B12 and vitamin D varies by country. As a result, it is important to review the adequacy of diet based on local

conditions, as partially reflected in this statement from Australia's National Health and Medical Research Council (also supporting vegetarian and vegan diets):¹²

"Appropriately planned vegetarian diets, including total vegetarian or vegan diets, are healthy and nutritionally adequate. Well-planned vegetarian diets are appropriate for individuals during all stages of the lifecycle. Those following a strict vegetarian or vegan diet can meet nutrient requirements as long as energy needs are met and an appropriate variety of plant foods are eaten throughout the day. Those following a vegan diet should choose foods to ensure adequate intake of iron and zinc and to optimise the absorption and bioavailability of iron, zinc and calcium. Supplementation of vitamin B12 may be required for people with strict vegan dietary patterns."

Vitamin B12

The vitamin B12 found in certain animal-based food products is produced by soil microbes that live in symbiotic relationships with plant roots, and which find their way into the animals' digestive tracts. Such bacteria are also found in humans' digestive tracts, but too far along to be readily absorbed for nutritional purposes.¹³

Vitamin B12 is not synthesised by plants, nor is it generally found with vegetables in our modern sanitised lifestyle. However, B12 supplements are readily produced from microbes, to be ingested directly or incorporated in various other food products. That is a far more natural approach than: (a) destroying rainforests and other natural environs; and (b) operating livestock production systems; purely for animal-based food products.

Vitamin D

It may be best not to rely on animal-based foods to satisfy vitamin D requirements. The Medical Journal of Australia has reported:¹⁴

"Most adults are unlikely to obtain more than 5%-10% of their vitamin D requirement from dietary sources. The main source of vitamin D for people residing in Australia and New Zealand is exposure to sunlight."

Whether or not we eat animal products, we need sunshine if possible, or perhaps supplements.

Iron

There are two types of iron in food: haem and non-haem. Haem iron is absorbed by the body more readily than non-haem, and is only available in animal products. Is that a problem? Not according to authors writing in the Medical Journal of Australia, who said:¹⁵

"Well planned vegetarian diets provide adequate amounts of non-haem iron if a wide variety of plant foods are regularly consumed. Research studies indicate that vegetarians are no more likely to have iron deficiency anaemia than non-vegetarians. Vegetarian diets are typically rich in vitamin C and other factors that facilitate non-haem iron absorption."

Please see earlier comments about the role of haem iron in cancer.

PART 3: ENVIRONMENT

General Concerns including Loss of Biodiversity

Whether in the form of extensive free range systems or more intensive systems, livestock production affects the environment in dramatic ways. Here are some examples of prominent organisations and individuals highlighting concerns over many years:

“[Animal food products] place undue demand on land, water, and other resources required for intensive food production, which makes the typical Western diet not only undesirable from the standpoint of health but also environmentally unsustainable.”

The Food and Agriculture Organization of the United Nations and World Health Organization (2002)

“[Livestock production] is one of the major causes of the world’s most pressing environmental problems, including global warming, land degradation, air and water pollution, and loss of biodiversity.”

The Food and Agriculture Organization of the United Nations (2006)

“[A new UNEP report] calls for a significant shift in diets away from animal based proteins towards more vegetable-based foods in order to dramatically reduce pressures on the environment” . . . “. . . substantial reduction of impacts would only be possible with a substantial worldwide diet change, away from animal products.”

United Nations Environment Programme (2010)

“Please eat less meat; meat is a very carbon intensive commodity.”

Former head of the IPCC, Rajendra Pachauri (2010)

The Pew Charitable Trusts have commented extensively on the destructive environmental impacts of Australian livestock grazing, including land clearing, introduction of invasive pasture grasses, degradation of land and natural water sources, and manipulation of fire regimes. Importantly, they have reported on improvements to land when pastoralists transition from grazing to eco tourism.¹⁶

Climate Change

Although specific results vary, the overwhelming conclusion of many studies is that the greenhouse gas emissions intensity of animal-based foods is far higher than that of plant-based alternatives, and that some animal based products are far more emissions intensive than others.

Livestock’s climate change impacts arise from many inter-related factors, such as its inherent inefficiency as a food source; the massive scale of the industry; land clearing far beyond what would otherwise be required to satisfy our nutritional requirements; greenhouse gases such as carbon dioxide, methane and nitrous oxide; and other warming agents such as black carbon.

These problems arise from free range and more intensive production systems.

The Food and Agriculture Organization of the United Nations (FAO) has provided separate emissions intensity figures for specialised beef from “mixed” and “grazing” systems. Beef from grass-fed cattle is far more emissions intensive than beef from mixed feed systems, involving grain and grass. Adjusting the figures for a 20-year “global warming potential” (refer below) results in the following comparisons for overall global beef production:¹⁷

Table 1: Emissions intensity of beef (kg of greenhouse gas per kg of product)

Description	Mixed fed	Grass fed
100-year GWP	56	102
20-year GWP	115	209

Calculations for determining the 20-year GWP figures were based on the FAO’s global average percentage apportionment of relevant factors across all feeding systems. As a result, the figures for mixed fed and grass fed systems are approximations only.

Greenhouse Gases and Other Warming Agents

A key reason for the difference between grass-fed and mixed-fed emissions is that, while cows are fed on grass, they produce far more methane than when they are fed on grain.

