7-8 August 2012
Hay, NSW
Re-valuing our rangelands

CARBON MARKETS AND MARKET INFLUENCES

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Discussion Points

- Carbon Farming Initiative
- Continued Obligations
- How Do You Get Started
- Rangeland Restoration Methodology
- Carbon Markets

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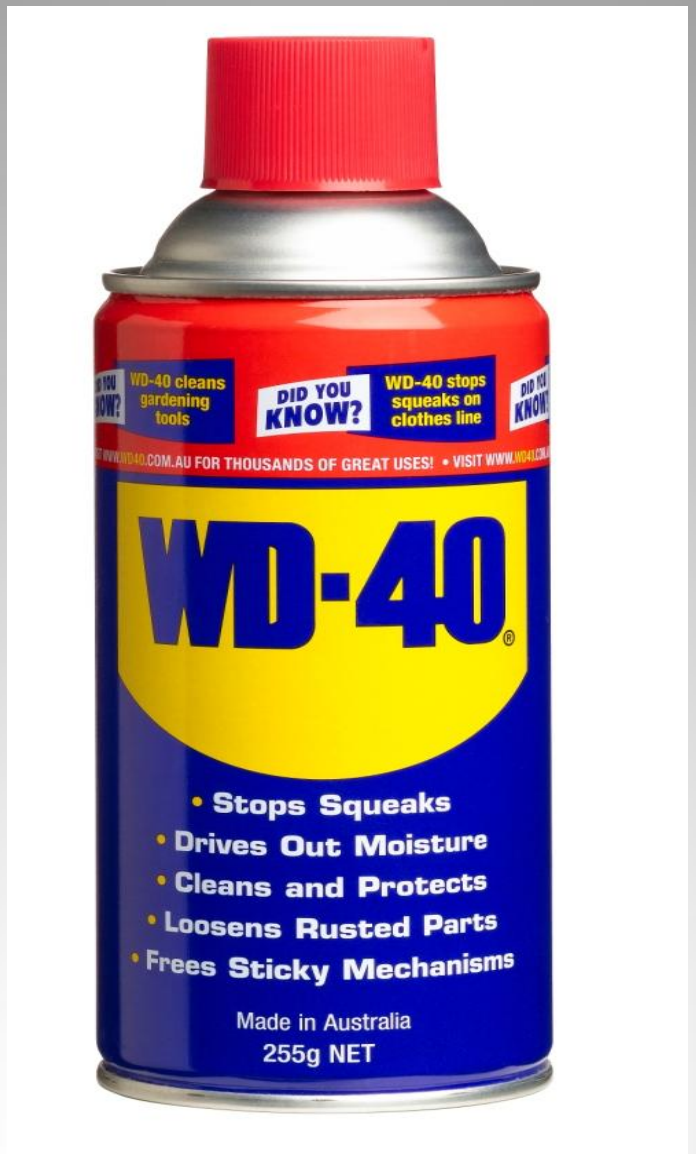
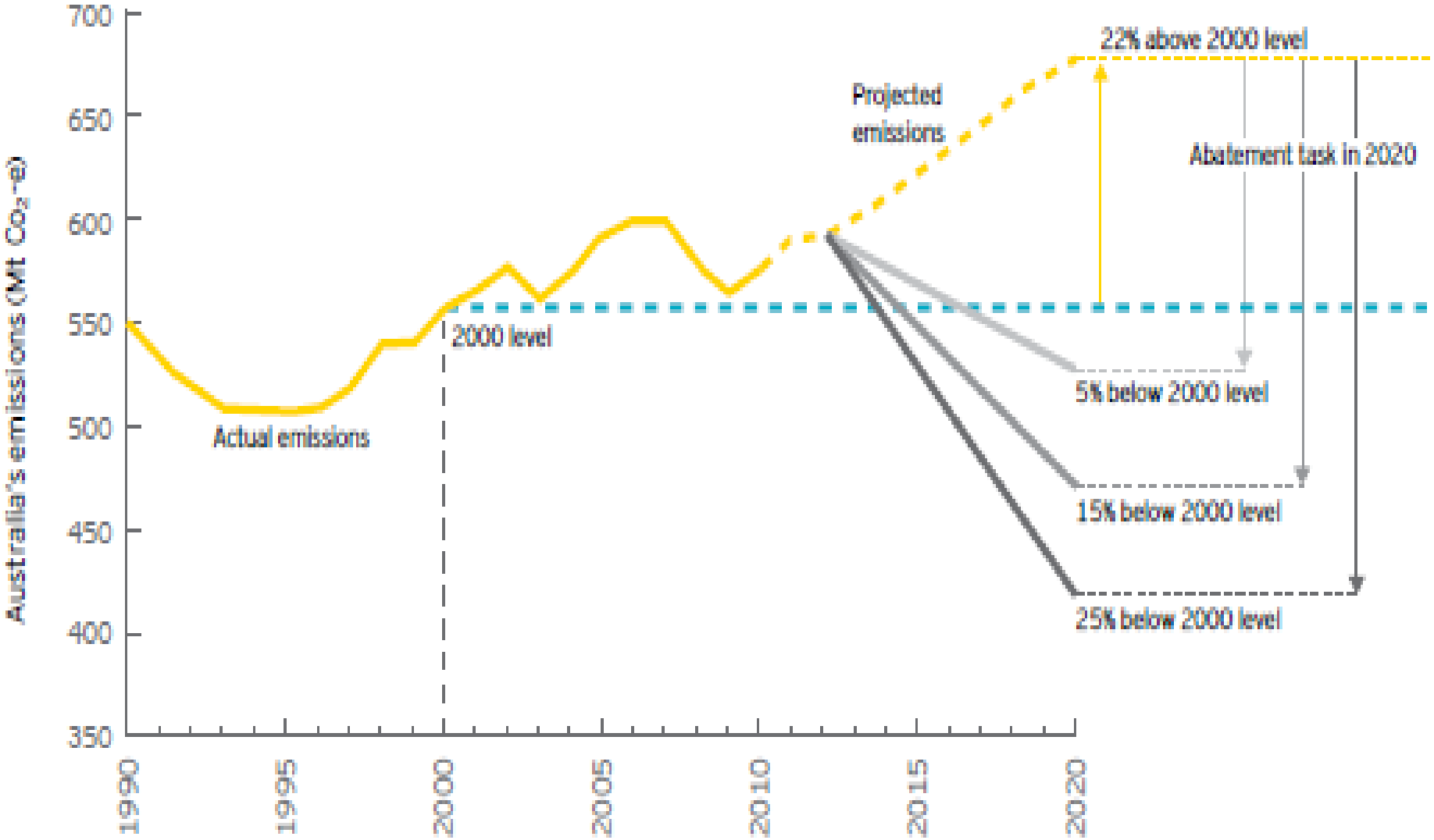

