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'Local to global, food and forests: how can New Zealand contribute?

Suzi Kerr

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'Local to global, food and forests: how can New Zealand contribute?

Suzi Kerr

Motu Economic and Public Policy Research

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Outline

1. Negative effects if agriculture is excluded from mitigation efforts
2. Why would we treat agriculture differently?
3. Global Nutrition Index (GNI)
 - Why we need it
 - What it would ideally represent
 - Why it is flawed just like GWP – and more
4. Domestic actions and international targets
5. Conclusion

Why address agriculture?

“Abatement of non-CO₂ gases keeps the 2°C window feasible (even if only just)”

“Taking agriculture mitigation seriously buys about 15 years for the peak of CO₂ emissions

NPV for energy sector: >\$500 billion”

Food competes with forests for land – if not addressed could have negative outcomes – cf. biofuel issue

If there were a global price on all GHG sources and no distributional issues, we should equalise all marginal costs of mitigation per unit damage

Why is agriculture different?

In the real world how do/should we treat cement?

Global: expect full pricing (high on list for sectoral agreements)

Domestic: given an incomplete agreement - leakage means we use output-based allocation (temporarily) or border carbon adjustments to reduce relocation of cement manufacture

Why is cement different from food?

People must consume food

Substitutes exist for concrete for shelter

Why is agriculture different?

Why is cement different from food?

People must consume food

Substitutes exist for concrete for shelter

Food production requires land – if Australia stops producing food, it will not easily be replaced elsewhere.

Why is food different from energy?

- Can't produce food with zero nitrous oxide emissions (now – algae, hydroponics?)
 - Long-term target is not zero emissions
 - Plant protein may involve higher GHG impact from nitrous oxide than animal protein from nitrous and methane (?)
- Poor people use a disproportionate share of their resources to get food – food prices are critical for their welfare.



GHG pricing and international food prices

- Carbon pricing on energy in country A doesn't raise cost of energy in country B
 - though it does affect the cost of manufactured goods
- Ag GHG pricing raises production costs in country A
- This will raise the price of food in country B if country A is big
 - like first generation biofuel

Solutions

1. Improve incomes of the poor (or subsidise their food).
 - This is the efficient solution but it is hard and may not happen in the short term.
2. Increase productivity in agriculture to lower food prices
 - our ability to do this is uncertain
3. Reduce impact of agricultural GHG mitigation on food prices
 - similar to an optimal consumption tax problem when social welfare depends on the distribution of income

Reducing food price impact through domestic action in the food producing country

- Price non-CO2 GHGs in agriculture but use output-based allocation
- Output in this case is 'delivered nutrition'
- Focus on GHG efficiency per unit of delivered-nutrition - not absolute emissions
- This encourages:
 - more GHG efficient production of given products and
 - movement toward more GHG efficient food products



How do we define 'delivered-nutrition'?

- Need to compare calories, protein, micro-nutrients ... and measure waste
- Positive pecuniary externality from production – with distributional weights
- Similar to the GWP problem – but challenge is not timing of damage but that the marginal value of production of each component of nutrition depends on the existing production mix / relative scarcity.

Delivered-Nutrition based allocation within ETS

- Each food product would have a weight based on the mix of nutritional components. This could be called the product's Global Nutrition Index (GNI).
- The measure of nutrition production would be adjusted for waste controllable by the point of regulation
- Free allocation would be based on previous year's nutrition production

Outside of an ETS what do we do?

Reduce demand for high GHG food: Diet and food waste

Increase GHG efficiency of nutrition

- Raise GHG efficiency of what we already produce
- Produce more lower GHG food

Address demands for preferential treatment

- Reduce food poverty – development; local production
- Support food security: storage and insurance (including through food trade agreements)

Support international avoided deforestation and reforestation efforts to reduce perverse effects of excess food production

National targets

Countries might take on an absolute emissions target for most sectors but a GNI intensity-based target for non-CO₂ emissions from food production.

As we address food poverty, this could be removed and agriculture simply included in overall targets.



Conclusions

In a perfect world, emissions from food production would be treated no differently from other emissions

As long as food poverty is an issue and we do not have good instruments to address it, avoiding increases in food production costs from GHG mitigation is a second best solution

This could involve defining something like a 'Global Nutrition Index' to be used:

- at the domestic level for ETS allocation and broader policy; and
- at the international level for intensity targets.