

**The 3Ps of Climate Change:
Physical, Policy and Peripheral Impacts of Climate Change on the Dairy
Industry**

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Introduction

By now we have all heard about climate change. Some of the more recent events highlighted in the media would include the recent drought and bushfires, the NFF stating that “*global climate change is potentially the biggest issue Australian agriculture has ever faced*”, Prime Minister Rudd ratifying the Kyoto Protocol, and not the least being Al Gore’s Hollywood-style documentary *An Inconvenient Truth*.

While some farmers may still be skeptical about the predicted **physical** changes due to climate change, there will nonetheless be a number of **policy** and **peripheral** issues associated with climate change that will impact on the agricultural industries, and perhaps sooner than predicted physical impacts will become apparent.

In some cases these impacts may be negative, in which case we need to ensure that the agricultural industries are fairly treated, while other impacts could be positive, providing astute farmers with new business and marketing opportunities. Either way, farmers and industry need to be informed about these likely impacts to enable them to prepare a response.

Therefore the information in this paper is relevant even to the Global Warming Skeptics.

Physical Impacts

According to a recent report by CSIRO and the Bureau of Meteorology¹, average temperatures across Australia have already increased 0.9°C since 1950, but with significant regional variations. The frequency of hot days and nights has increased and the frequency of cold days and nights has declined.

Since 1950, most of eastern and south-western Australia has experienced substantial rainfall declines. Across New South Wales and Queensland these rainfall trends partly reflect a very wet period around the 1950s, though recent years have been unusually dry. In contrast, north-west Australia has become wetter over this period, mostly during summer. From 1950 to 2005, extreme daily rainfall intensity and frequency has increased in north-western and central Australia and over the western tablelands of New South Wales, but decreased in the south-east and south-west and along the central east coast¹.

The above observed trends in our climate align with the predictions from the highly complex computer models developed by CSIRO and elsewhere in the world showing that the temperature changes are directly linked to human activities, while the rainfall changes and extreme events (drought and floods) can only be partly attributed to human activities.

¹ www.climatechangeinaustralia.gov.au

The Dairy Industry will have to cope with less water for irrigation, changes in rainfall distribution and heat stress on plants and animals. However, increases in minimum temperatures and reduced frost during winter could mean higher winter pasture growth rates. This could provide opportunities to use more nitrogen fertiliser in winter to ensure adequate pasture for a drier and less reliable warm season.

In the northern irrigation region, dairy farmers have already begun adapting by shifting from irrigating perennial pastures to using limited water only on high value crops (eg. annual ryegrass and maize), while some are exploring deeper rooted crops that can handle less water like Lucerne. In the future there may be a need to explore turning the system around, only irrigating through the cooler months, when evaporative loss is less and growth is more predictable, bulking up feed in warmer winters for a predictably dry warm season.

In Gippsland, warmer and slightly drier winters may mean more focus on winter and early spring pasture, using more mid-winter nitrogen fertiliser and harvesting more silage and hay to manage the risk of less predictable summers. We are already seeing some contractors in Gippsland starting their silage harvesting far earlier than ever before, previously commencing around Cup Day but now starting in August.

Policy and Political Impacts

With the election of the Rudd government, Australia has now joined 173 other countries in ratifying the Kyoto Protocol – *A political decision that will have policy implications for the Dairy Industry.*

This binds Australia to reduce emissions of all greenhouse gasses to 108% of what was emitted in 1990 by 2012. Agriculture is reported to contribute 15.7% of national greenhouse gas emissions in Australia – a figure that will not be overlooked by policy makers. In contrast, almost half of New Zealand's greenhouse gas emissions are deemed to come from their agricultural sector. As is already happening in New Zealand, we should expect governments to implement policies that lead to reductions in greenhouse gas emissions from all sectors of the economy.

A National Emissions Trading Scheme (ETS) is proposed to start in Australia by 2010². At this stage agriculture is exempt from the Australian scheme, but can trade in offsets (eg. selling carbon storages like tree plantings). However, the plan is ultimately to include agriculture when the technology and accounting methods allow. As of 2010, this scheme will apply to 700 medium and large companies and over 70% of greenhouse gas emissions in the covered sectors. This will impact on the Dairy Industry through their fuel and electricity prices³. In contrast, New Zealand already plans to include the agricultural industries in their ETS by 2013, particularly the Dairy Industry, with the fertiliser suppliers and processors being the preferred point of obligation. Obviously, Australian policy makers will be watching these developments in New Zealand closely and the Dairy Industry would be well advised to do the same.

² www.greenhouse.gov.au/emissionstrading/index.html

³ See paper on Emissions Trading – a challenge or opportunity for the Dairy Industry?

