

# New Zealand's methane/nitrous Inventory model and the New Zealand emissions trading scheme

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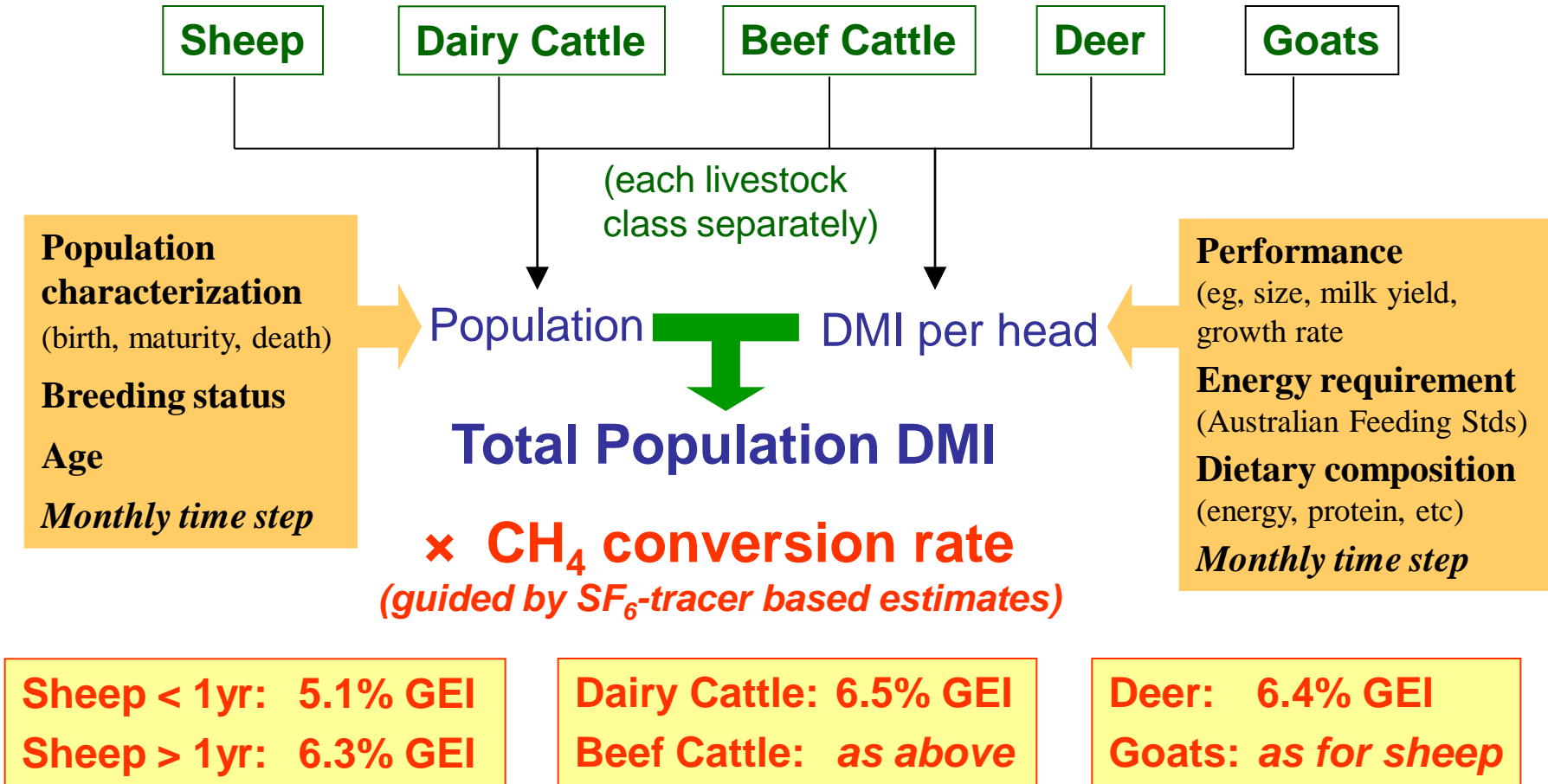
**Ministry of Agriculture and Forestry**  
Te Manatū Ahuwhenua, Ngāherehere



