



Challenges and opportunities in addressing global agriculture emissions: a NZ perspective

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Situation and Outlook

- Global agriculture emissions are estimated to be between 5100 and 6100 Mt CO₂-eq (2005) ~ 14% of global emissions.
- FAO/OECD World Agricultural Outlook - estimated longer term requirements of a 70% increase in global food production by 2050 and agricultural production growth remains on track to achieve this.
- IPCC projects that agricultural emissions will increase by ~13% during the decades 2000-2010 and 2010-2020 and assuming similar rates of increase (10-15%) for 2020-2030, agricultural emissions might be expected to rise to 8000–8400 MtCO₂-eq by 2030.

Challenges

- Global mitigation in agriculture cannot be addressed through one-off technological fixes as with other sectors such as energy and transport.
- Rather, mitigation will require the sustained application of processes or management practices by millions of individuals (farmers).
- In many countries, mitigation is not seen as a priority for agriculture, adaptation and food security (read: self sufficiency) objectives take centre stage.
- For effective action on mitigation in the agriculture sector we'll need to regard mitigation as a priority alongside other objectives.
- Therefore, mitigation must not go against other objectives, but support or enhance them.

Competing objectives...?

- How to reduce agriculture emissions, AND...
 - Ensure development – agriculture makes up a large proportion of many countries' economies, development of the agriculture sector will provide much of the economic growth in these countries.
 - Safeguard food security – ensuring adequacy of food supply and availability, stability of supply, without fluctuations or shortages from season to season or from year to year, accessibility to food or affordability, and quality and safety of food.
 - Enhance resilience – projections by IFPRI indicate that declining agricultural yields associated with changes to the climate and growing conditions could exacerbate global food insecurity.

...Or complementary opportunities?

- These global challenges are immense. Fortunately, there are also real opportunities to progress both.
- We can meet the multiple objectives of food security, adaptation, mitigation, development, through increased agricultural productivity and efficiency.
- In many cases this is positively correlated with reduced emissions intensity, resilience and food security opening a wide potential field for research and technology development.

You can't mitigate what you can't measure

- However, first we need to better understand the systems we are dealing with:
 - Currently there is a limited understanding of process and practices that influence GHG emissions (e.g. carbon and nitrogen in soil).
 - Estimates of agriculture GHGs are poor, globally, regionally, and at the farm level.
 - We know the least about those regions with projected growth in emissions – inventories must improve.
 - a recent FAO country census revealed 30% more livestock than previously thought.
 - We also need country/region specific emissions factors and more sophisticated methodologies to capture mitigation actions that are taken.

The importance of R&D

- Critical to measurement and estimation.
- Critical to improving our understanding of production systems.
- And the only way we can develop mitigation options that are real, low-risk, low-cost and fulfill multiple objectives.
- However, trends in agricultural R&D spending in recent years not good – productivity growth has been declining.
- Need to invest more in agriculture, but invest smarter. We need to incorporate mitigation research into broader agriculture research programmes.

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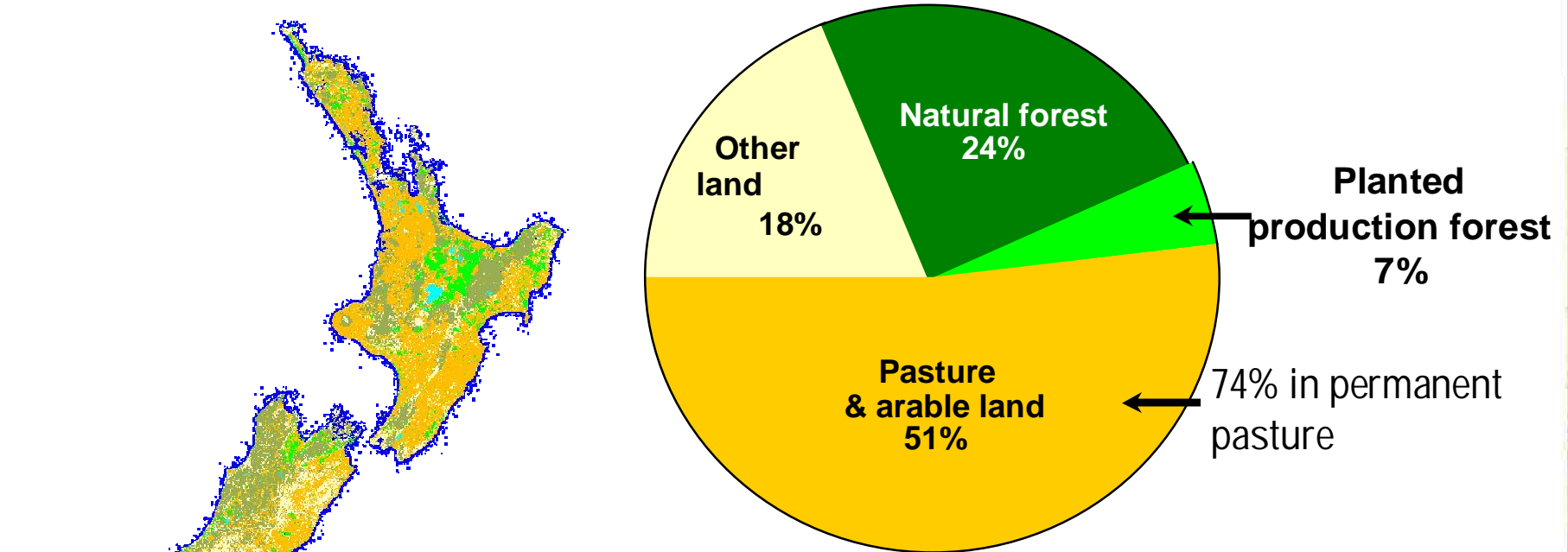
Not sure what you're getting at here?

