

“The impact of climate change policies (internationally and locally) on global and local food production, and related policy issues.”

IPS Roundtable on Climate Change, Food Security and Related Issues

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Overview

- **The Challenge** - immense, carrying capacity
- **Mitigation** – must take action but at what cost
- **Adaptation** – huge strategic importance
- **Inputs** – security of supply
- **Trade** – risks and opportunities
- **Effecting Change** – social and cultural barriers
- **Where to next?**



The Challenge

- **FAO: 50% more food by 2030, double by 2050**
- **Combination of population increases & rapid income growth in emerging economies**
- **Meat up by 32% and milk up by 35% between 2003 and 2020**
- **Scope to increase productivity but can underpinning ecosystem services can assimilate greater intensification?**
- **Global research efforts and aid funding in agriculture is declining**
- **Insufficient progress on reducing environmental impacts**
- **Genetic progress in food crops has declined as well, potentially leaving crops increasingly at risk of disease and pest damage**



The Challenge

- 17% more land available
- **But desertification, salinization, climate variability, urban sprawl and input scarcity (including water and nutrients)**
- **Need to reduce deforestation and increase carbon sinks = growth in financial instruments to incentivise = growing pressure to take (marginal) land out of agricultural production = will probably further increase the price of food.**
- **CO₂ fertilisation = only temporary relief (may in turn encourage complacency)**
- **Maintaining the current land area in production is likely to be a real challenge over the coming decades.**
- **Also declining productivity of aquatic ecosystems for food production, which in turn adds additional pressure to land use.**



The Challenge

- **Post-harvest losses in the developing world considerable**
- **Investment in supply chain management, transportation and storage.**
- **However, supply chains are energy and carbon intensive**
- **Developing such infrastructure in the developing world is a considerable challenge in itself but poses gains well worth exploring.**
- **The World Food Summit in Rome in June emphasised the lack of coherency in international perceptions of the nature and causes of the problem and therefore the limited prospects of coordinated way forward. Institutions are weak.**
- **While the picture for much of humanity is very grim, the fortunes for New Zealand as a major food exporter in this landscape are full of opportunities, but also some major risks**
- **So how does New Zealand respond?**



Mitigation

- **New Zealand agriculture needs to be part of the solution, not the problem.**
- **Strong strategic interests in taking steps to reduce emissions, including:**
 - **ensuring action on climate change by others**
 - **showing that an agrarian economy (such as that of many developing economies) can take on commitments**
 - **defending our case for producing more food for a growing world population**
 - **addressing ‘food miles’, ‘low carbon diets’ and ‘buy-local’ campaigns**
 - **increasing differentiation of our products against low-cost competitors**
 - **achieving co-benefits (such as water quality from nitrogen management and erosion control).**
- **NZ is doing well-known world-leading research on a wide range of agricultural emissions**
- **However, focus will soon need to shift from supporting research to effecting tech-transfer and extension.**
- **Cultural, social, attitudinal barriers, as well as real human capability and capacity issues**
- **Soil carbon – biochar and through afforestation – Hill Country Erosion fund, East Coast Forestry Project, Afforestation Grants Scheme, Permanent Forest Sinks Initiative and Biochar Professorships.**
- **These programmes highlight co-benefits of integrated policy that achieves multiple outcomes and increases the value of action on climate change.**



Mitigation

- Nitrogen management the most well developed, tech transfer and extension focus
- Lack of solutions to reduce methane from enteric fermentation.
- Hard to see increasing costs and therefore disincentives on food production as politically sustainable in future commitment periods – both internationally and here in NZ.
- The current phase-out path of free allocation under the ETS would have profound impacts if cost-effective tools don't become available and competitors do not face such price signals, hence the 5 yearly review mechanism of the legislation.
- We currently have a set of rules that NZ must live by and the ETS design reflects this
- But NZ has big strategic questions about how it argues for the treatment of enteric fermentation:
 - should it be treated on an intensity basis, or given separate and softer commitments, or removed from global efforts altogether? As monitoring of agricultural emissions globally will be highly resource intensive are the gains worth the costs and complexities of trying the deal with agricultural emissions through global trading systems? What risks exist of shifting production to developing countries and does the global system risk swapping potent but short-lived methane for long-lived carbon dioxide?
- NZ officials are still considering the options and evaluating the international landscape for a firm position on this going forward.
- The challenge is be part of necessary global action while safeguarding interests unique to New Zealand.



