Climate Change Policy Overview and Recent Policy Developments

David Griffin
Climate Change Branch
Agriculture and Natural Resources Policy

Victoria
The Place To Be

June 2009

DEPARTMENT OF PRIMARY INDUSTRIES | policy and strategy

Outline

Opening Remarks

Part 1: National & State Policy frameworks

Part 2: Emissions trading - CPRS

Part 3: CPRS for agriculture & forestry

Part 4: Questions

Opening Remarks

Climate change

Biophysical impacts

Market and trade impacts

Policy impacts

Agriculture
Forestry
Fisheries
Adaptation / Mitigation responses

1: National Policy Agenda

- **Reducing emissions/improving productivity**
- **Livestock a focus for research**
- **National Framework for Climate Change R&D**
  1. Reducing Livestock Emissions R&D Program ($26.8m)
  2. Nitrous Oxide R&D Program ($11.8 m)
  3. Soil Carbon R&D Program ($20 million)

1: National Policy Agenda - Mitigation

Carbon Pollution Reduction Scheme (CPRS)

National GHG & Energy Reporting System (NGERS)

Renewable Energy Target (RET)

1: State Government Policies

Future Farming strategies and programs:

- Planning for Climate Change - $5.2m
- New technologies and strategies - $6.22m
- Drive innovation in the dairy industry - $8.57m
- Boost productivity through research, development and extension - $77m

1: State Government Policies

Victorian Government's Responding to Climate Change Program (R&D)

Reducing greenhouse gases from agriculture:

- $1.86m to reduce nitrous oxide emissions in high rainfall legume/wheat cropping systems;
- $1.7m to investigate nitrous oxide inhibitors for animal production systems.
- Better soil management:
- $1.65m for soil carbon cycle R&D for Victorian dairy, sheep, cereal and beef systems;

1: State Government Policies

Climate Change Strategy Green Paper Priorities:

- Position Victorian Industry to capitalise on opportunities
- Support private action to adapt to climate change
- Help regions, businesses and communities to adjust
- Build business and community awareness of climate change
- Planning and building standards support low emissions future
- Victoria's transport system to reduce emissions

1: Policy response

Policy options to address global market failure to reduce greenhouse gases

- A market based instrument: ETS v carbon tax
- Regulation – mandatory emission standards e.g. cars
- Public information and advice - codes of practice
- Public investment in innovation - R&D/ practice change
- Public investment in infrastructure – ports & channels
- Public subsidies and incentives - tax rebates

1. Emissions trading vs Carbon tax

National target…X tonnes of GHG emissions by date Y

What gives us the best chance of hitting that target?

- Tax = Cost is known ($ set by government) but emissions quantity actually reduced (extent of response to a given price) is not known.
- Emissions trading = quantity to be reduced (cap) is known (set by government) but price is not known (let the market decide)

1. Other considerations in GHG mitigation:

- Ability to find 'least cost' / economically 'optimal' solutions
- Link to international trading schemes
- Globally or regionally tradeable commodity
- Incentives for research, innovation, new industries
- Administrative simplicity
  - Broad coverage of economy but minimal number of parties regulated
- Risk management / hedging through derivatives market
- Government assisting structural adjustment.

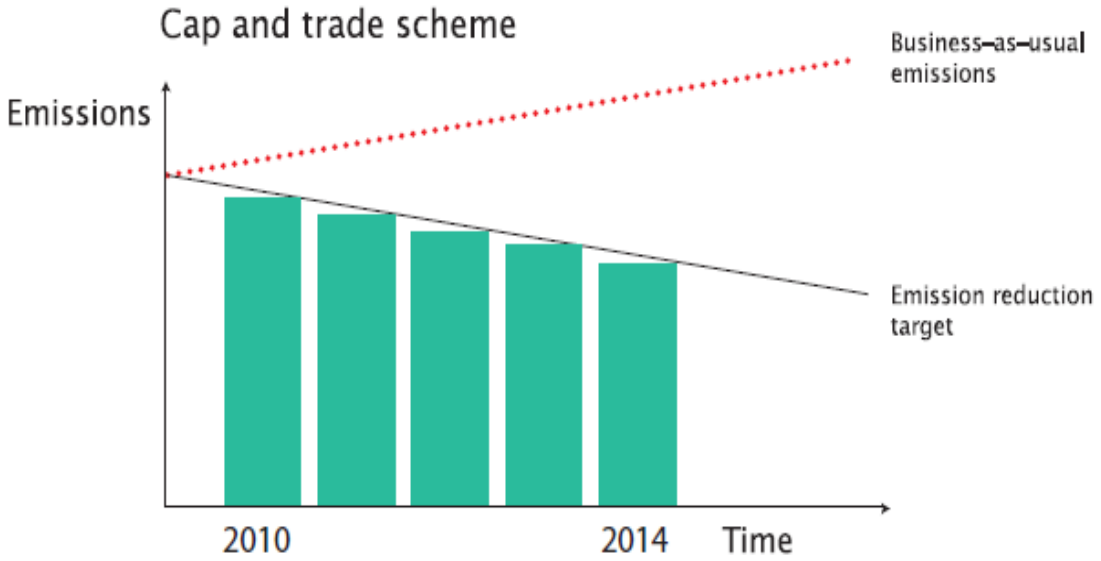
'Cap & Trade' emissions trading……..on balance the best option

2: Carbon Trading – how does it work?

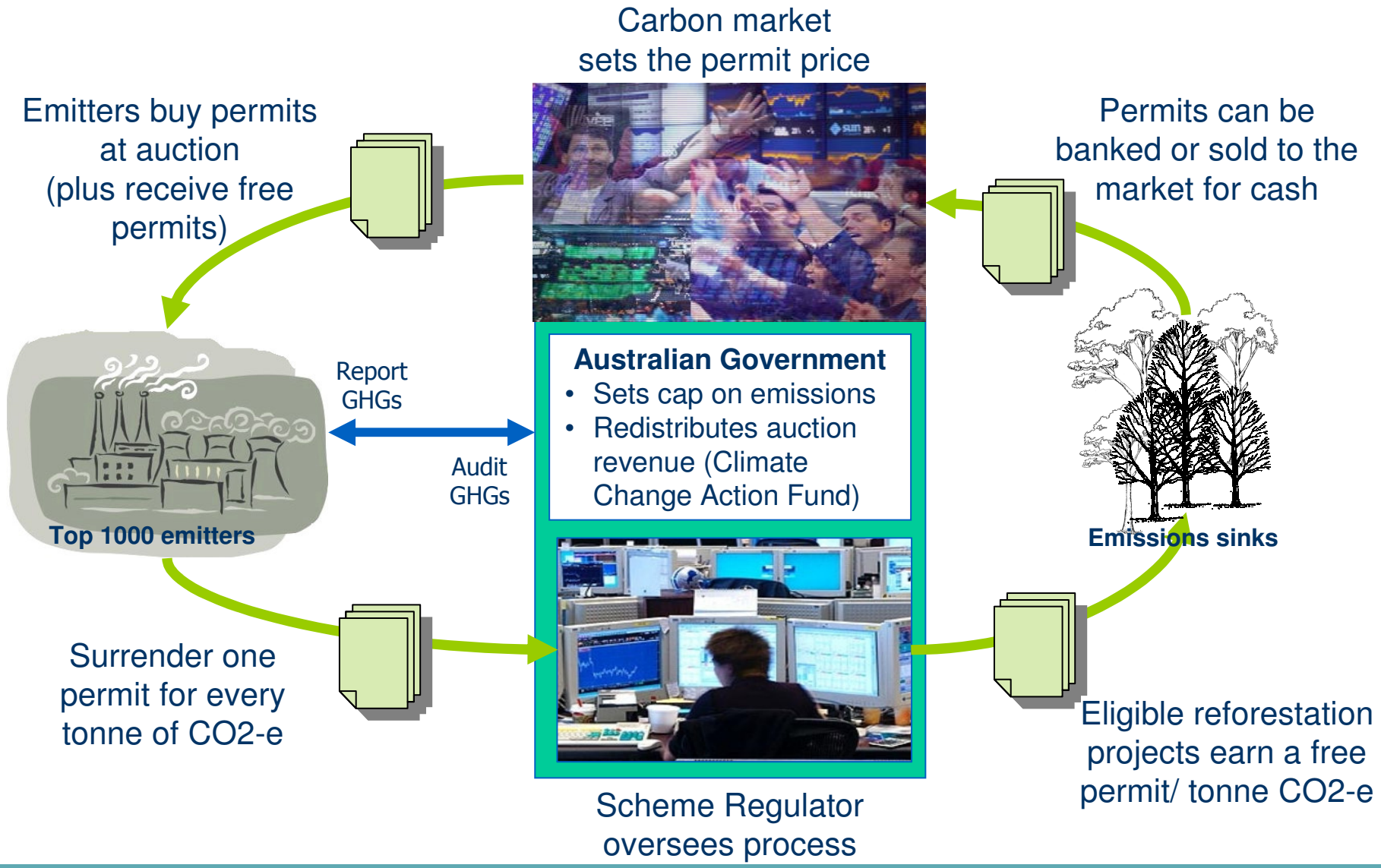
- Governments set a 'cap' on amount of pollution permitted
- Number of permits to be issued are limited (the 'cap')
- Large emitters (liable parties) need to acquire a carbon
- pollution permit for every tonne of emissions
- Note: No emission limits on individual entities
- Permits have a value – carbon becomes a cost of production
- Emissions are monitored and audited
- Surrender of permits at the end of the compliance year
- Permits can be traded (and spare ones 'banked')
- The 'cap' (availability of permits) is progressively reduced

2: Carbon Trading – how does it work?