Australia’s Commonwealth Scientific and Industrial Research Organisation (CSIRO) has estimated that cows fed on grass produce four times as much methane as those fed on grain.¹⁸

In national greenhouse gas inventories, the only greenhouse gases generally attributed to livestock are methane (CH₄) and nitrous oxide (N₂O). Other relevant warming agents are either excluded altogether or reported in different categories. An example is carbon dioxide emissions from livestock-related deforestation, which are attributed to the category “*land use, land use change and forestry*”.

Two of the warming agents generally omitted are tropospheric ozone and black carbon, as referred to below. They are referred to as short-lived climate forcers, as their impact on climate primarily occurs within a decade from the time they are emitted, and generally within days or weeks for these particular warming agents. Those timeframes are critical, as meaningful action in reducing emissions of such warming agents provides rapid benefits, and can contribute to us avoiding tipping points and runaway climate change as our energy infrastructure is transformed.

National inventories also exclude estimates of foregone sequestration, which is the loss of carbon absorption arising from the loss of forest and other vegetative matter through land clearing. Allowing for that factor would help identify a significant mitigation measure, namely reforestation, along with other measures to reinstate biomass and soil carbon.

Global Warming Potential

An issue particularly relevant to methane is the concept of “global warming potential” or “GWP”. The emissions of different gases can be aggregated by converting them to carbon dioxide equivalents (CO₂-e). It is analogous to converting different currencies to a common denomination. The greenhouse gases are converted by multiplying the mass of emissions by the appropriate GWP, representing the relative warming effect of a unit mass of the gas

when compared with the same mass of CO₂ over a specific period. The choice of time horizon is critical in relation to methane's emissions, as referred to below.

Carbon Dioxide (CO₂)

The main CO₂-related emissions from livestock arise from land clearing and loss of soil carbon in relation to grazing and feed crop production. Energy used in preparing livestock feed is also a factor. Loss of soil carbon can be in the form of oxidation and combustion of deforested and drained tropical peat lands or overgrazing of land, with resultant loss of top soil and release of carbon.

Nitrous Oxide (N₂O)

Nitrous oxide is emitted through the use of fertiliser for feed production and from depositing manure on pasture or during the management and application of manure on crop fields.

Methane (CH₄)

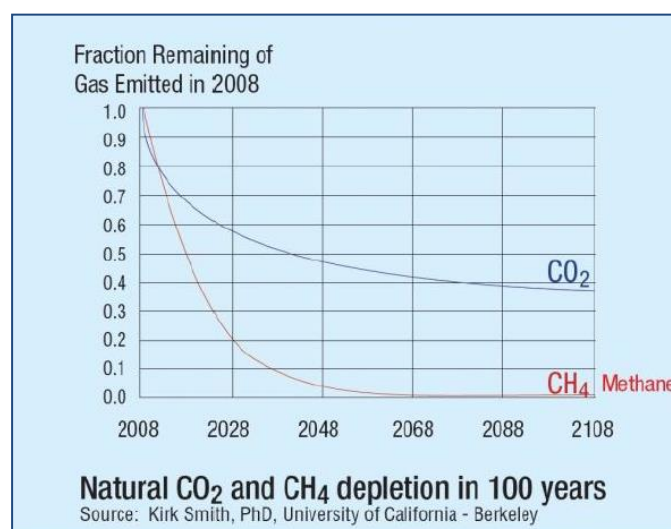
The Intergovernmental Panel on Climate Change (IPCC) has reported that the livestock sector is responsible for around 44 per cent of anthropogenic methane emissions.¹⁹ While the emissions may not be reducing in absolute terms, livestock's share may be reducing over time due to increasing volumes of gas production and related fugitive emissions.

The main livestock source of methane is the process of enteric fermentation, which occurs in the digestive system of ruminant animals, such as cattle, sheep and goats. In their rumen (stomach), food is broken down into simple molecules that can be more easily digested. Methane is a by-product, and is mainly emitted through belching and breathing. Manure management is another source of methane.

A key factor in relation to methane is the choice of time horizon for calculating CO₂-e emissions figures.

By using a 100-year timeframe, traditional reporting methods have understated its shorter-term impact. The reason is that it breaks down in the atmosphere much faster than carbon dioxide, and is almost non-existent for much of the 100-year reporting period. Its rapid breakdown is demonstrated in Figure 1.

Figure 1: Natural carbon dioxide and methane depletion over 100 year timeframe²⁰



The IPCC's 100-year GWP for methane was 25 in 2007 but was increased to 34 (with climate carbon feedbacks) in 2013.²¹

The figures for a 20 year timeframe were 72 in 2007 and 86 in 2013.

NASA scientists have reported figures of 33 for 100 years and 105 for 20 years after allowing for aerosol (particulates) interactions.²²

In its Fifth Assessment Report, released in 2013, the IPCC stated:²³

“There is no scientific argument for selecting 100 years compared with other choices. . . . The choice of time horizon is a value judgement since it depends on the relative weight assigned to effects at different times.”

Unless otherwise stated, emissions figures are generally based on a 100-year time horizon.

Tropospheric Ozone²⁴

Tropospheric ozone is formed through a series of chemical reactions involving nitrogen oxide, methane, carbon monoxide and other non-methane volatile organic compounds. It is the third most prevalent greenhouse gas after carbon dioxide and methane (not allowing for water vapour). Major sources of carbon monoxide are agricultural waste burning, savanna burning and deforestation. Livestock grazing is one of the main drivers of deforestation and savanna burning.