# New Zealand agricultural emissions for 2008



# The Inventory Model





# Inventory model

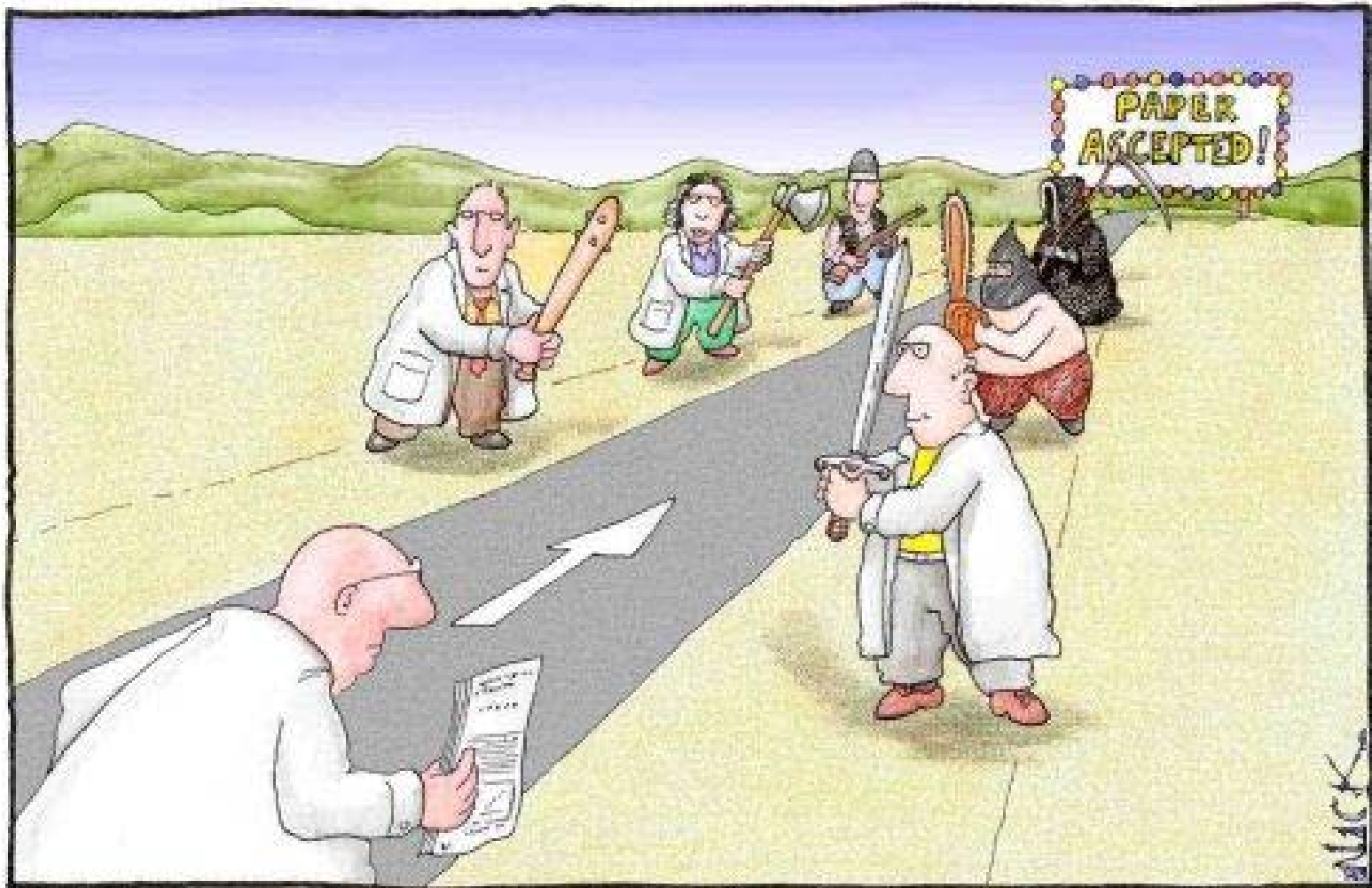
- Various age categories
- Benefits
  - Accuracy
  - Comparability



# Validation

- Peer reviewed research





Most scientists regarded the new streamlined peer-review process as 'quite an improvement.'