- Liable parties (directly impacted)
  - –measure, report, manage, purchase & surrender permits
  - –absorb or pass costs on or generate income
- Non-liable parties (indirectly impacted)
  - –no reporting or permit management
  - –will pay carbon cost through purchase of goods & services



2: Carbon Trading – How does it work?



2: Carbon Trading - International

Kyoto Protocol

- Global cap and trade system for Annex 1 signatories (ratified 2005)
  - Cut GHGs to 95% of 1990 levels by 2012
  - Australia's 108% of 1990 levels by 2012
- NZ ETS under review,
  - forestry included from 1 January 2008
  - proposed inclusion of agriculture 2013
- EU 10% reduction from sectors not covered in EU ETS, such as agriculture
- US early stages of ETS

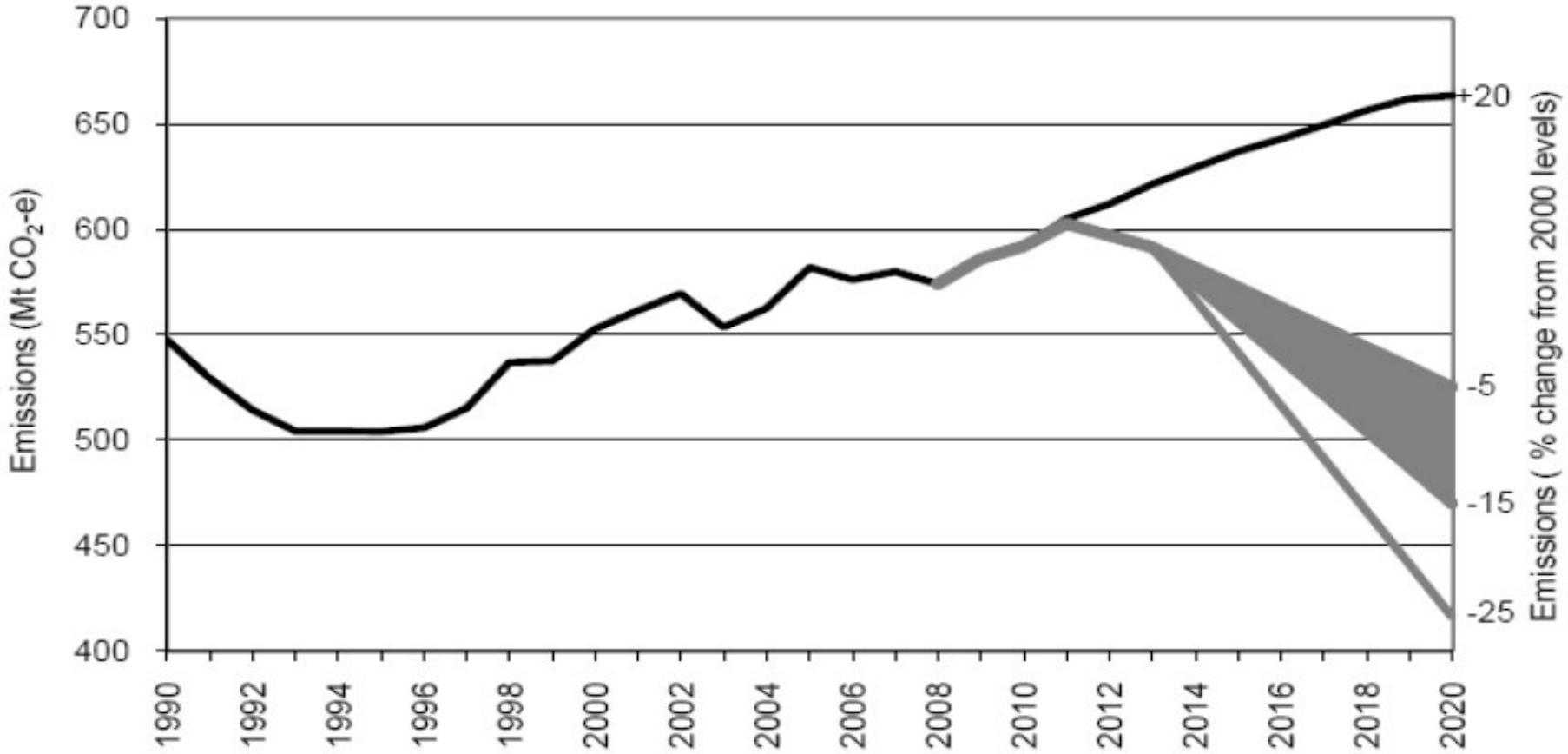
2: National Carbon Pollution Reduction Scheme

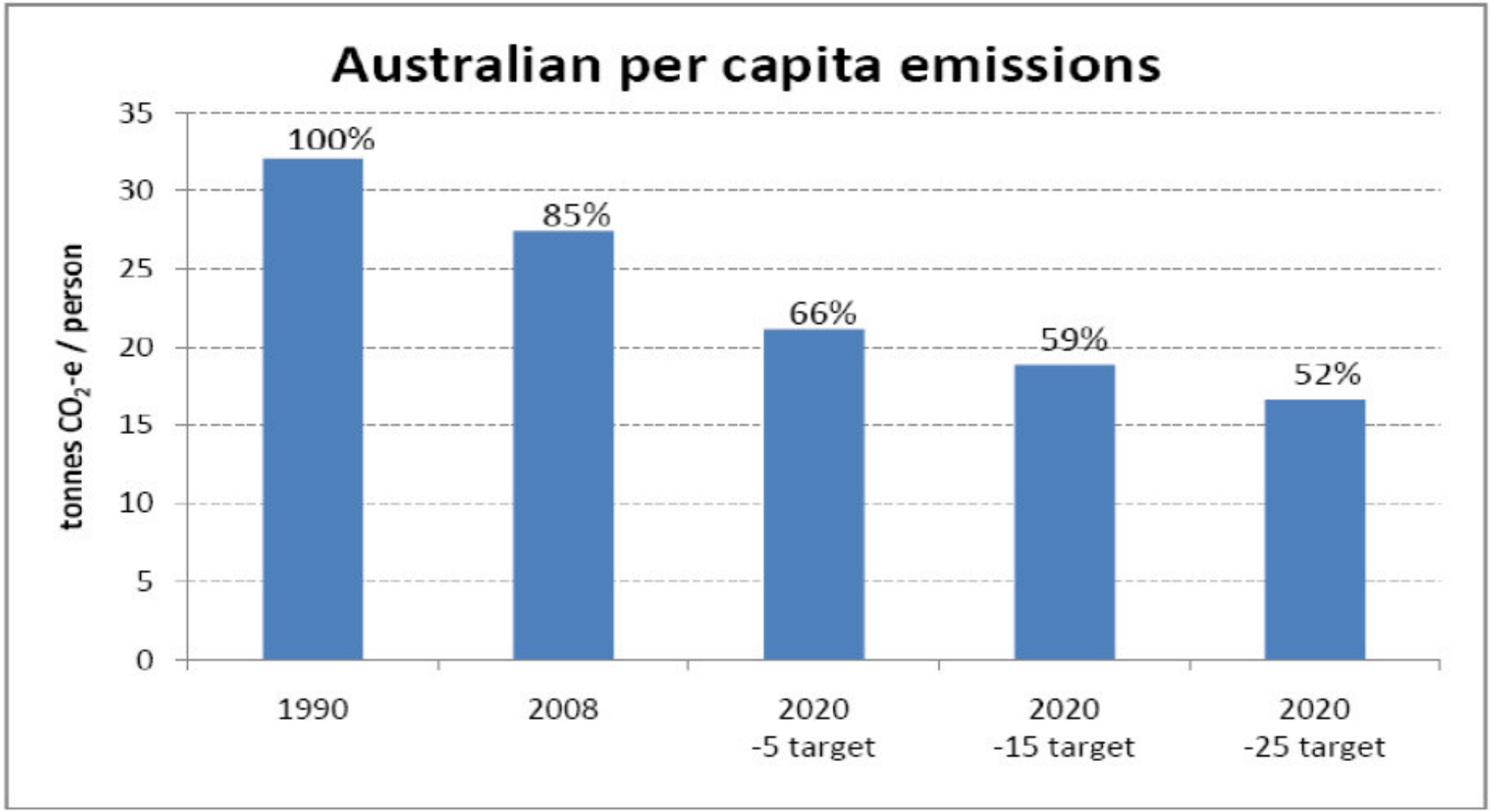
Carbon Pollution Reduction Scheme

Softer/ delayed start but tougher 2020 target

- 5-25% cut on 2000 levels by 2020
- Targets top 1,000 emitters
- Covers stationary energy, transport, industrial processes, waste and fugitive emissions (75%)
- Agriculture not included (until at least 2015)
- 1 July 2011 @ $10/ tonne CO_2e
- Permits only valid in 2011-12
- Reforestation projects eligible from 01/07/10