In its fifth assessment report, the IPCC stated, *“there is robust evidence that tropospheric ozone also has a detrimental impact on vegetation physiology, and therefore on its CO₂ uptake”*.²⁵

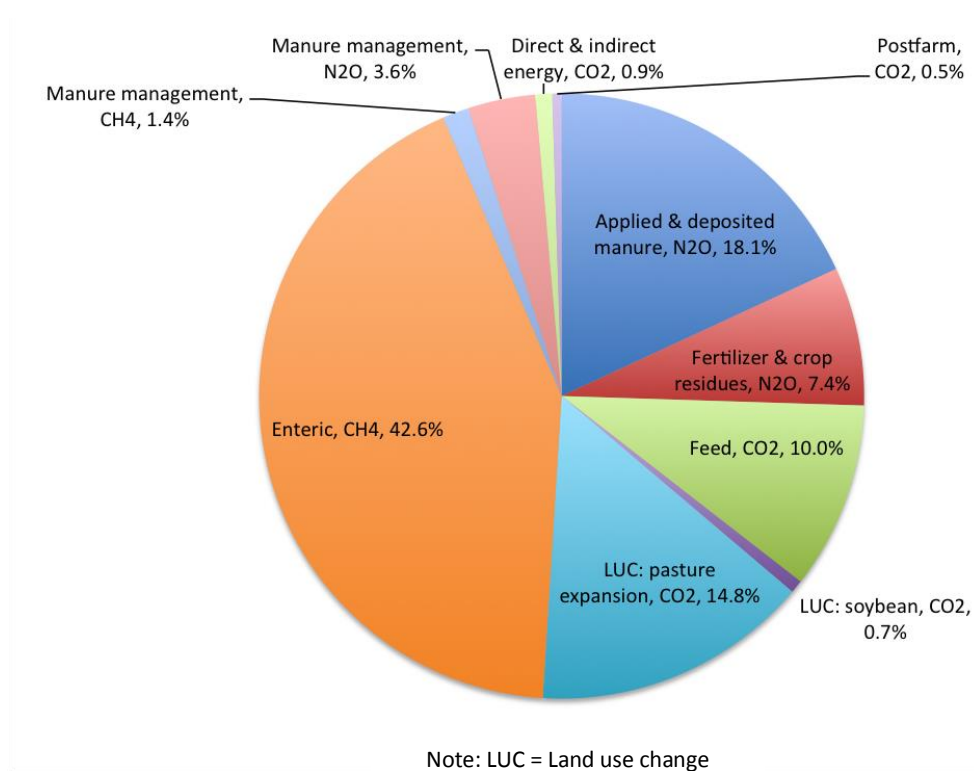
Black Carbon²⁶

Black carbon is a microscopic particulate that is formed through the incomplete combustion of fossil fuels, biofuels and biomass. The greatest single sources of black carbon are savanna and forest fires, with livestock production playing a key role. Black carbon contributes to global warming in two ways. Firstly, the particulates create heat by absorbing the sun's radiation while airborne. Secondly, they can blow thousands of kilometres to land on glaciers and polar ice caps, where they cause solar radiation to be absorbed, rather than reflected, thereby speeding melting.

Food and Agriculture Organization of the United Nations (FAO)²⁷

In estimates of livestock emissions published in November 2013, the FAO included some categories of carbon dioxide emissions in addition to methane and nitrous oxide. The full breakdown is depicted in the following chart.

Figure 2: Breakdown of beef’s greenhouse gas emissions (global average)



Summary:

Enteric fermentation (producing methane)	42.6%
Manure (3 categories)	23.1%
Feed & fertiliser	17.4%
Land use change - Pasture	14.8%
Energy	0.9%
Land use change - Soybean	0.7%
Postfarm (transport and processing)	0.5%
Total	100.0%

The relatively minor “land use change” component attributed to soybeans would probably not exist at all if land was not already being utilised, in an inherently inefficient fashion, for livestock grazing and feed crop production.

Based on a 20-year time horizon (GWP20), enteric fermentation’s share increases to 71.7 per cent, and methane’s overall share (including manure management) to 74.1 per cent.