WD-40 cleans gardening tools
DID YOU KNOW?
WD-40 stops squeaks on clothes line
WWW.WD40.COM.AU FOR THOUSANDS OF GREAT USES! • VISIT WWW.WD40.COM
WD-40
• Stops Squeaks
• Drives Out Moisture
• Cleans and Protects
• Loosens Rusted Parts
• Frees Sticky Mechanisms
Made in Australia
255g NET



Source: Treasury modelling, 2011 (medium global action scenario).

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Carbon Farming Initiative (CFI)

- Clean Energy Futures Legislation passed Senate 23 Aug 2011.
- Clean Energy Act includes Carbon Pricing Mechanism (CPM) linked to CFI aims provide financial incentive farmers, forest growers and land managers develop projects to reduce or sequester GHG emissions.

Carbon Sequestration (storage)	Emissions avoidance (at the source)
• Reforestation, revegetation, restoring rangelands, •Increasing soil carbon and protecting native forests or vegetation	• Methane from livestock / feral animals •Savanna Burning •Emissions from manures • Emissions from Nitrogen fertiliser

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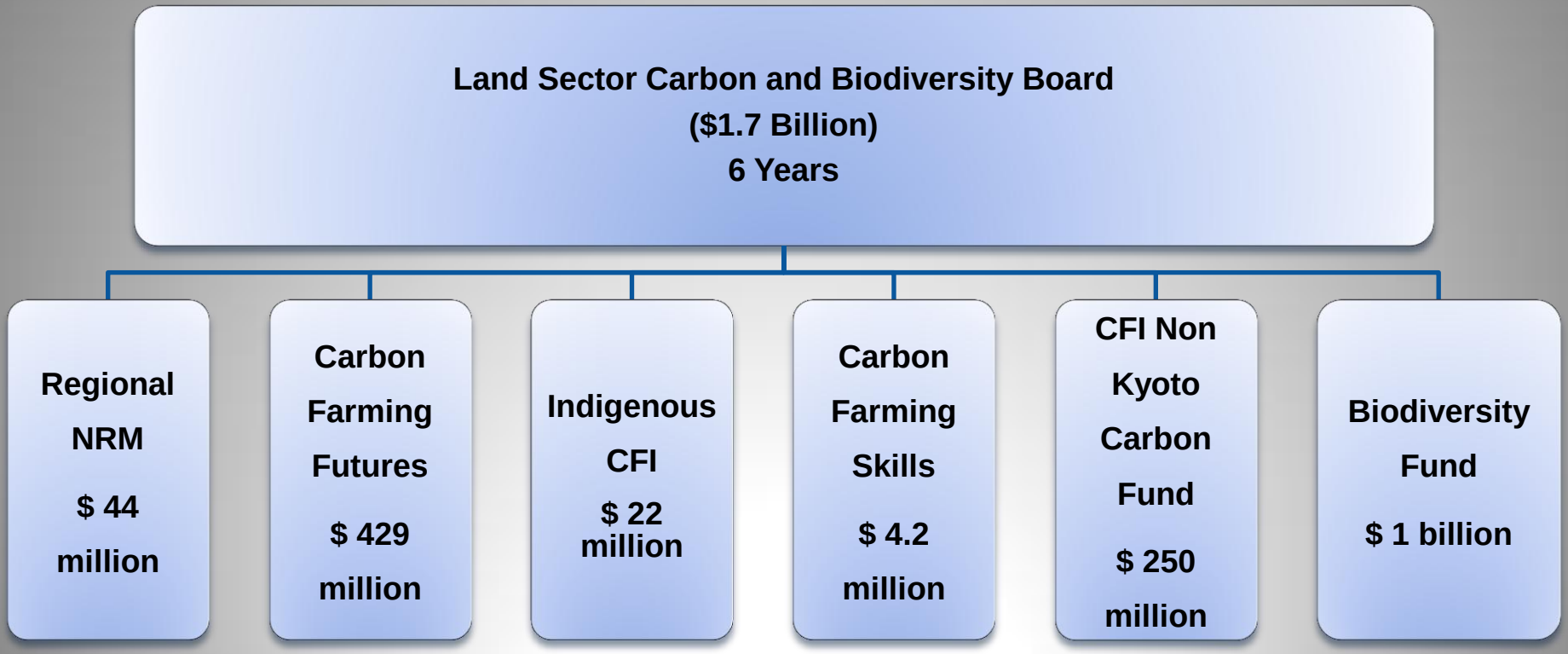
Land Sector Packages



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The Carbon Currency

- Each tonne of carbon dioxide equivalent (CO_2e) emissions that is reduced or stored will be rewarded with one “Australian Carbon Credit Unit” **(ACCU).**