2020 target range: 5-15 and 25 per cent reductions on 2000 levels




Australian per capita emissions
tonnes CO_2-e / person
35
30
25
20
15
10
5
0
100%
85%
66%
59%
52%
1990
2008
2020
-5 target
2020
-15 target
2020
-25 target

2: Every player wins a prize?

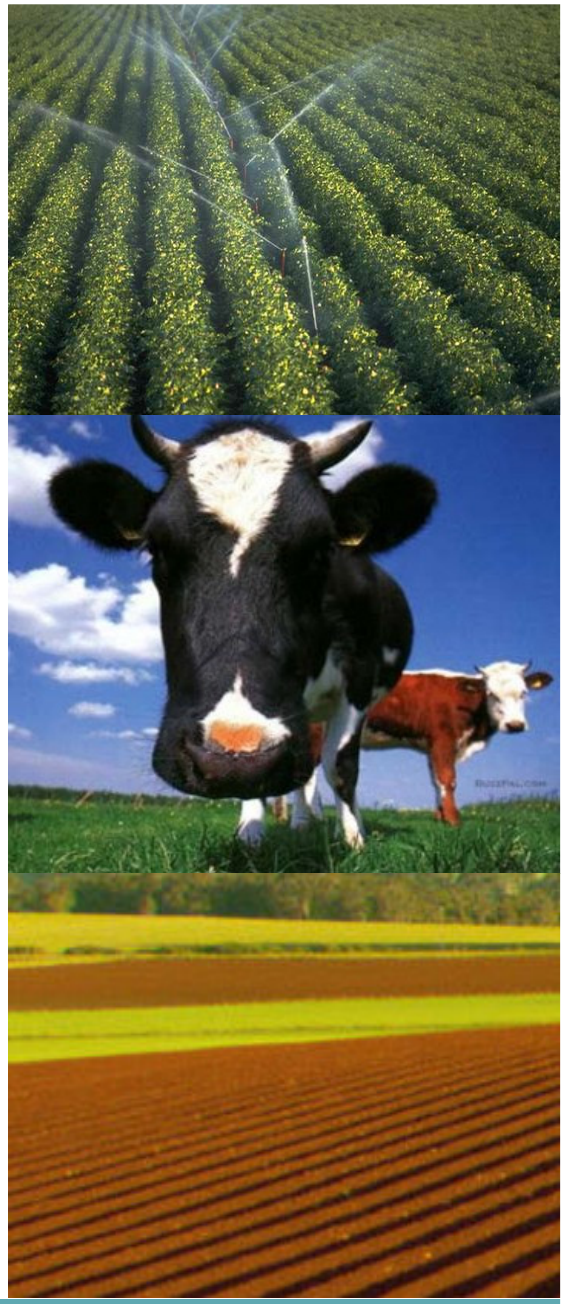
Government to redistribute CPRS revenues to:

- Emissions Intensive Trade Exposed assistance:
  - aimed at moderating transitional and sectoral impacts:
  - potentially high impacts on some sectors
- Increased compensation for EITE:
  - 94.5% for high emitters
  - 66% for medium emitters
- Lower socio-economic households
- Fuel tax (excise) adjustments
- Renewable Energy Target (20% by 2020)
- Australian Carbon Trust ($75.8 million)
  - Energy efficiency projects for households and small businesses
  - Voluntary permit cancellation

3: CPRS – What about agriculture?

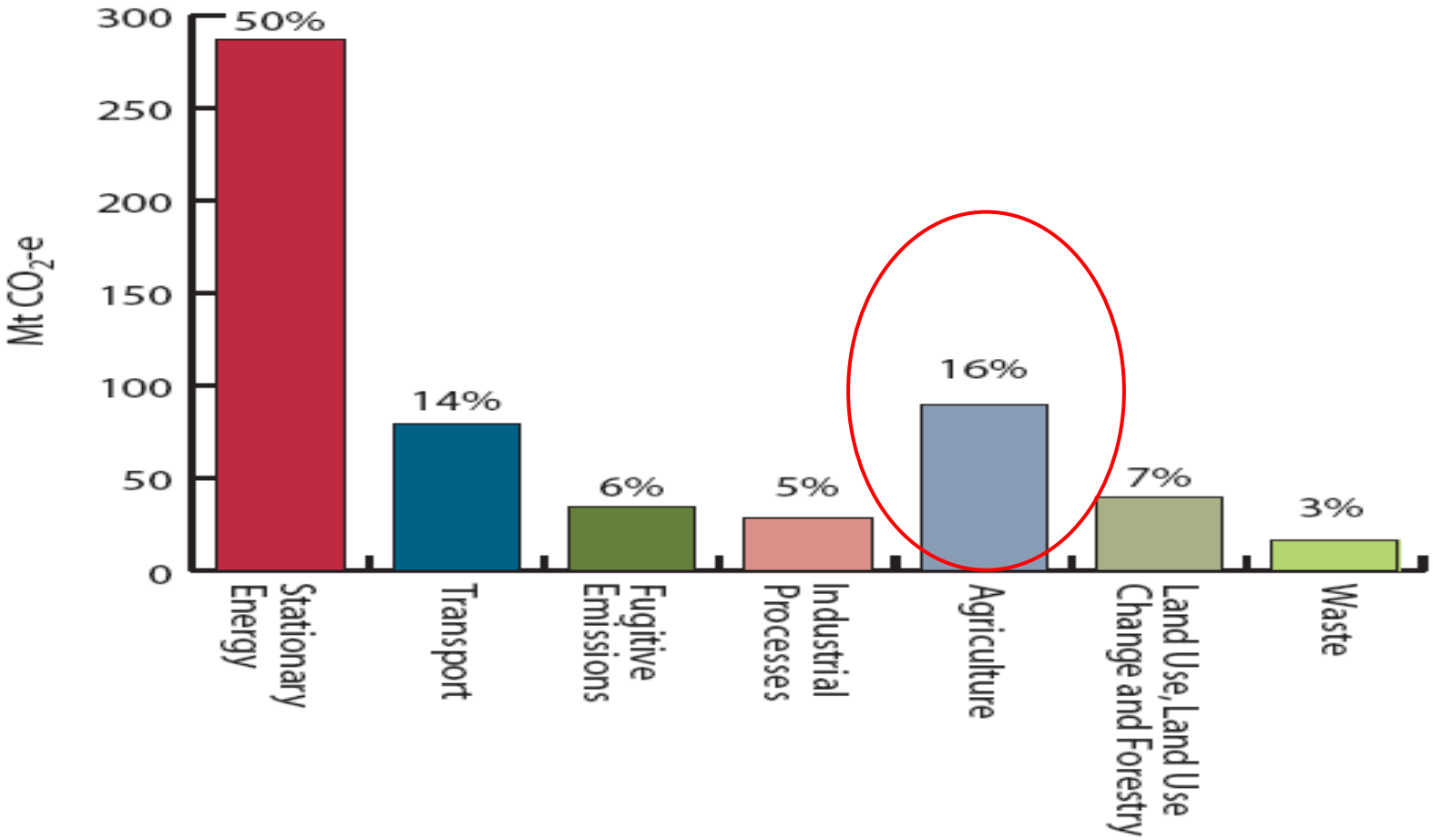
Agriculture's inclusion deferred until at least 2015

- Final decision in 2013 (coverage vs offset provider)
- No agricultural offsets prior to 2015
- Commonwealth's preferred position to include agriculture but some easing of hardline stance
- Work program commencing in 2009 to support this decision
- Mandatory emissions reporting to being in 2011