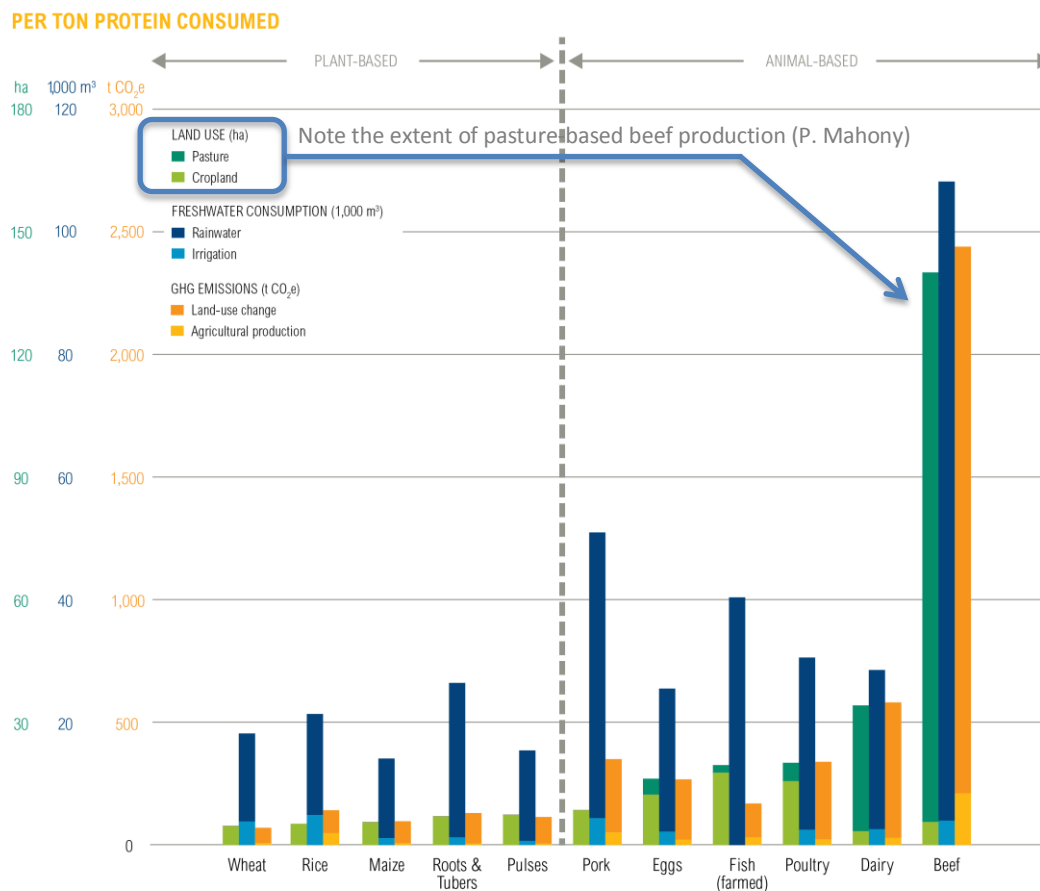
The chart does not allow for the impact of foregone sequestration.

Land Clearing

The extent of livestock related land clearing is highlighted by the fact that livestock production systems occupy between 30 per cent (Food and Agriculture Organization) and 45 per cent (International Livestock Research Institute) of the planet's terrestrial land surface.²⁸

The World Resources Institute has reported that 25 per cent of land (excluding Antarctica) is used as pasture.²⁹ Figure 3 highlights the problem in terms of beef production.

Figure 3: Resource Intensity of Animal-based vs Plant-based Foods (adapted from World Resources Institute)



Grazing's impact on land clearing, and therefore (in terms of climate change) the ability of the biosphere to retain its existing carbon stores and to draw excessive carbon from the atmosphere, has been significant.

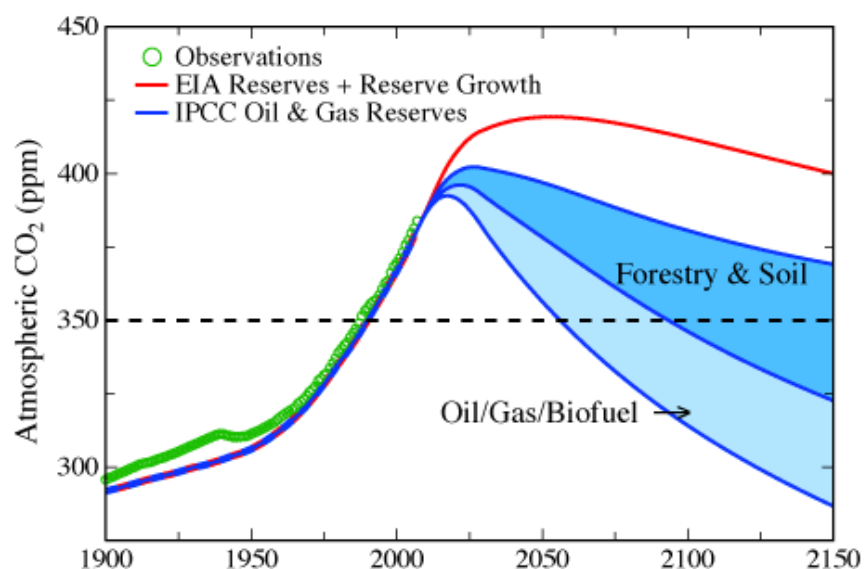
In a landmark 2008 paper, leading climate scientist, Dr James Hansen and colleagues argued that, in addition to dealing with coal-fired power, we would not achieve a critical threshold level of 350 ppm (parts per million) of CO₂ in the atmosphere without massive reforestation.³⁰ The aim would be to reduce CO₂ concentrations (currently around 400 ppm) by drawing them from the atmosphere, while also reducing ongoing emissions.

While stressing the critical need to cease burning coal, Dr Hansen and his colleagues also stated (with our underline):

“A reward system for improved agricultural and forestry practices that sequester carbon could remove the current CO₂ overshoot. With simultaneous policies to reduce non-CO₂ greenhouse gases, it appears still feasible to avert catastrophic climate change.”

The following image shows the estimated trajectory of atmospheric concentrations of CO₂, assuming a phase-out of coal usage by 2030. Based on the IPCC’s estimates of oil and gas reserves, meaningful action on forestry and soil would contribute significantly to achieving the target of 350 ppm before 2100. The estimated contribution from such action is a reduction of around 50 ppm.