Most States in Australia have now also drafted *Climate Change Bills* to target up to a 60% reduction in greenhouse gas emissions by 2050, with all sectors of the economy contributing. With on-farm production contributing 15.7% of national emissions, clearly such a targeted reduction in greenhouse gas emissions will affect the Dairy Industry at some stage.

Another example of a Climate Change related policy impacting on agriculture is the renewable energy targets in the USA. These targets have stimulated investment in biofuel production, which has more than doubled the USA corn price in one year. As a result farmers are struggling to afford grain for their stock.

Climate Change also has potential to affect exceptional circumstances funding, as droughts and floods may no longer be regarded as exceptional but more the norm. Government funds may then rather be used to fund structural adjustment and adaptation measures.

Initially there may also be conflicting policies, for example between water and emissions, or nitrogen fertiliser as an adaptation measure or a greenhouse gas emission. Clearly the policies discussed above that will impact on the agricultural industries irrespective of actual physical changes in our climate.

Peripheral Impacts

The Peripheral⁴ Impacts of Climate Change on the Dairy Industry are likely to include issues like:

- **Food Labelling:** The UK Carbon Trust's Carbon Reduction Label⁵ was launched last year, which shows consumers the total amount of carbon dioxide emitted from source to store for each product. Tesco, the UK's biggest supermarket, also recently decided to label food products according their carbon footprint⁶. Australian dairy products will need to include an accounting of the total greenhouse emissions if they want to compete in these markets in the near future.
- **Consumer perceptions:** There is an increasing level of environmental awareness in our largely urban population, with a high proportion making changes to their lifestyles by taking public transport, recycling their waste and even changing their diets to reduce red-meat and milk consumption, in an effort to reduce their carbon footprint. However, the increasing popularity of local farmer markets with these consumers may also provide significant advantages in the future.
- **Carbon neutral companies:** A number of major Australian companies are aiming to be carbon neutral in the near future, and these are likely to include dairy processors as well. To what extent this includes their supply chain remains to be seen, but in New Zealand this seems highly likely, as their ETS plans to have the point of obligation at the company level, leaving it up to the processor to work out how they want to reduce the emissions from their supply chain (including their farmers).

⁴ Impacts indirectly associated with or incidental to the physical impacts of climate change.

⁵ www.carbontrust.co.uk

⁶ www.tescocorporate.com/climatechange.htm

- **Insurance and Financing:** With the expected increase in frequency of extreme climate events, insuring against the impacts of these events is likely to be either more expensive or not available. Insurance companies and financial institutions have been factoring in these risks for a number of years already. Likewise, the banking sector are likely to insist on a climate change risk management strategy where long-term financing extends into a potentially new climate.

Conclusions

Regardless of being either skeptics or believers in the **Physical** impacts of climate Change, there will be **Policy** and **Peripheral** impacts on the Dairy Industry that we need to be prepared for.

How can the Dairy Industry and farmers prepare for this new environment?

- The Dairy Industry and its farmers must have an informed and credible voice engaged in policy negotiations at both State and Federal level. Dairy Australia and the ADF are working actively in this area on behalf of the Dairy Industry.
- We are already seeing other industries vocally objecting to agriculture being left out of the initial ETS, perceiving this as a shirking of corporate responsibility. As price increases flow through, the dairy industries will need a concerted media campaign to assure these industries and the public of their environmental credentials and that they are researching and addressing these issues appropriately.
- There will be new business opportunities for agriculture in this new environment. To capture these opportunities farmers will need to keep abreast of the facts. For example, should farmers make a quick buck from selling offsets now (eg. selling the carbon in trees planted after 1990), or would they be better off storing these credits for their own use under a future ETS to meet a future imposed target?
- Unfortunately, there are also many myths being promoted and particularly false expectations being raised about the potential profits to be had from selling soil carbon. To this end it is important that farmers and the Industry as a whole draw their advice from credible sources.
- Emissions Trading is not really that different to futures trading, or for that matter, negotiating forward contracts for grain and hay. The key is to ensure that the rules of ETS are fair and not onerous for farmers to comply with.
- The Australian Dairy Industry spans over 3,000 km in latitude and over 4,000 km in longitude, meaning that somewhere in Australia a dairy farmer is already managing the higher temperatures or changed rainfall distribution predicted for your region. This provides the Australian Dairy Industry with a wide pool of experience from which other farmers can share and learn.

While there is no doubt that climate change will bring some changes and challenges, it will also bring many new opportunities for those who are willing to adapt, not only to the physical changes, but also to the policy and peripheral impacts that are inevitable.