# Validation





# Documentation

- Research
- Methodology
- Verify equations
- Processes
- QA/QC





# Transparency

## Accessibility to all parts of model

- Documentation
- Equations
- Coding
- Inputs
- Outputs

Easily reviewed

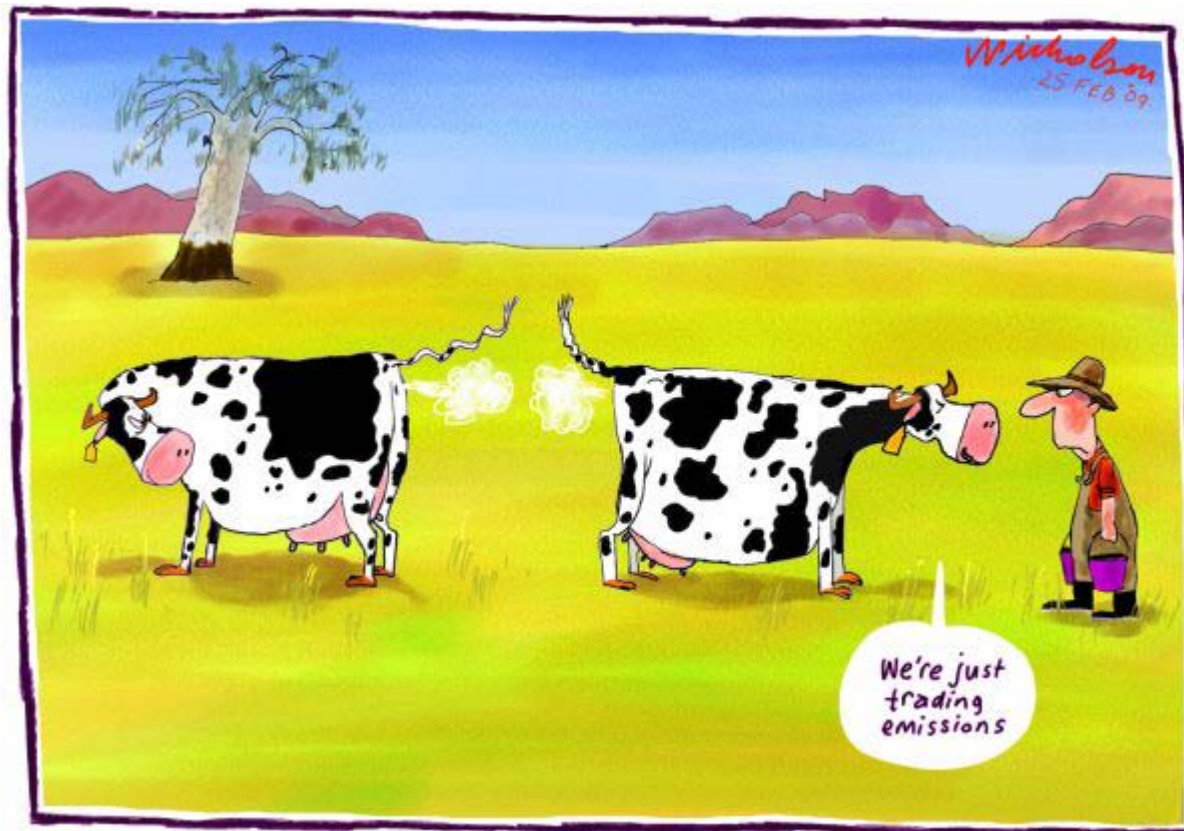


# Integration

## 2008 Domestic livestock methane emissions from enteric fermentation and manure management

Livestock type	Number of animals (single yr) (1000s)	Emission factor for enteric fermentation <sup>1</sup> (kg CH <sub>4</sub> /head/yr)	Emissions from enteric (Gg)	Emission factor for manure management <sup>2</sup> (kg CH <sub>4</sub> /head/yr)	Emissions from manure management (Gg)	total CH <sub>4</sub> emissions from domestic livestock (Gg)
Non-dairy cattle	4,137	56.6	234.23	0.692	2.86	237.09
Dairy cattle	5,578	77.1	429.95	3.299	18.40	448.35
Sheep	34,088	11.3	384.76	0.111	3.80	388.55
Goats	96	9	0.86	0.18	0.02	0.88