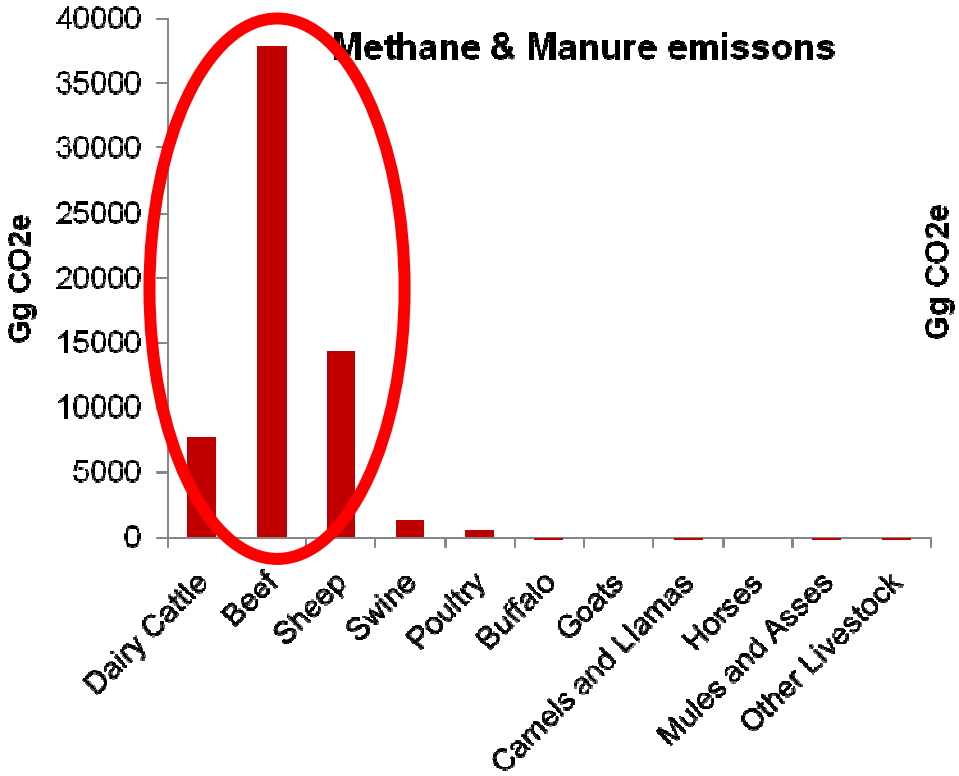
3. CPRS – What about agriculture?

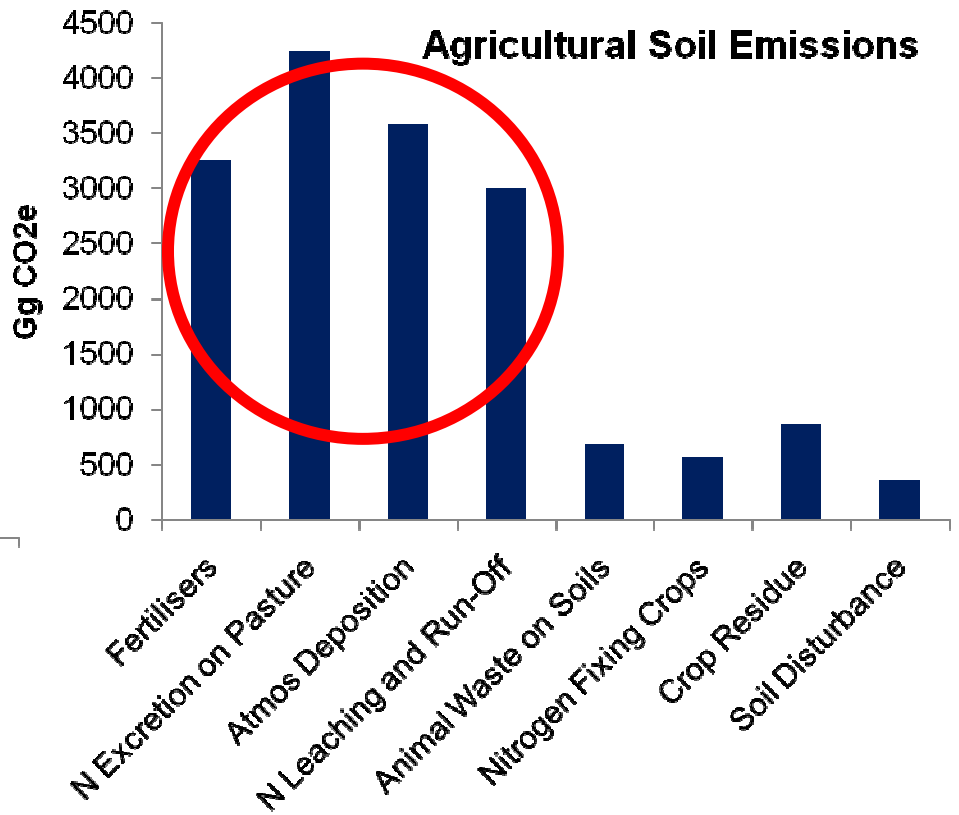
Carbon emissions by industry sector (DCC 2008)



3: CPRS – What about agriculture?

Australian Methane and Nitrous Oxide sources



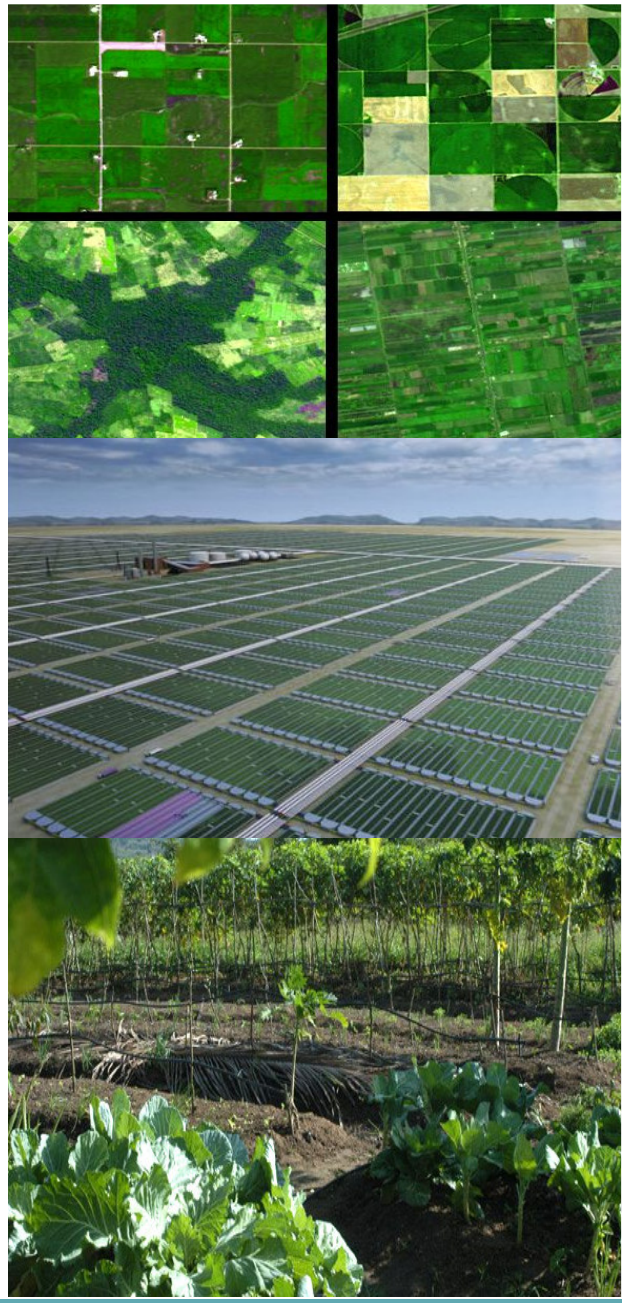


3: CPRS – What about agriculture?

If included in the CPRS:

- New threshold: less than 25,000 tonnes of emissions per annum
- New Zealand to include agriculture as a covered sector by 2013
- Covered agriculture eligible for EITE assistance in 2015-16:
  - 94.5% for beef, sheep, dairy
  - 66.0% pigs and sugar cane
- Decision to be made on point of obligation – farm level or processor?