Figure 4: Atmospheric Concentrations of CO₂ with Coal Phase-out by 2030



The only way to meaningfully reforest in the context of the climate emergency is to reduce the extent of animal agriculture.

Other organisations have commented as follows on reforestation and animal agriculture:

PBL Netherlands Environmental Assessment Agency

The PBL Netherlands Environmental Assessment Agency has stated:³¹

“... a global food transition to less meat, or even a complete switch to plant-based protein food [was found] to have a dramatic effect on land use. Up to 2,700 Mha of pasture and 100 Mha of cropland could be abandoned, resulting in a large carbon uptake from regrowing vegetation. Additionally, methane and nitrous oxide emissions would be reduced substantially.”

They said that a plant-based diet would reduce climate change mitigation costs by 80 per cent. A meat-free diet would reduce them by 70 per cent. Their assessment was based on a target of 450 ppm. The issue is even more critical when aiming for 350 ppm.

Zero Carbon Britain

The Centre for Alternative Technology in Wales is responsible for the Zero Carbon Britain 2030 plan. A summary of the plan states:³²

“Zero Carbon Britain 2030 will revolutionise our landscape and diets. An 80% reduction in meat and dairy production will free up land to grow our own food and fuel whilst also sequestering carbon from the atmosphere. The report also represents an opportunity to tackle the relationship between diet and health in the UK by promoting healthier diets and lifestyles.”

The University of Minnesota

The position is further highlighted by the fact that a 2013 paper from the Institute on the Environment at the University of Minnesota stated:³³

“The world’s croplands could feed 4 billion more people than they do now just by shifting from producing animal feed and biofuels to producing exclusively food for human consumption”.

The paper’s lead author, Emily Cassidy, has said:

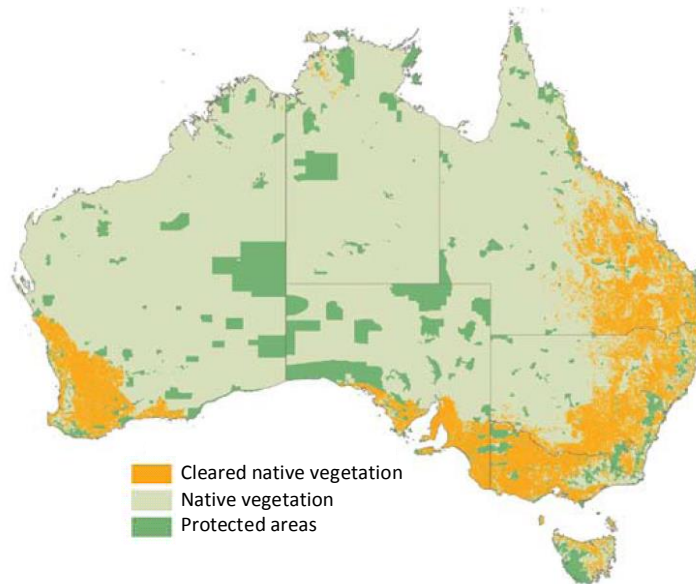
“We essentially have uncovered an astoundingly abundant supply of food for a hungry world, hidden in plain sight in the farmlands we already cultivate. Depending on the extent to which farmers and consumers are willing to change current practices, existing croplands could feed millions or even billions more people.”

A paper from researchers at the Institute for Social Ecology, Vienna, published in April 2016, reported on the potential to avoid further deforestation while feeding a growing global population.³⁴ They considered 500 food supply scenarios using forecasts for crop yields, agricultural area, livestock feed and human diet supplied by the FAO. The lead author, Karl-Heinz Erb, has stated:³⁵

“The only diet found to work with all future possible scenarios of yield and cropland area, including 100% organic agriculture, was a plant-based one.”

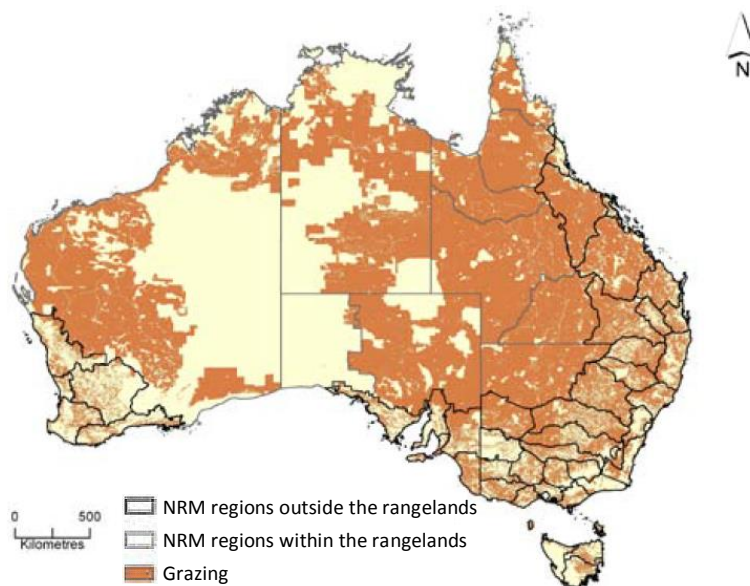
In Australia, since European settlement, we have cleared nearly 1 million square kilometres of our 7.7 million square kilometre land mass. The extent of clearing is demonstrated in Figure 5.³⁶ Of the cleared land, around 70 per cent has resulted from animal agriculture, including meat, dairy and wool.³⁷