Adaptation

- Perhaps the greatest strategic risk confronting New Zealand agriculture is from climate change itself.
- Adverse events, including the 07/08 drought in places such as Waikato, have highlighted the importance of policy frameworks that support the resilience of rural communities and incentivise appropriate risk management.
- MAF has an Adverse Events Recovery Framework to guide responses and funded nation wide Rural Support Trusts.
- Water availability, particularly on the eastern side of New Zealand a challenge with the prospect of increasing droughts.
- Investment in water storage infrastructure, so that high flows can be harvested and stored is an important part of increasing resilience and potentially increasing production.
- However, water storage schemes have environmental impacts and potentially facilitate intensification of agriculture in catchments = poor water quality.
- Policy to encourage water storage will have to be integrated with policy response to improve water quality. MAF and other agencies will be leading work on this in the New Year.



Adaptation

- **New Zealand has a high degree of inbuilt adaptive capacity in its land-based industries, which will be increasingly important in a changing climate**
- **Climate change policies need to support and encourage adaptive capacity and not reduce such capacity through poorly conceived or blunt land use controls. Kyoto rules?**
- **MAF expects that climate change will make new pests and diseases more viable in NZ**
- **NZ has strategic interest and competitive advantage in maintaining stringent biosecurity.**
- **The role of GM in increasing production resilience remains unclear**
- **GM may become increasingly debated in the community if technologies become commercially available to safeguard production systems**
- **On the other hand increased environmental degradation and human-induced climate change may increase consumer resistance to technological intrusion into the food supply chain and increase consumer demands for 'natural' foods.**



Inputs

- Security of key inputs into New Zealand agriculture is increasingly of strategic concern.
- Water is the most important of all agricultural inputs, globally and in NZ.
- Strategy to future proof agricultural production in the face of increasing drought is to increase tech transfer of new plants and practices and water storage
- Current water management arrangements, particularly the allocation and first-in-first-served approach, do not serve us well. HSNO?
- MAF already has a Community Irrigation Fund in place as part of the Plan of Action.
- Superphosphate is the major nutrient driver of agricultural productivity in New Zealand.
- 95 percent of phosphate rock provided from one source in the geopolitically unstable region of sub-Saharan West Africa.
- Since June 2004, the cost of applying superphosphate has risen by 185 percent. Climate change's additional pressure on food supply and growth in input demand can only add to this risk.
- Increased use of nitrogen is already placing aquatic ecosystems in peril and further production demands will exacerbate this. Major sleeper issue.
- The 2007/8 drought emphasised the importance of supplementary feed for resilience.
- Developing a more secure supply of supplementary feed on a national basis may be an effective intervention to increase resilience in our primary sectors.



Inputs

- **NZ's distance to market also poses obvious risks and challenges to New Zealand food producers.**
- **Climate change policies will increase the costs of energy as an input, at a cost to the poorest consumers and higher cost producers.**
- **NZ will need to focus hard on energy costs in food production (including the energy cost component in input products) in order to remain competitive**
- **Therefore, the integration of Energy, Transport and Freight strategies an important policy response that can draw upon rail and shipping hubs**
- **Scope for NZ to leverage renewables portfolio to reduce product footprints.**
- **Over the longer-term biofuels have the potential to be part of New Zealand's response to food miles and travel miles concerns but to date there has been limited focus on the application in the shipping and rail context.**
- **Feedstocks for biofuels are already displacing enormous quantities of food production and forestry has a history of competing with pastoral farming**
- **MAF is looking to lead work next year on input security for our major agricultural sectors, including water, fertiliser, feed stocks and transport.**