1 tonne reduction or sequestration of CO_2e = 1 ACCU

- Kyoto compliant vs Non-Kyoto compliant ACCUs

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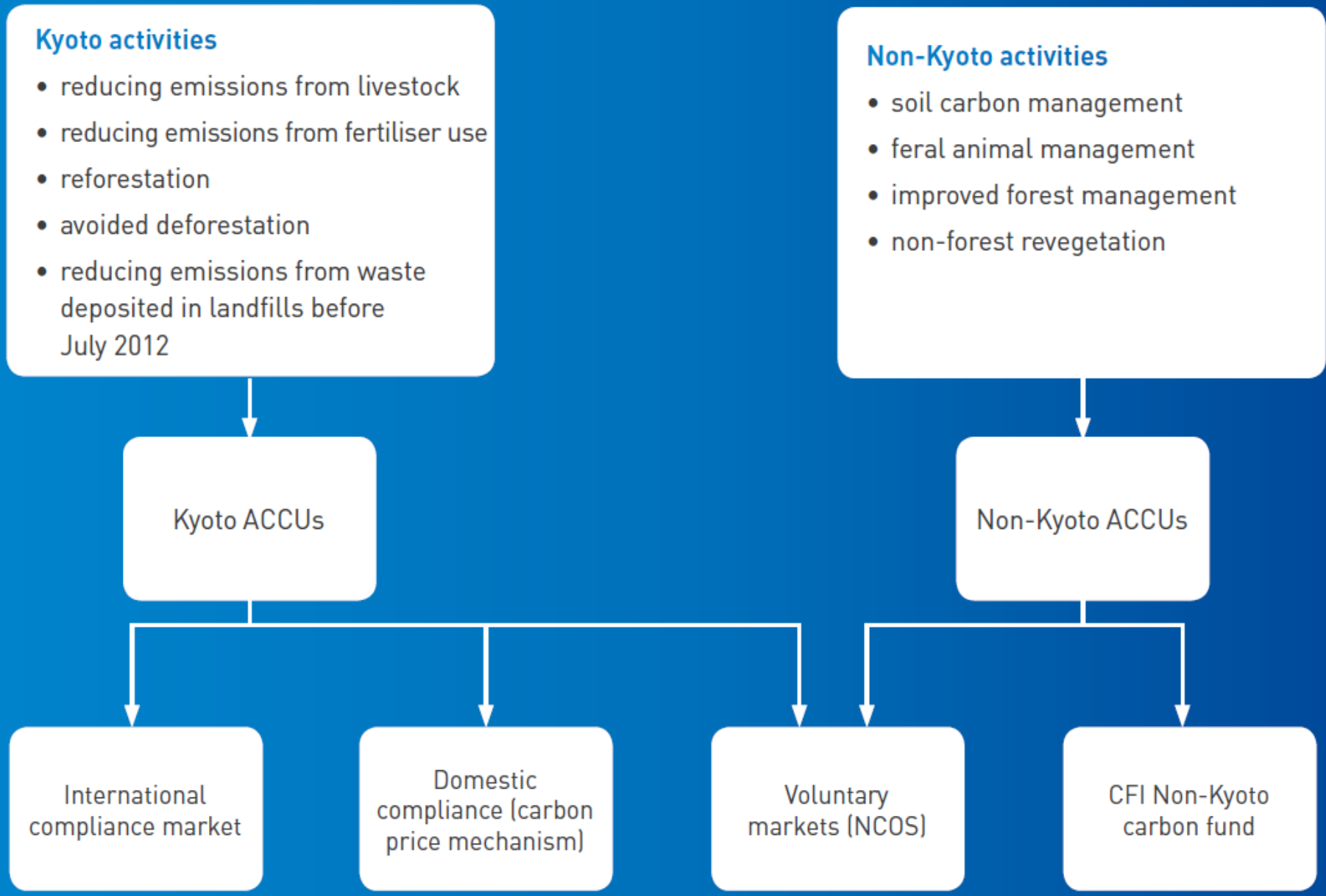

Note that after 2012, abatement from Kyoto activities will be issued with compliance ACCUs.