Figure 5: Cleared native vegetation and protected areas in Australia



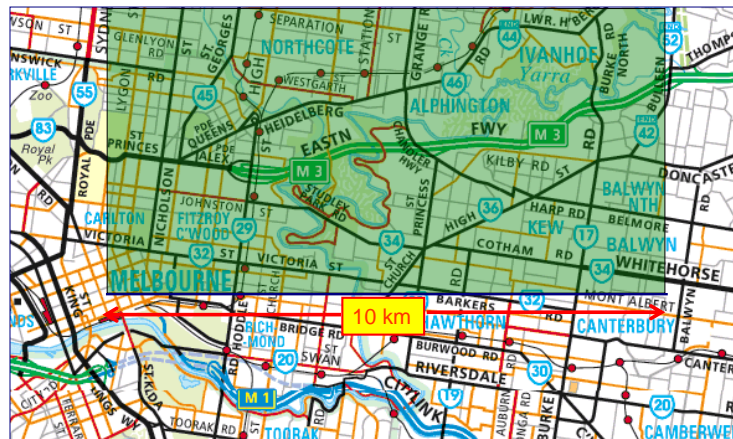
That may not be surprising when you consider the proportion of our landscape used for livestock grazing:³⁸

Figure 6: The location of grazing land in Australia in 2005-06 showing NRM (natural resource management) regions within and outside the rangelands. Source ABARE-BRS



In Queensland alone, from 1988 to 2008, around 86,000 square kilometres of land was cleared, 91 per cent of which (78,000 square kilometres) was for livestock pasture.³⁹ The vast majority of clearing in the “pasture” category was for cattle grazing.⁴⁰ If we were to draw a line 10 kilometres east of Melbourne’s GPO building, it would almost take us to Balwyn Road, in the suburb of Balwyn (Figure 7). If we assumed that all the land north of that line was wooded vegetation, including forest, and we wanted to clear as much as was cleared in Queensland for livestock pasture in that twenty year period, how far would the 10 kilometre tract of land extend?

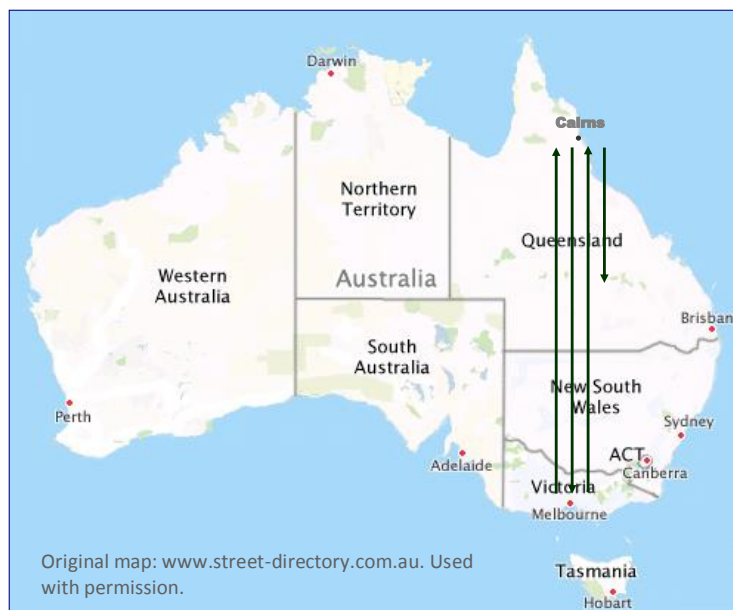
Figure 7: 10 kilometre-wide tract of land to the east of Melbourne’s Central Business District



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The 10 kilometre wide tract of land would extend between Melbourne and Cairns 3.3 times (Figure 8), a total distance of around 7,800 kilometres. That’s similar to a tract of land of the same width winding around the US east coast 3.3 times from Boston to Miami.

Figure 8: The equivalent land area cleared in Queensland for livestock 1988 - 2008



Original map: www.street-directory.com.au. Used with permission.

Around 40 per cent of the clearing was of regrowth. It is critical that we allow the forests and other wooded vegetation to return if we are to have any chance of overcoming climate change, so the clearing of regrowth is of vital importance.

Unfortunately, due to exemptions and possible illegal clearing, legislative restrictions on broad scale land clearing introduced by Queensland’s Labor government from the end of 2006 did not cause livestock-related land clearing to cease.

In any event, the relevant legislation was overturned by the Liberal National government in 2013 in respect of land deemed to be of “high agricultural value”.⁴¹ Even with the ban in

place, extensive clearing for pasture occurred, including an estimated 134,000 hectares in 2011/12.⁴²