Trade

- **The importance of trade to New Zealand producers simply cannot be overstated. 94% of cheese, 90% of milk powder, 85% of meat and 93% of kiwifruit exported.**
- **Border sovereignty and trade controls tend to be some of the most readily available tools for politicians to use to influence domestic outcomes.**
- **Other countries with traditionally high domestic industry protections have suddenly become more open to trade liberalisation to secure food supplies**
- **New Zealand is already benefiting from this in bilateral FTA discussions but it may mean that multilateral trade liberalisation is even harder to achieve.**
- **Some commentators have raised the question as to whether New Zealand should have a domestic food security strategy. Hard to see how this would work in practice without either subsidising producers to grow something they wouldn't otherwise. Does this help or exacerbate the problems? Should NZ, and every other country, produce what it is most efficient and effective at producing? At present MAF is electing to focus on input security.**
- **Climate change policy will also result in new rules around food supply, particularly product labelling and carbon footprinting.**
- **MAF is working with sectors on GHG footprints and international dialogue on the standardisation of these.**



Trade

- Higher commodity prices can help improve environmental outcomes.
- Difficult trade-offs between producing food cheaply and abundantly, and driving down the profitability of producers and eroding the carrying capacity
- NZ faces a difficult trading period for agriculture and the impact this has on actions that increase farm costs, whether it be tech-transfer, investment in new practices or tools, the ETS or regulation on water quality, remains to be seen.
- Likely to reinforce the old adage that you can't be green if you are in the red.
- Fonterra's = Mexican Government 'milk in schools' programme for its poor.
- We need our farmers to be profitable but we need their food to be affordable as well as taking into account the cost of the environmental externalities in producing the food – how is the balance achieved?
- New Zealand needs to think about how ODA resources tackle these challenges.
- Increasingly agricultural cooperation is featuring in discussions around trade liberalisation and climate change and even in FTA negotiations.
- Win-win opportunities here but past experience has shown that agricultural cooperation is not always sustainable in the long term when NZ has withdrawn.



Effecting change

- For a public policy challenge of this magnitude we need integrated 'systems thinking' along the entire length of the supply chain.
- MAF is applying resources and focus at all points of the chain.
- How to get land managers into a constructive dialogue?
- Challenge is to work with land managers in order for them to become comfortable with owning their environmental footprints and then delivering value back to them for reductions in their foot prints.
- Conversation with the sectors continues but at times it is very hard going
- Many do not believe that humans have a significant influence over climate change, or that its has much relevance to agriculture.
- Even with those who believe in anthropogenic climate change, the focus tends to be on short term costs
- We need to looking at how to position NZ for the future.



Effecting change

- **Action to mitigate, adapt and position NZ production will take time and delays will make the challenges even harder over the longer-term.**
- **New Zealand needs policy frameworks that are integrated and mutually supportive, incentivise and encourage change, and do so in a politically sustainable and durable manner.**
- **In multilateral dialogue on climate change there is a real challenge in getting interest from developed countries in the treatment of agricultural emissions.**
- **New Zealand is well placed to do this as a developed food producer with good environmental credentials and robust institutions.**
- **Opportunity for New Zealand to link international actions and goals across a range of fronts and lead policy integration.**



Where to next

- **Considerable strategic importance that New Zealand is both engaged, and sufficiently credible in its domestic policy settings, to influence international responses to climate change and food security.**
- **New Zealand agriculture must be, and must be seen to be, part of the solution rather than the problem.**
- **High degree of fluidity and dynamism in international environment**
- **We need to know more about:**
 - **Production impacts of climate change**
 - **Commodity price forecasts and market dynamics**
 - **Input price forecasts and security of supply**
 - **Environmental constraints on production**
 - **What will consumers, purchasers and regulators demand**
- **How do we differentiate our commercial and humanitarian response?**
- **How do we lift R&D? Incentivise private investment? Share IP?**
- **Population debate? How many is too many?**