CFI – Eligibility Criteria

- Additionality
  - not required by law and going beyond common practice (business as usual)
- Permanence
  - 5 % insurance + noted on land title + 100 year commitment
- Leakage
  - Emissions rising outside of project boundaries
- Measurable and verifiable
  - Min. every 5 years and not within 12 months previous report
- Conservative - assumptions
- Internationally consistent – Natl. Greenhouse Accounts

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Positive List

- Vegetation and wetland restoration projects
  - The establishment of permanent tree plantings
  - Regeneration of native vegetation
    - Management and timing of grazing
    - Feral animal management
- Legacy Landfill Gas Projects – pre 1 July 2012 waste
- Livestock Management / Other
  - Livestock manure combustion
  - Application of biochar to soils
  - Savanna fire management
  - Reduction of methane by manipulating ruminant digestive process

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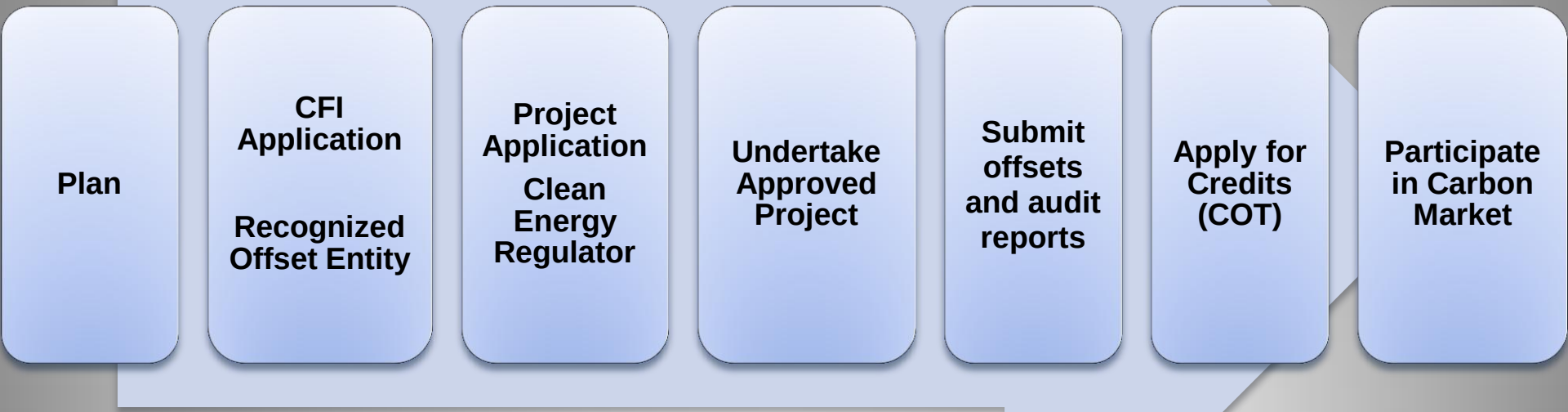
Undertaking a CFI project