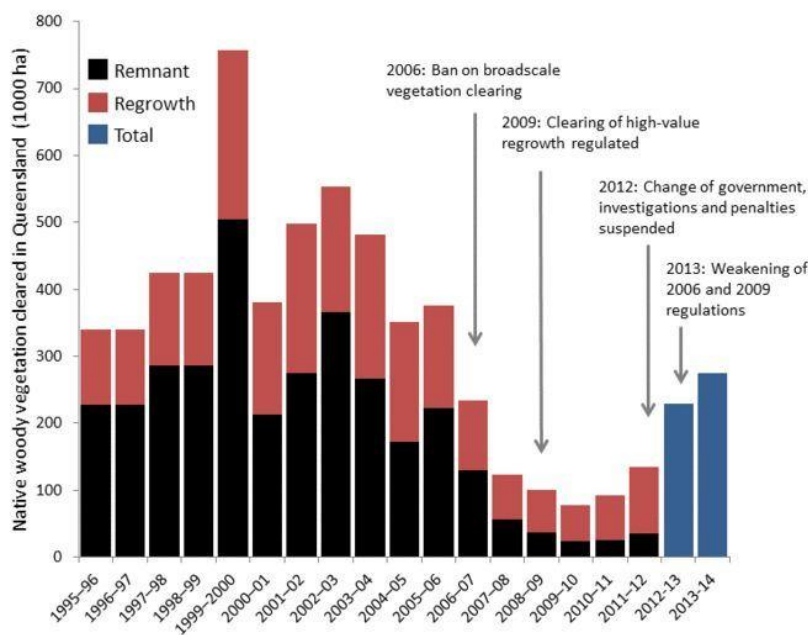
Labor regained power in early 2015. In November that year, it announced plans to re-introduce stricter land clearing controls. However, Labor has only 43 seats in the 89-seat, single-house Parliament, with the balance of power held by two Katter’s Australia Party MPs and two independents, one of whom is the Speaker. The Katter party has said it will not support the proposed legislation.⁴³

Prior to Labor’s announcement, Fairfax Media’s “Queensland Country Life” reported⁴⁴:

“... the minority Labor government is stymied from delivering pre-election commitments because it would require the support of pro-farmer Speaker Peter Wellington and the Katter Party.”

An estimated 275,000 hectares was cleared in Queensland in 2013/14, representing more than a tripling since 2009/10.^{45 46}

Figure 9: Queensland land clearing 1995 – 2014



A report by the World Wildlife Fund has identified eastern Australia as one of eleven global “deforestation fronts” for the twenty years to 2030. It has stated⁴⁷:

“A weakening of laws to control deforestation in Queensland and New South Wales could bring a resurgence of large-scale forest clearing, mainly for livestock farming.”

WWF’s concern in respect of New South Wales relates to the fact that the Liberal/National Party coalition government intends repealing the Native Vegetation Act.⁴⁸

The forests will always be at risk of further clearing, depending largely on the inclination of the government of the day. The recently signed China-Australia Free Trade Agreement and

the recently agreed (but yet to be ratified) Trans Pacific Partnership agreement increase the likelihood of accelerated livestock-related land clearing.

The folly of replacing forest and other wooded vegetation with pasture has been highlighted by the following comments from Australia's Chief Scientist⁴⁹:

"Based on data from typical perennial grasslands and mature forests in Australia, forests are typically more than 10 times as effective as grasslands at storing carbon on a hectare per hectare basis."

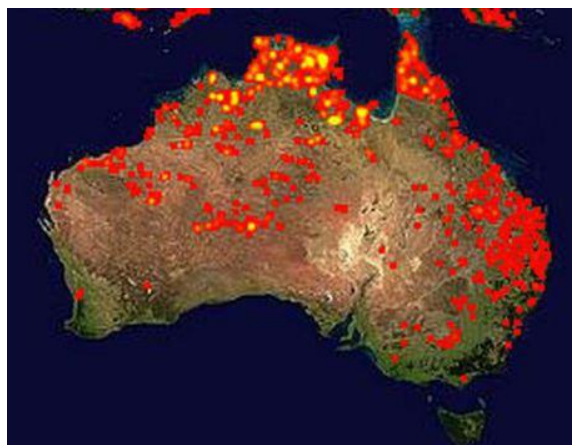
Although the proposed trademark would require the holder to ensure there is not a "significant impact" on remnant vegetation or ecological communities, such a requirement ignores the fact that the land on which cattle graze may have already been cleared. Whilst used for grazing, native vegetation will have little opportunity to regenerate.

Forests, other wooded vegetation and perennial grasses are also adversely affected by livestock-related burning, generally for grazing activity. The areas are generally burnt each year to prevent the forest from regrowing and to encourage growth of new, high-protein grass. In some countries and regions, burning is the initial form of land clearing.

The images that follow are extracts of MODIS Fire Maps from NASA Earth Data.⁵⁰ Each of the fire maps accumulates the locations of the fires detected by satellites over a 10-day period. Colour ranges from red where the fire count is low to yellow where the number of fires is large.

