

TALKING POINT



CHANGING THE DIET FOR INVESTORS

Climate change has been constant throughout history. According to NASA, there have been seven cycles of glacial advance and retreat in just the last 650,000 years. The last ice age ended about 7,000 years ago. This marked the start of the modern climate era.

For thousands of years, atmospheric carbon dioxide fluctuated between 180 parts per million (ppm) and 280 ppm. The changes in climate were mostly due to slight variations in the earth's orbit, which changed the amount of solar energy received on earth.

Early last century, the carbon dioxide level began to rise, accelerating over the past sixty years. In 1950, atmospheric carbon dioxide measured 280 ppm, but by 2018 the level had increased to 410 ppm. Global temperature increases have accompanied this acceleration of carbon emissions, rising by an average 0.9 degrees Celsius. If the temperature continues to grow by a further 1.0 to 2.0 degrees Celsius over the next century, scientists warn of catastrophic environmental, human and economic consequences.

The world's population has gone through a similar rate of change, from a billion people in 1800 to 1.5 billion by 1950, then an acceleration to 7 billion by 2016. The number of people on the planet is forecast to keep increasing until at least 2100, growing by approximately 83 million per year. United Nations estimates predict a world population of 8.6 billion in 2030, 9.8 billion in 2050 and 11.2 billion by 2100. As a consequence of the rapid increase in population over the last century, scientific consensus accepts that climate warming trends over the same period are most likely due to human activities.

The leading solutions proposed to address the impact of warming sea and atmospheric temperatures are either mitigation or adaptation. Mitigation aims to stabilise the carbon dioxide, or greenhouse gas, levels within the atmosphere by adjusting behaviour. Target sources include energy (fossil fuels burnt for transport, heating, and power) while increasing and protecting storage sinkholes (oceans and forests).

Adaptation aims to reduce vulnerability to changes in climate with obvious examples being protection from rising sea levels and food security. For agrarian economies such as New Zealand, climate warming offers some benefits as well as risks. Slightly warmer weather could increase the growing season and range of crops able to be grown. Tourism could also boom as the more temperate seasons lengthen.



However, to reduce carbon emissions, New Zealand's significant agriculture sector is threatened. According to the Ministry of Environment, New Zealand's agriculture and energy sectors are the two most significant contributors to emissions, at 48.1% and 40.7% respectively.

Exports contribute around 27% to New Zealand's GDP. Exports of dairy, meat and seafood generated approximately \$20 billion in the year to March 2018, or 8% of GDP. So the impact of emission mitigation efforts targeting New Zealand's agriculture sector could have a material effect on the economy. The rise of, and global interest, in Alt-Protein is likely to be part of this disruption.

For thousands of years, meat has been a key form of protein sustaining diets. In the last 100 years or so, meat has been supplemented by dairy. New Zealand is good at producing both. Unfortunately, the production of both also has a significant environmental footprint. In a world with a growing population, warming climate and increasing carbon emissions, New Zealand's agricultural advantages could turn into disadvantages.

Farming of animals for food has also come under increasing scrutiny in recent years, with an intense focus on farming practises and animal wellbeing. Climate warming, growing and ageing populations, health considerations, and ethical concerns are all contributing to our changing relationship with meat and dairy.

The alternative protein industry is attracting hundreds of millions of investors' dollars, with some companies now moving to share market listings. The market is divided between plant-based meat-like products and lab-grown meats from cell cultures. While the early challenges of taste and texture were relatively easy to overcome, the cost per unit was prohibitively high, and scale or the ability to consistently supply large populations remained elusive. These problems are now being solved. The first 'clean' hamburger, made in 2013, cost roughly US\$325,000. By 2015, that price had dropped to less than US\$12. It was expected back then that it would take another 20 to 30 years before a cultured meat product would become viable, but now some food technology companies are planning to bring lab-grown meat to the commercial market within 2 to 5 years. This trend could be as disruptive to traditional farming, as ride-sharing and Uber has been to the taxi industry.



Beyond Meat is a Los Angeles based producer of plant-based meat. Its products are available in 35,000 stores in the US and last year reported revenues of US\$88 million. Supermarket sales of alternative meat products in the US surged to US\$878 million in 2018, with a forecast the market will grow to US\$6.4 billion within four years. Beyond Meat successfully listed on 1st May this year, with its share price increasing 189% since debut.

Besides selling burgers that contain no meat, scientists are now also growing meat on blades of grass, from the cells of pigs and cows. Mosa Meat, a Dutch food technology company is aiming to bring lab-grown meat to the market by 2021. Demand is continuing to increase for alternatives that are healthier and better for the environment. Global multinational companies such as Kellogg and Nestle are embracing this trend.

While plant or lab-based food is likely to supplement rather than replace traditionally grown protein, the increasing environmental challenges point to potential headwinds for our primary sector. The younger generations (Y and Z) embrace disruption, technological innovation and alternatives. Think Uber, Airbnb, Lime, Apple TV, and Netflix – businesses hardly familiar five years ago. Within 10 to 20 years, commercial farming as we know it in New Zealand may be turned on its head.



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