3: CPRS – Design Issues for Agriculture



Points of Obligation:

Downstream processor obligation

- based on product throughput
- less accurate GHG estimates
- lower transaction and assurance costs

Farm level obligation

- varying production systems
- large number of participants
- higher transaction and assurance costs
- improved mitigation incentives

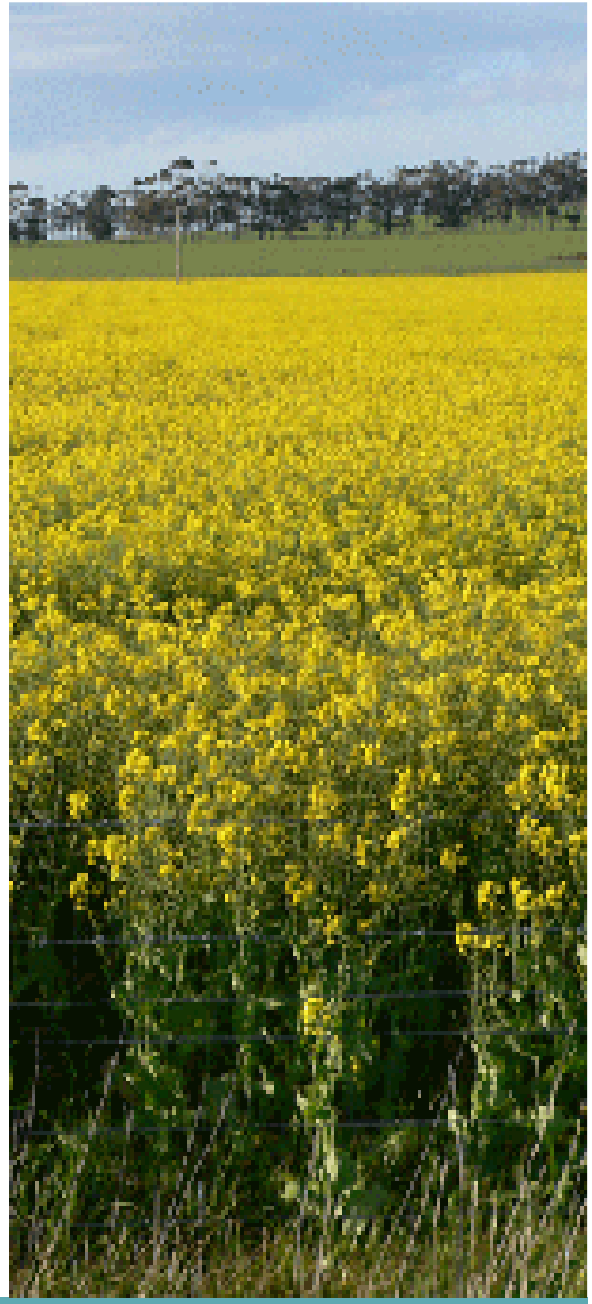
Trade-off costs versus accuracy

- transaction costs versus reporting accuracy
- GHGs ≠ units of output @ farm gate
- on farm incentives vs ease of admin

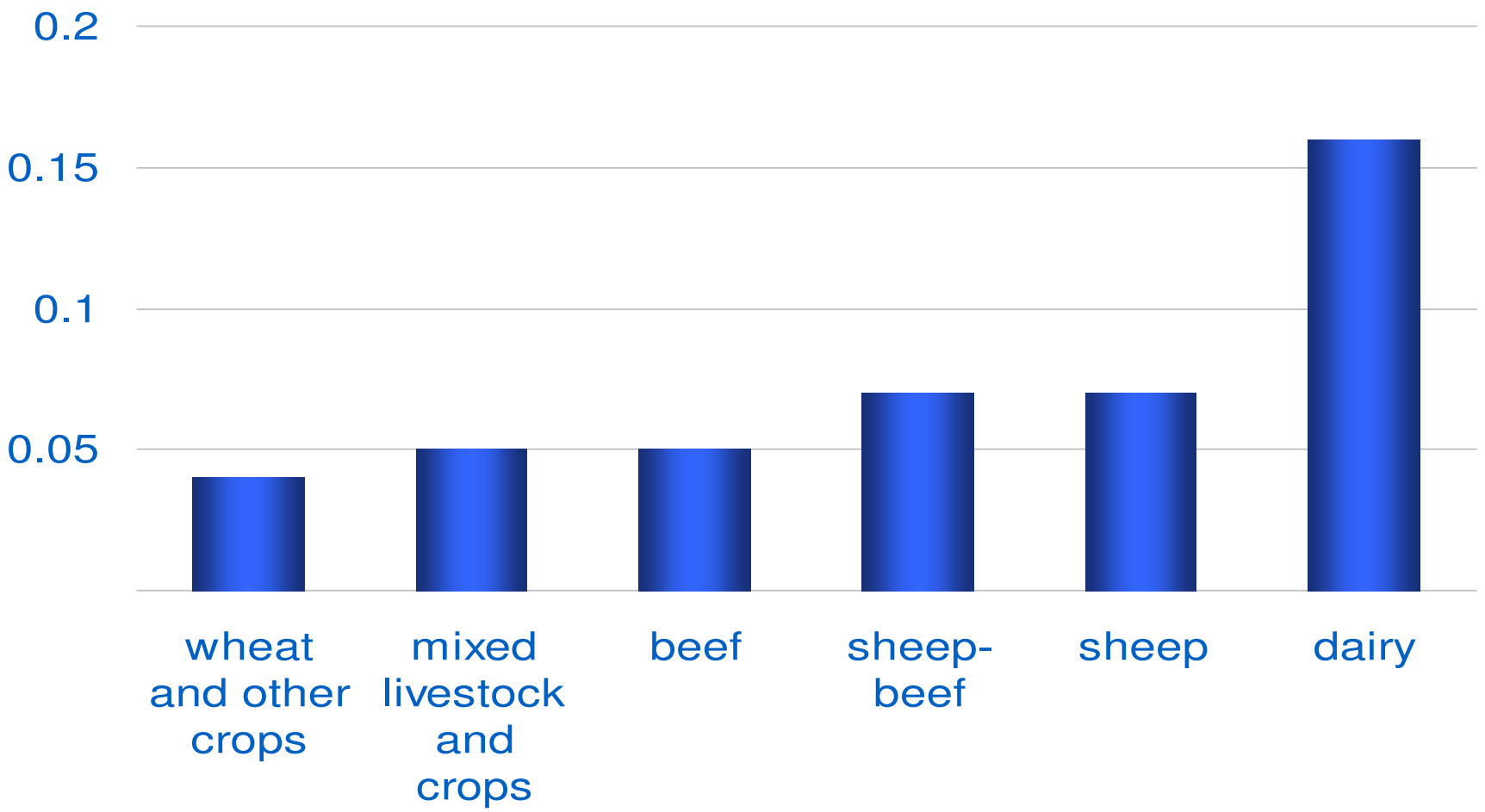
3: CPRS – Implications for Agriculture

Impacts will vary depending on:

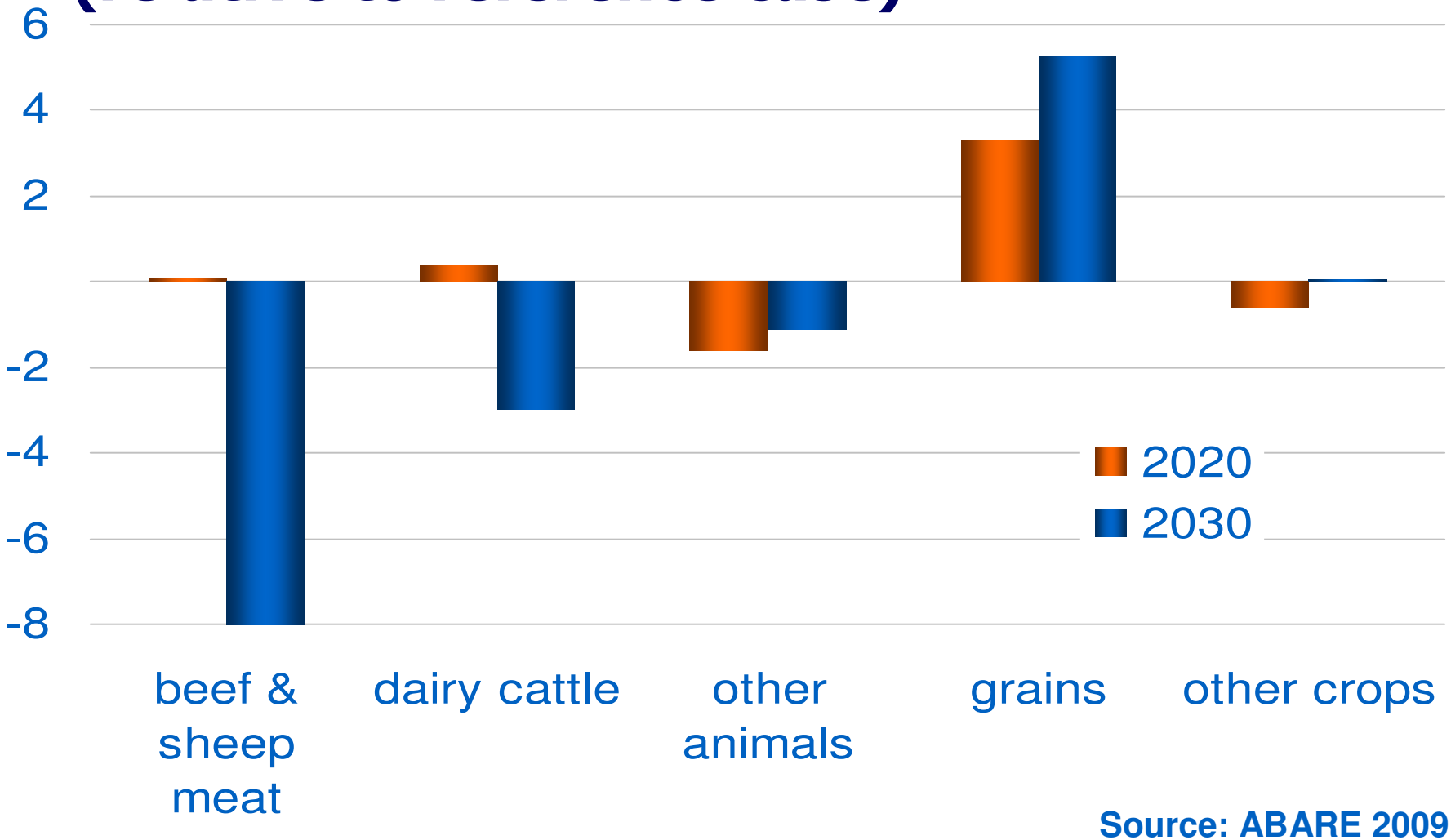
- type of business: e.g. livestock vs. cropping
- energy & input intensity of business
- distance to markets
- management practices
- opportunities for reforestation