Authorised User, 24/06/2010

The importance of incentives

- Must have appropriate policy design to facilitate implementation.
- Current international policy framework will not adequately address much of the agriculture sector.
- Where sector is covered (i.e. Annex I Kyoto Protocol Parties and Non-Annex I Parties under the Clean Development Mechanism) - national level or project level implementation is limited.
- Why – technical challenges, political challenges (competitiveness etc)
- We need to rethink the international framework in order to provide incentives for mitigation that can actually be implemented.

Land use in New Zealand



- Total land area of New Zealand: 27 million hectares
- 32 million sheep (+33 million lambs per year)
- 5.2 million dairy cattle
- 4.1 million beef cattle
- 1.2 million farmed deer

NZ Agriculture Emissions

- In 2008, the agriculture sector contributed 34.8 Mt of carbon dioxide equivalent (Mt CO₂-e) which represents 46.6% of New Zealand's total greenhouse gas emissions.
- Represents ~0.62% of global agriculture emissions.
- Methane emissions from enteric fermentation were 65.1% of agricultural emissions and 30.3% of New Zealand's total emissions.
- Agriculture emissions have increased by 9.3% from 1990 levels.

What is New Zealand doing to respond?

- Understanding our emissions
- Significant increase in domestic R&D
- GHG footprinting of primary products and participation in international standards work in this area
- Policy settings as an incentive: agriculture in our ETS
- Working with other countries to establish a Global Research Alliance
- Working to get agriculture on the agenda in the UNFCCC

NZ Research and Development

- Ministry of Agriculture and Forestry
 - Broad research programme for agricultural and forestry mitigation and adaptation
 - \$40 million to be invested between 2007 and 2012 and then \$10 million per annum thereafter.
 - www.maf.govt.nz/climatechange
- Pastoral Greenhouse Gas Research Consortium (PGgRc)
 - An investment vehicle that aims to understand, and provide mitigation solutions for, greenhouse gases produced by grazing animals
 - Science, farming and business operating in partnership with government - reinforced by MOU
 - \$5 million invested per annum since 2002
 - www.pggrc.co.nz

NZ Agricultural Greenhouse Gas Research Centre

- Established in March 2010
- Additional investment of \$5 million per annum in a 10 year investment plan
- Brings together NZ's key expertise in this field of work:



Landcare Research
Manaaki Whenua



- Primary role is to help find ways for New Zealand to meet its international greenhouse gas emission obligations without reducing agricultural output.

- www.nzagrc.org.nz



GHG Footprinting Strategy

- **International engagement**
 - International Standards Organisation (ISO), Product Category Rules (PCR), World Resources Institute (WRI), major retailer discussions
- **National-level Action**
 - Addressing fundamental knowledge gaps in environmental life-cycle management (data/information gathering and quality)
 - Professorship and New Zealand Centre for Life-Cycle Management
- **Supply Chain Activities**
 - Development of sector-specific approaches to GHG footprinting – 80% of Agricultural products covered; Dairy, wool, beef, kiwifruit...

Agriculture in the NZ ETS

- Voluntary Reporting from 2011
- Mandatory Reporting from 2012
- Accounting from 2015
- Allocation to participants will be provided on an output intensity basis.
 - Will be 90 per cent of the emissions baseline and will be reduced by 1.3% per annum from 2016.
 - The baseline will be the industry average emissions per unit of output for a given year or years.
 - The baseline is yet to be established and will be set in regulations, so it will be subject to a consultation process.
- The allocation will be uncapped, meaning that there is no set limit on the number of units that may be allocated.

The Global Research Alliance concept

- Objective to help reduce the emissions intensity of agricultural production and increase its potential for soil carbon sequestration.
- Voluntary initiative to strengthen research collaboration and leverage collective effort.
- A light bureaucracy trying to get going quickly.
- Not “science for science’s sake” - outcomes focused.
- Partner with other organisations and entities in a co-ordinated, simple and efficient way.
- NZ investment of \$45 million over 4 years.

The Alliance

- Launched 16th December in Copenhagen and now has 29 member countries:

Argentina
Australia
Canada
Chile
Colombia
Denmark
France

Germany
Ghana
India
Indonesia
Ireland
Japan
Malaysia

Mexico
Netherlands
New Zealand
Norway
Pakistan
Peru
Philippines

Russia
Spain
Sweden
Switzerland
U.K.
United States
Uruguay
Vietnam

- Observer countries: Brazil, China, Korea, South Africa, Thailand

www.globalresearchalliance.org

GLOBAL
RESEARCH
ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

Agriculture in the UNFCCC

- June 2008 – a work programme on agriculture is proposed
- December 2008 – production of a technical paper on Challenges and Opportunities for Mitigation in the Agriculture Sector
- April 2009 – workshop on Challenges and Opportunities for Mitigation in the Agriculture Sector
- June, August and September 2009 – informal dialogue on agriculture between Parties and observers
- September, November 2009 – negotiations on agriculture commence
- December 2009 – Copenhagen – draft decision prepared but not adopted
- Draft decision (almost) ready to be adopted at Cancun to establish a work programme on agriculture

Thank you for your attention

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