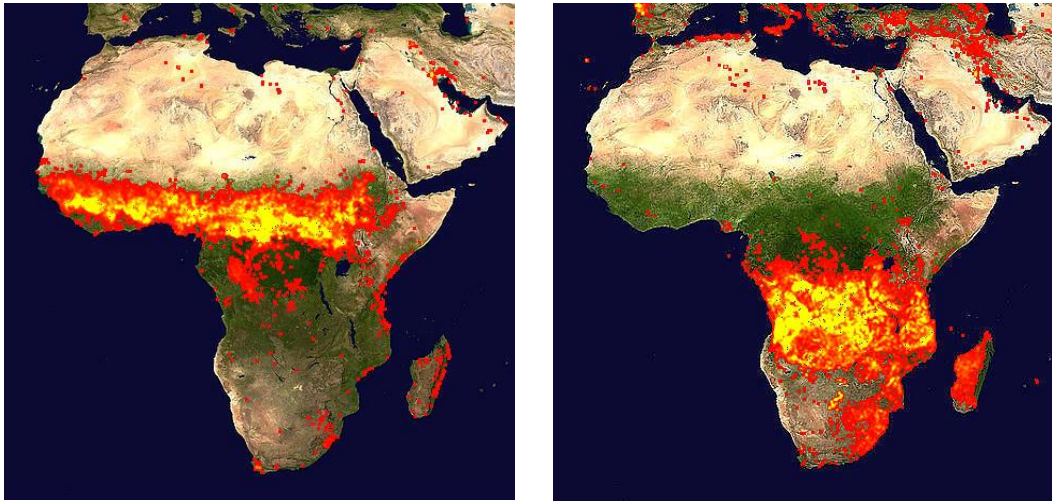
In Australia, the 2009 Black Saturday bushfires in the state of Victoria burnt around 4,500 hectares. In comparison, each year in northern Australia where 70 per cent of the country's cattle graze, around one hundred times that area is burnt across the tropical savanna. The savanna covers around 1.9 million square kilometres across northern Australia, which is around one-quarter of the nation's land mass.⁵¹

Figure 10: Extract of MODIS Firemap of Australia from July/August, 2012



The following page contains images depicting the extent of burning in the northern and southern Guinea Savanna of Africa.

Figure 11: Extracts of MODIS Firemaps of Africa

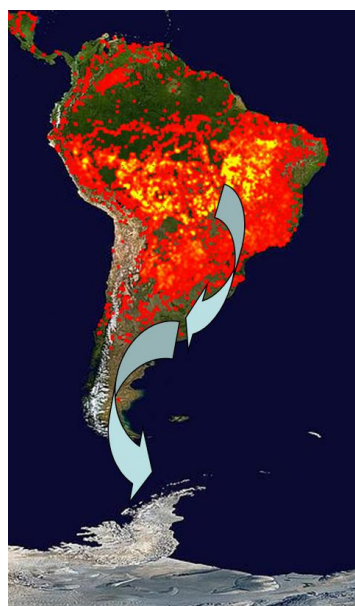


An area roughly corresponding to the yellow burning area in the maps has an average rainfall of over 780 mm and could revert to forest if given the opportunity. Its status as savanna is anthropogenic and not a product of natural attributes such as soil type and climate.⁵²

Africa has around 310 million cattle, compared to Australia's 29 million.⁵³

Livestock-related burning also occurs in South America for cattle grazing and feed crop production. The burning produces black carbon, which is a potent warming agent while airborne. Prevailing winds from South America and Africa blow black carbon to Antarctica, where it lands on ice and contributes to melting by causing the ice to absorb, rather than reflect, solar radiation.

Figure 12: MODIS firemap of South America with overlay representing winds to Antarctica



While some land clearing in South America relates to soybean plantations, soy's prominence as an agricultural commodity has been driven by its use in livestock feed.⁵⁴ According to the Food and Agriculture Organization of the United Nations (FAO), *"Expansion of livestock production is a key factor in deforestation, especially in Latin America where the largest amount of deforestation is occurring – 70 per cent of previously forested land in the Amazon is occupied by pastures, and feedcrops cover a large part of the remainder."*⁵⁵

Great Barrier Reef



The plight of the Great Barrier Reef provides a stark example of cattle grazing's destructive qualities arising from soil erosion.

The journal *Water Science and Technology* has reported on the impact of run-off from areas used for cattle grazing to the Great Barrier Reef Marine Park (GBRMP)⁵⁶:

"Grazing of cattle for beef production is the largest single land use on the catchment with cropping, mainly of sugarcane, and urban/residential development considerably less in areal extent. Beef cattle numbers are approximately 4,500,000, with the highest stock numbers in the Fitzroy catchment."

"Beef grazing on the large, dry catchments adjacent to the GBRMP (in particular the Burdekin and Fitzroy catchments) has involved extensive tree clearance and over-grazing during drought conditions. As a result, widespread soil erosion and the export of the eroded material into the GBR has occurred, and is continuing."

The 2012-13 report card of the Reef Water Quality Protection Plan (released in 2014) indicated that only 30 per cent of graziers had adopted improved land management practices since the plan commenced in 2009.⁵⁷

The 2013 Scientific Consensus Statement also highlighted the livestock sector's major role in destruction from pollution, primarily in relation to suspended solids (sediment), nitrogen and phosphorous.⁵⁸

The statement confirmed that grazing areas in the catchment were responsible for the following pollutant loads to the Great Barrier Reef lagoon:

- 75 per cent of suspended solids
- 54 per cent of phosphorous
- 40 per cent of nitrogen

The release of nitrogen and phosphorous, and the associated nutrient enrichment, contributes significantly to outbreaks of Crown of Thorns starfish, which have had a massive impact on the reef.⁵⁹

Conclusion: Our Answer

Whether animals are raised in free range or more intensive production systems, critical problems exist in terms of the environment; animal health and welfare; and human health.

The proposed CTM certification may cause consumers to wrongly believe that such problems do not exist in relation to the relevant products.

As such, we believe the proposed certification should be considered unacceptable in terms of the spirit, and potentially the letter, of consumer protection regulations.

A general transition from animal-based to plant-based diets is essential if we wish to maximise our effectiveness in protecting the environment, avoiding catastrophic climate change, preventing animal cruelty, and achieving optimum human health.

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Medical team in operating room | © Nyul | Dreamstime.com

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