3. % change in agricultural input costs in 2011

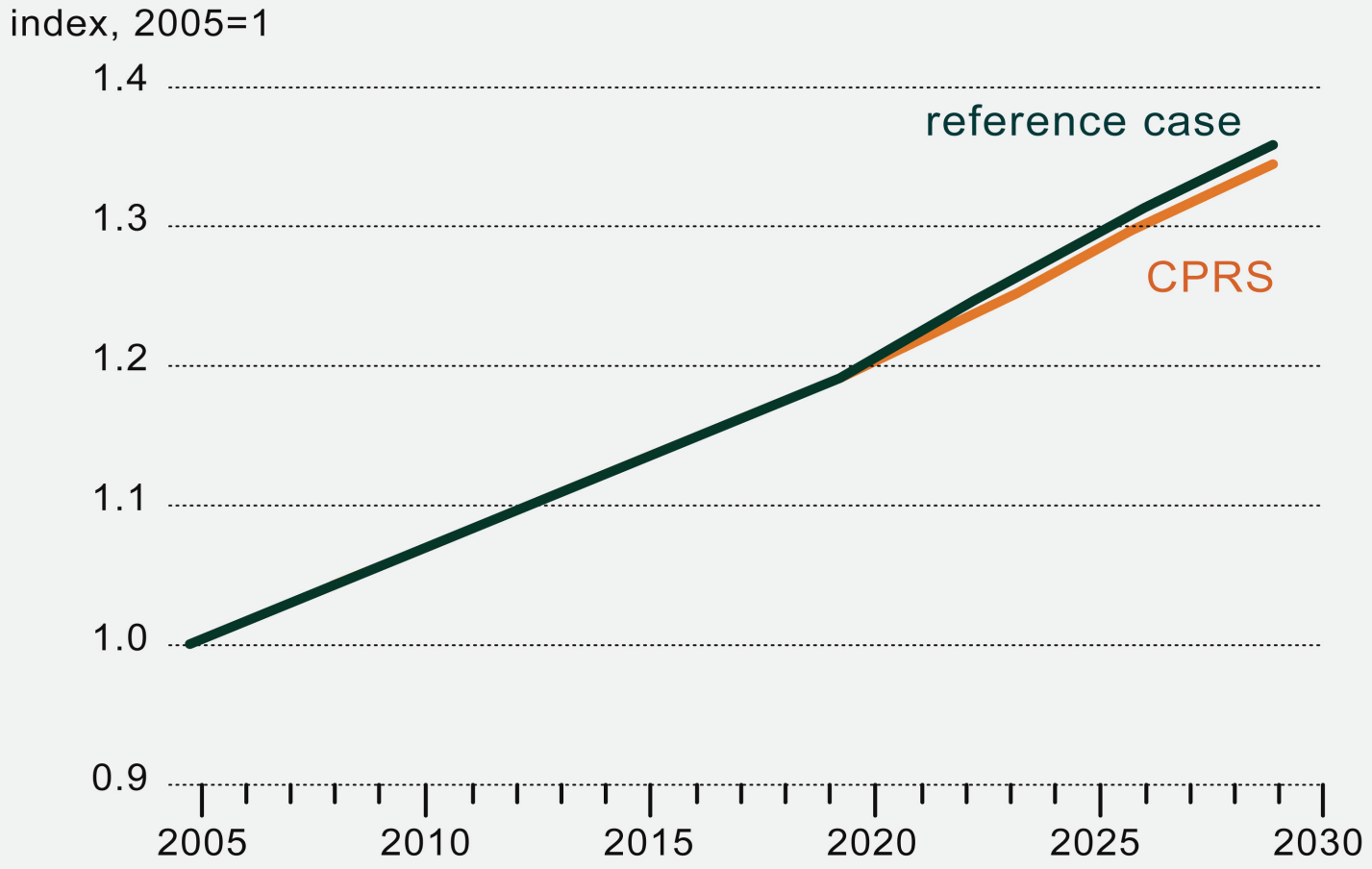


Modelled CPRS impacts in 2020 & 2030 – (relative to reference case)



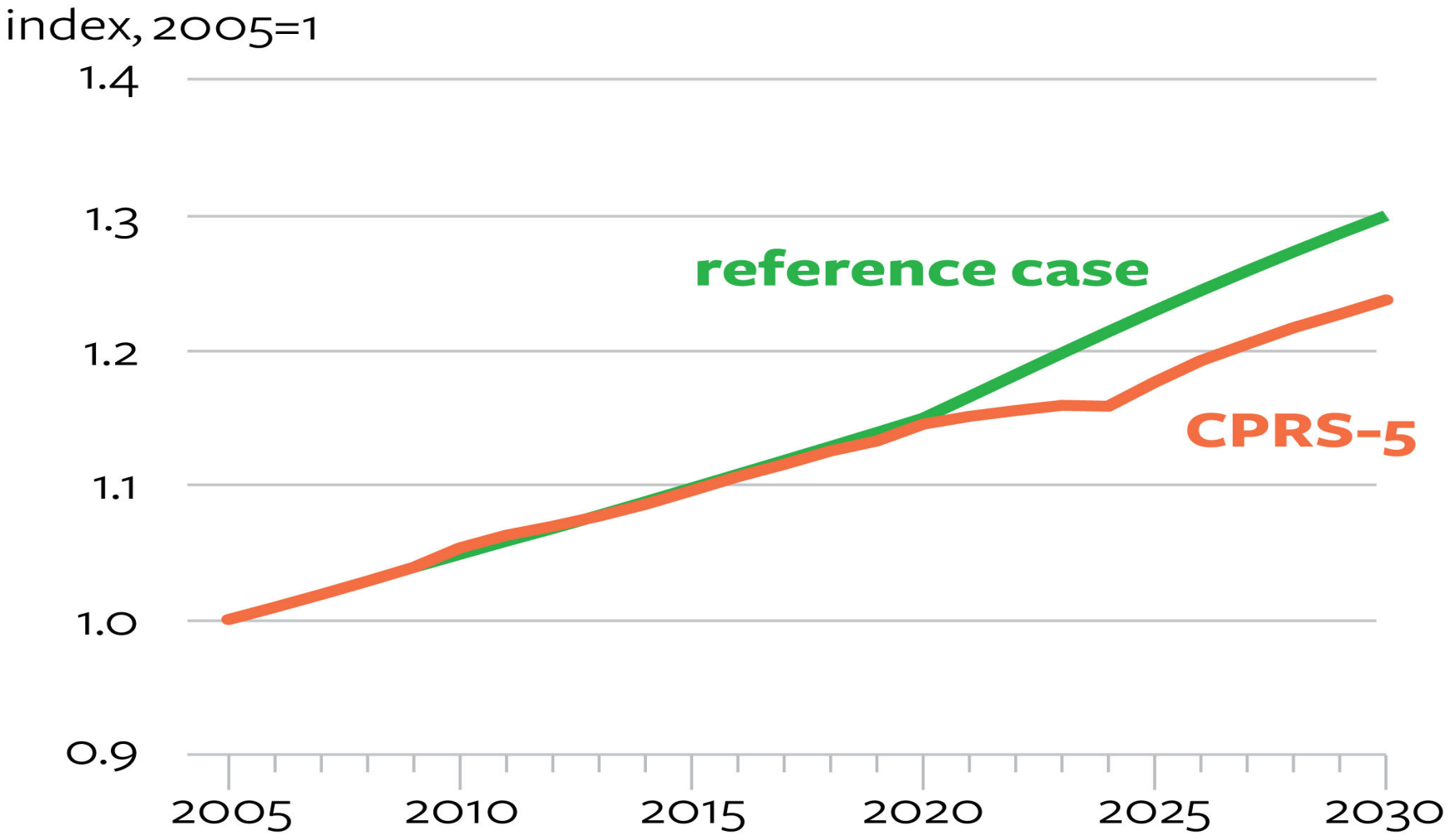
Source: ABARE 2009

Value of agricultural output



innovation in economics abare.gov.au

Output of livestock



3: Agriculture's challenges for CPRS design

Technical & logistical challenges for farm sector:

- >130,000 farms nationwide – higher transaction costs
- Technical challenge of measurement
- Limited opportunities for mitigation
- Trade-off between efficiency and on-farm incentives
- Global GHG net reductions = reduced food production?
- Forecast linear growth in world food demand
  - Nitrogen fixed % protein in human diet
  - Implies doubling of Nitrogen inputs to agricultural production
  - Agricultural N20 emissions likely to rise
- Australia's food production supports ~ 55m

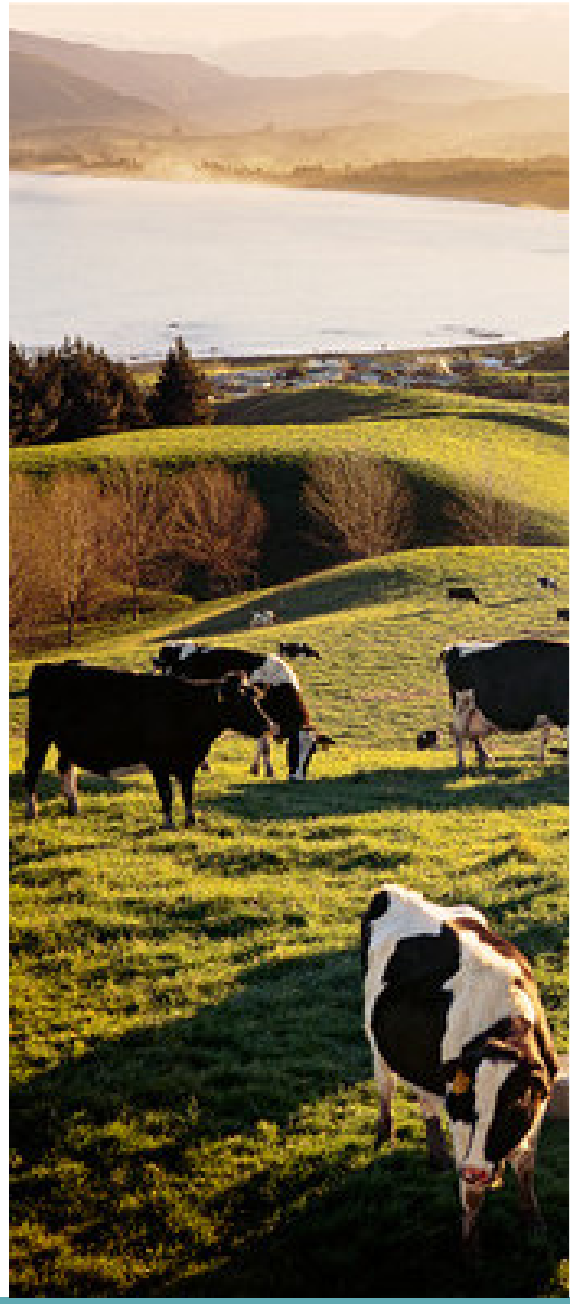
3: Alternatives to CPRS

Fonterra pushing a baseline & credit scheme in New Zealand

- Point of obligation on farm for CH4 and N2O;
- Focused on reducing GHGs not production;
- Incentives to on farm R&D & technology adoption;
- No impost for best practice operators

Victoria & NSW jointly exploring feasibility and merits of alternative policies to the CPRS:

- Information based
- Other market based instruments
- Promoting R&D and innovation on farm



3: CPRS - Reforestation

- Reforestation included on a voluntary basis from 2010:
  - based upon Kyoto Article 3-3
  - forest stands of at least 0.2ha x 2m x 20% canopy cover
  - projects must remain for 100 years
- Eligible participants:
  - landowners
  - certain forest & carbon owners
- Harvested wood products excluded but Commonwealth to lobby for international inclusion
- Avoided deforestation not included in the CPRS – laws are in place in Australia to prevent deforestation

Opportunities

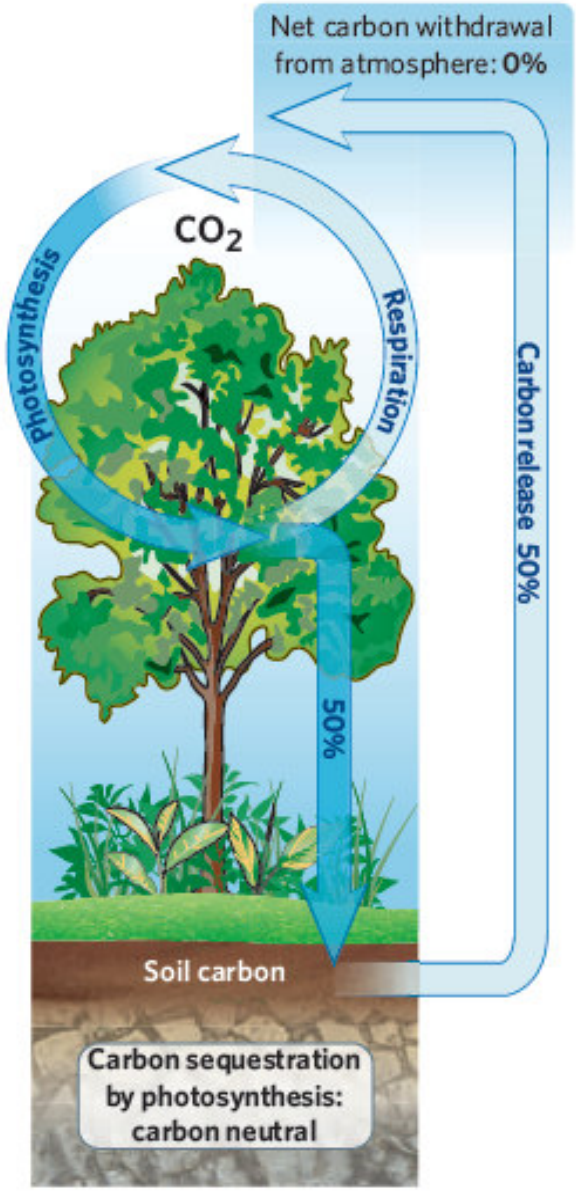
Towards a greener future

- Position food and fibre exports as low carbon footprint
- More efficient farm production processes = improved profitability
- Build on existing farm sector productivity gains
- Rural R&D to develop new technologies and practices to raise productivity & reduce emissions
- Promote adoption of proven commercial technologies and practices to reduce livestock and soil emissions
- Explore viable carbon offsets on farm
- Exploit emerging carbon and bioenergy markets

