



Ricardo
Energy & Environment

Brazil PMR – Sectoral studies

Carbon pricing in the agricultural sector

6th October 2017

GHG mitigation in Agriculture is intrinsically linked with productivity



- **Biological GHG emissions are a necessary by-product of production, with no alternatives like in the power or fuel sectors.**
 - Meeting growth and productivity improvement objectives requires climate policy to focus in the short-term on improving the **GHG intensity** of production.
 - In the long-term there may need to be an absolute cap on GHG emissions



- **Therefore, the right incentives are important:**
 1. **Focus on productivity**
 2. **Additionally, a narrow focus on improving GHG intensity at a farm level may have detrimental impacts on sustainability such as animal welfare, soil, air and water impacts.**



- “High quality” mitigation options, which meet sustainability criteria over the long term, and have synergies with improved productivity, should be prioritized.
- 3. **Productivity incentives must exist within framework of regulatory safeguards**
 - As the value of marginal land increases due to productivity improvements, regulatory safeguards need to **restrict conversion of marginal and forest land.**

There is very limited experience with CPIs in the Agriculture sector

Priority mitigation option	Carbon Pricing Instrument			
	Emission Trading Schemes	Carbon Tax	Crediting Mechanisms	Results-based Finance
Nutritional supplementation			Many examples: - Clean Development Mechanism (CDM) - Australia Carbon Farming Initiative	
Genetic improvement of livestock	No existing examples. New Zealand ETS limited to MRV system			
Improved pasture and grassland nutrient management		British Columbia carbon tax (2008-2012) covered farm fertilizers	Many examples: - CDM methodology - Australia Carbon Farming Initiative	
Agroforestry: integrated cropland-livestock-forestry systems			Many examples: - CDM - Australia Carbon Farming Initiative	BioCarbon Fund covers agroforestry projects specifically
No-till farming			- Australia Carbon Farming Initiative - In British Columbia crediting mechanism.	

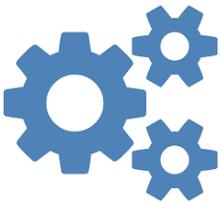
-  Existing examples identified
-  Past example
-  No examples identified

- **Crediting mechanisms** are the most widely implemented market-based mechanism, they allow choice of mitigation option but have limited impact on emission reductions

Why is there limited experience with CPIs?



- **Administrative problems:**
 - **Measurability** and data availability
 - Large number of **diffuse emission sources** raises question of point of regulation



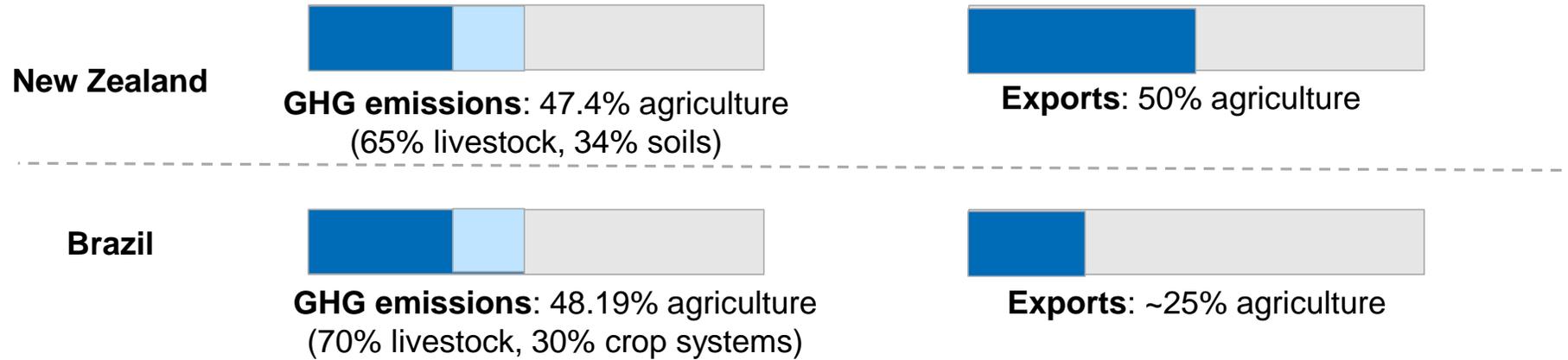
- **Issues with incentives:**
 - Generally, intelligent design is needed to incentivise productivity improvements, and not penalise production volumes (e.g. emission factor indicated by growth rate not volume of meat; taxing fertilizers may be doubly prejudicial for productivity)
 - CPIs incentivize **lowest cost options** rather than **highest quality** mitigation options
 - High quality mitigation options consider long term impacts at economy-wide scale

Point of Regulation	Administrative costs
Upstream	Low / medium
Mid – Farm level	High
Downstream	Low / Medium



- **Available mitigation options to farmers face several barriers for implementation, which may increase costs.**
 - International experience shows **cultural and capacity barriers** are high, therefore CPIs should go hand in hand with the provision of **support**
 - Agricultural mitigation options often have high **upfront costs**, e.g. confinement

The New Zealand ETS case study illustrates issues with CPI in Agriculture



- **In 2009 the plan was to include agriculture in 2015**
 - Distribution of allowances in agriculture (**free allocation of 90%** in 2005 and phase out to 2025)
 - **Mixed point of regulation** (processors of meat and manufacturers/importers of fertilizer)
 - **MRV** and data system
- **Agriculture excluded from ETS in 2013*** because of
 - Limited range of mitigation options available in sector
 - High expected impact on farm profit and exports, **negative interaction** with competitiveness objective of existing New Zealand policies
 - Lack of data and high expected administrative burden
- **Data is crucial:** New Zealand implemented **mandatory reporting** for agriculture in 2012

New Zealand illustrates that a MRV system is the first step towards implementing a CPI

- **Objectives:**
 - Increase **awareness** of GHG emissions and **stimulate uptake** of mitigation practices
 - Overcome **data barriers** associated with including agriculture in the ETS
- **Scope:**
 - Initially, mandatory reporting of data: animal number, classification, amounts of fertilizer, breeds of animals, amount of product produced
 - Assigned to **processor** for livestock and manufacture or import for fertilizer; **minimise administrative costs** by keeping amount of participants low, simplify verification and compliance process
 - Contested because only a '**per-kilogram levy**'; treats all kgs the same → no productivity incentive for farmers
 - Current proposal is for voluntary reporting at farm level: live and carcass weight of animals, feed type, use of nitrous oxide inhibitors, manure management and soil type
 - **Lesson for Brazil:**
 - Such an MRV system would be crucial for intelligent design:
 - **If animal age is also reported, good measure of farm growth efficiency (age + weight),**
 - **Carbon pricing incentive can be linked to productivity, minimising distributional impacts**

Hybrid “carrot / stick” CPIs can overcome barriers of CPIs in Agriculture

	Sticks	Carrots
Proposal	<ul style="list-style-type: none"> • Output-based taxes linked to benchmarked productivity <ul style="list-style-type: none"> • Drives incentives throughout the productive chain • Better than placing incentives on inputs such as fertilizers 	<ul style="list-style-type: none"> • Output subsidies • Revenue recycling <ul style="list-style-type: none"> • For crediting (for high quality mitigation options such as agroforestry, no till, genetic improvement) • For upfront costs to overcome barriers to implementation of mitigation options and mitigate distributional impacts
Caveats, safeguards are required for the sticks	<ul style="list-style-type: none"> • Combine with checks of sustainability like EU Common Agricultural Policy • Exist in environmental safeguards to avoid deforestation • In the long term, an absolute limit to GHG emissions will need to be proposed 	