Deer	1,223	22.4	27.43	0.201	0.25	27.67
Horses	63	18	1.13	2.08	0.13	1.26
Swine	325	1.5	0.49	20	6.49	6.98
Poultry	19,761	NE	NE	0.117	2.312	2.31
Alpaca's	12	8	0.09	0.091	0.001	0.10
Total			1,078.93		34.260	1,113.19

# Emissions trading scheme





# Emissions trading scheme

- Annual emissions converted to lifetime emissions



# Emissions trading scheme

Per kg emission  
factor



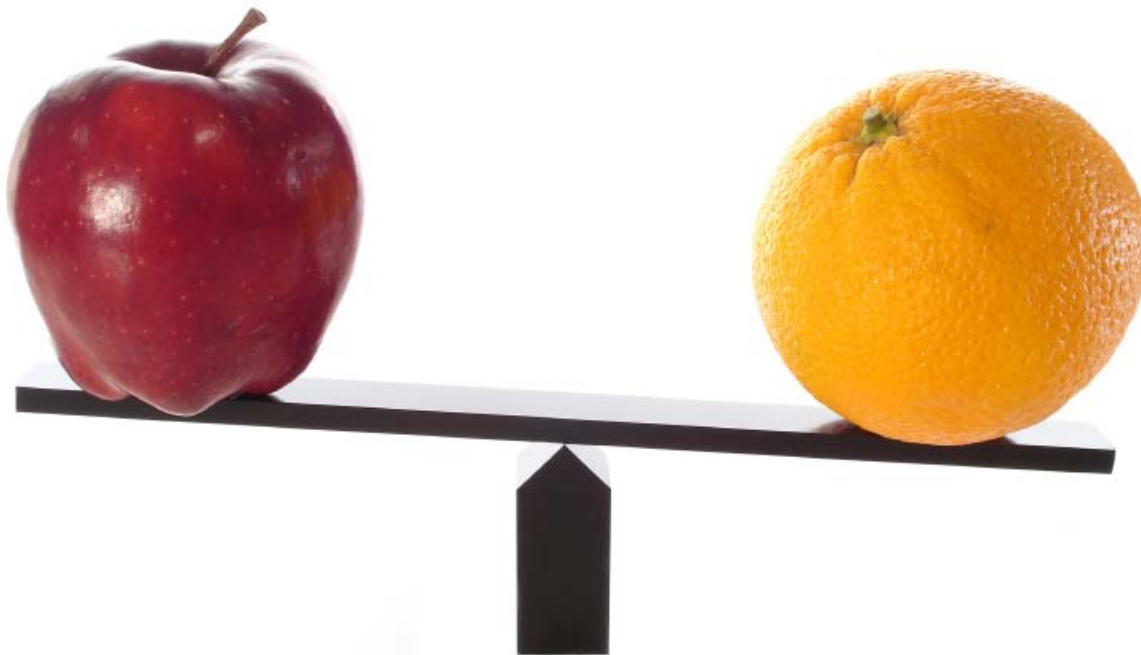
Per head emission factor



Milk solid emission  
factor



# Comparison of Inventory and ETS





# Possible improvements

- Regional ETS emission factors
- Monthly emission factors
- Unique emission factors



# Verification

- Processor level – use existing data
- May be able to help improve SOME activity data for Inventory
  - Encourage low emission research
  - Encourage further disaggregating of data
  - Encourage further collection of new data