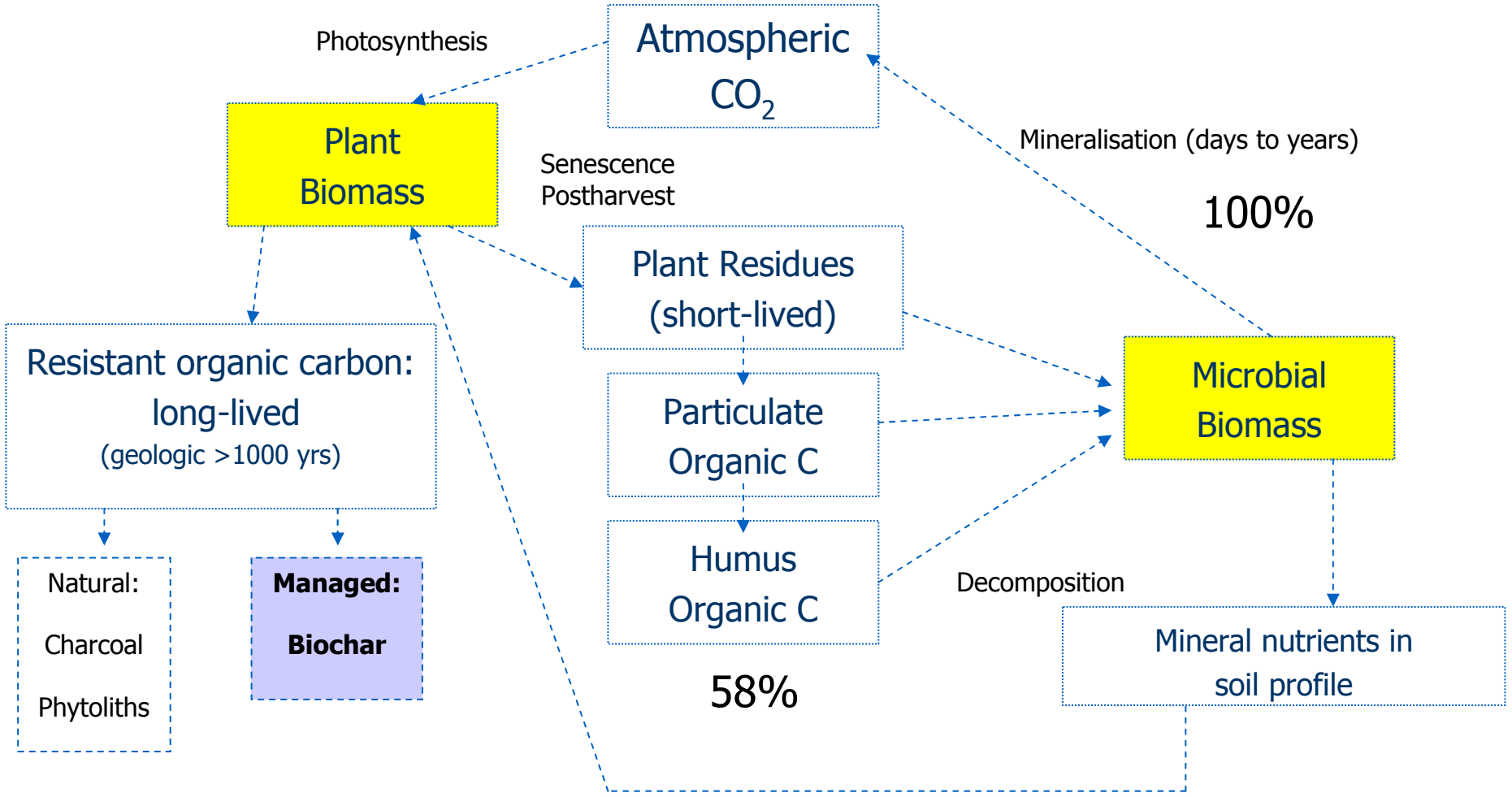
DEPARTMENT OF PRIMARY INDUSTRIES | policy and strategy

3: CPRS - Soil carbon

- Kyoto Protocol Article 3.4
- Soil carbon cycle – CO2 in / CO2 out
- Biochar – potential carbon store?
  - potential source of bioenergy
  - potential for retaining soil moisture
  - potential for retaining nutrients
- Improved soil carbon = improved soil health = improved productivity
- Pasture roughly carbon neutral – until you put cattle or sheep on it
- Cropping more or less of an emitter depending on usage of fertilizer and tilling pratices



3. The carbon cycle in soils – it comes and goes



3. Soil as a carbon store – how can we tell?

Soil as an ecosystem:

- dynamic and complex physical, chemical and biological processes, functions and services
- changes occur slowly but significant due to scale (34m. ha under crop)

Soil as a carbon store:

- 55% of Australia's continental carbon store
- Victoria's average carbon (OM) content 1.6% (0.5-8.0%)
- Equiv. 64t/ha of carbon (OM) over 10 million ha (DPI, 2009)
- Victoria's carbon store ~ 640m. tonnes (OM, 370m. tC), current practice

Managing the carbon store (agronomy):

- potential increase 1.6 t/ha/yr under pasture
- potential increase 0.5 t/ha/yr under crop

Measuring the carbon store:

- carbon increase does not exceed detection errors until 20 years

3: CPRS – Implications for Forestry

Incentive for permanent plantings - carbon sinks

- Treasury estimated: 5-40m ha new trees by 2050 (1.82m ha now)
- Plantations 2020 Vision 3m ha nationally by 2020
- Boost for not-for-harvest plantings

Weaker incentives for plantations – smaller sinks

- Harvest sub-rule (permit liabilities cannot > permits earned)
- Lower carbon credit reflects rotation length
- Uncertainty over post-2012 Kyoto rules for forestry & HWP
- Limited to Kyoto compliant forests (post-1990)

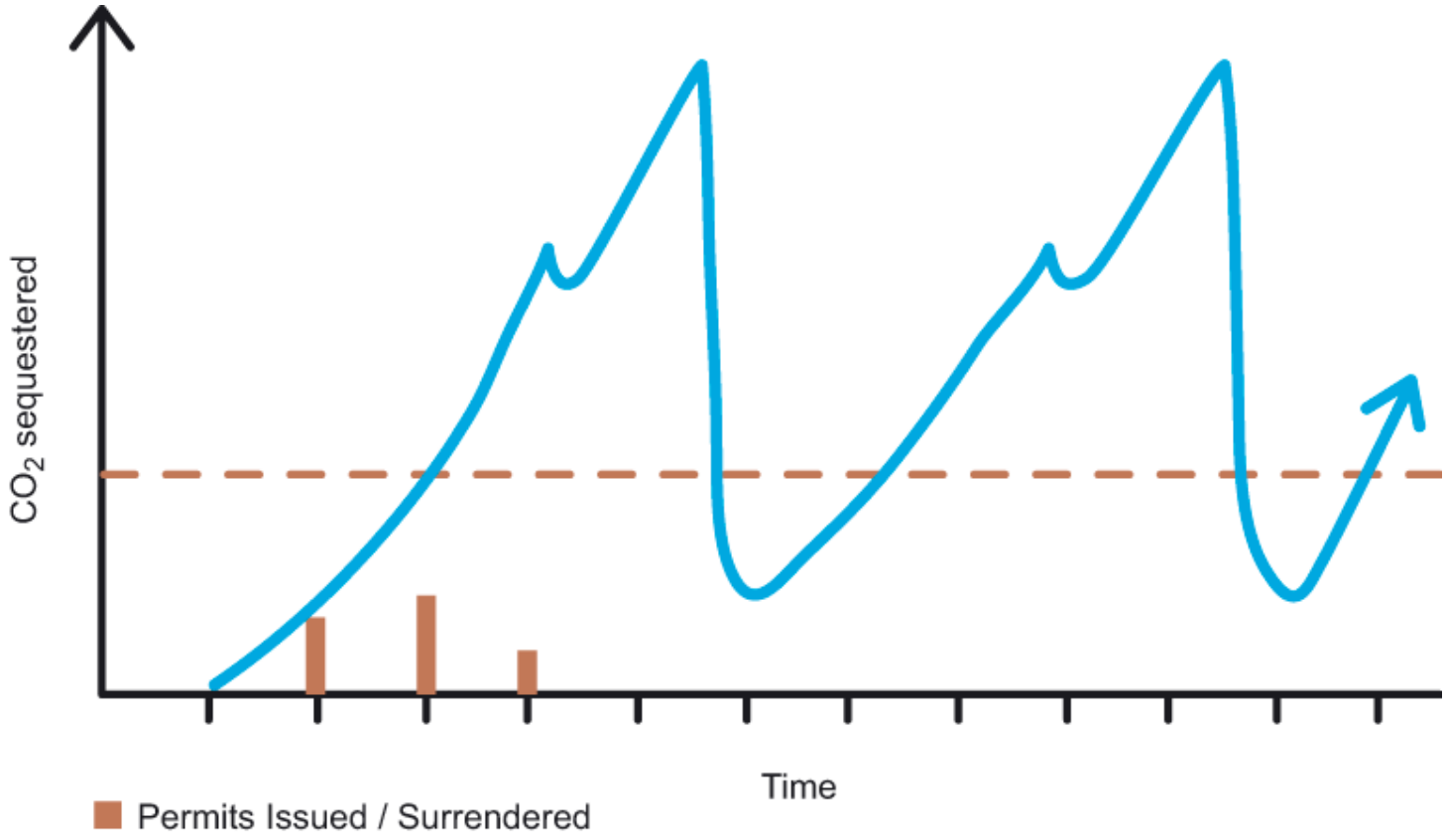
3: CPRS – Implications for Forestry

Measurement & Reporting requirements

- Initial accreditation requires forest management plan
- Annual reporting by exception
- Periodic audit & reconciliation every 5 years
- 'Average crediting basis'
- Relinquishment obligation buffer

3: CPRS – Implications for Forestry

Average Accounting - Rotation x 2



3: CPRS – Implications for Forestry

Average Accounting – Permanent plantings