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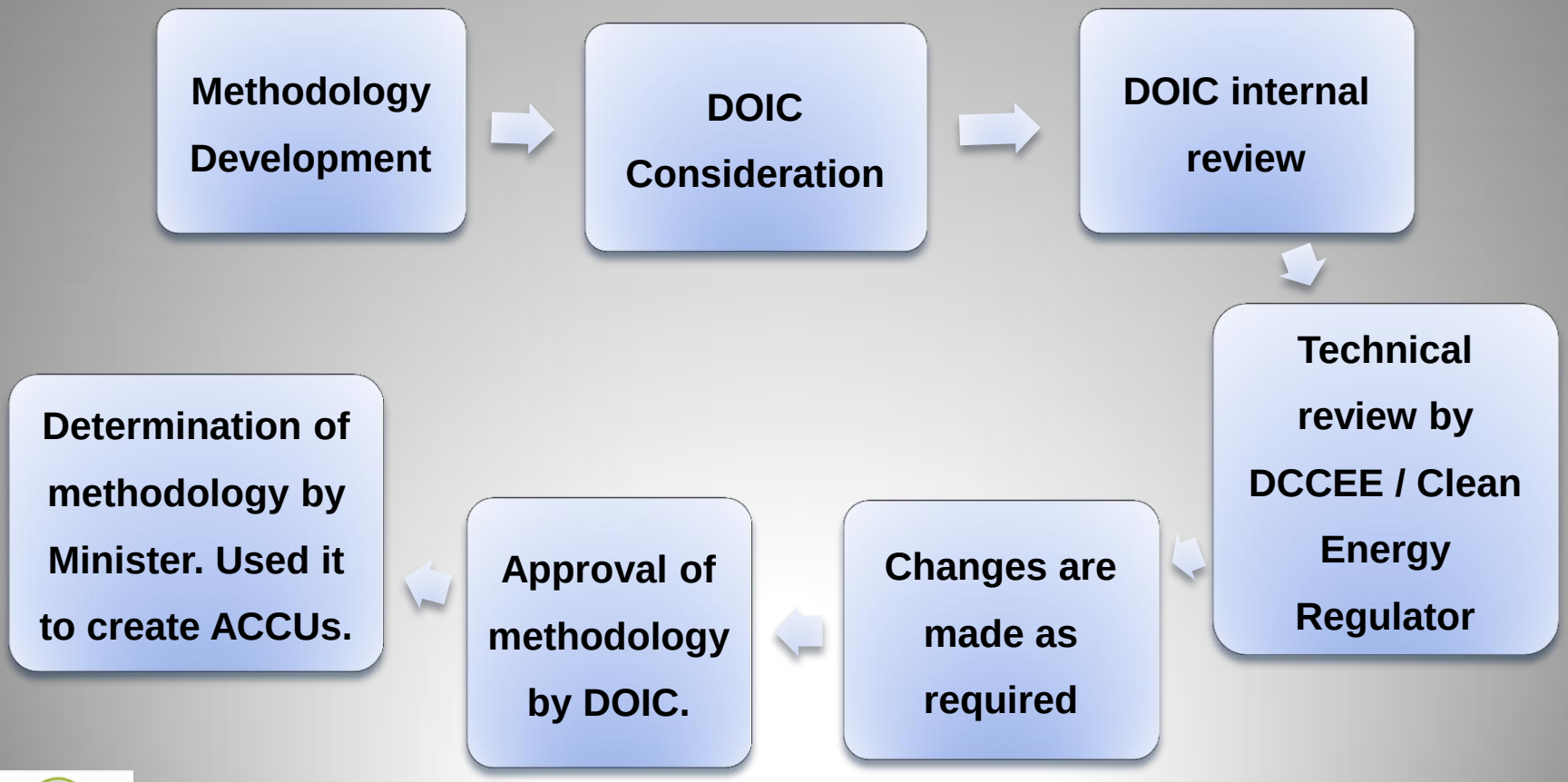
How can I participate?

- Do you have the legal right to conduct project? Carbon Rights?
- Consent of persons having an interest in the land?
- Obtain necessary water, planning and environmental approvals consider regional NRM Plans.
- Confirm eligibility criteria (Additionall + Leakage etc)
- Approved CFI Methodology?
- Positive or Negative list?

Methodology Development



CFI Project Methodology	Methodology description
Methodology Approved and Determination made	
Environmental plantings	Reforestation of areas that have been cleared prior to 1990.
Methodology Approved and waiting Determination	
Capture and Combustion of Landfill Gas	Collection and combustion of methane from legacy waste
Destruction of methane generated from manure in piggeries	Combustion of the methane from biogas captured in anaerobic digester ponds.
Savanna Fire Management	Reducing emissions from late dry season fires.

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Methodology Submitted and under Consideration	
Measurement-based methodology for farm forestry projects	Establishment of trees on agricultural land that was previously clear of woody vegetation.
Native forest protection projects	Protection of native forests through the prevention of clearing and clear felling harvesting activities.
Reforestation and afforestation	Reforestation of cleared land and afforestation on land where no forests previously existed in order to sequester carbon.
Management of large feral herbivores (camels) in the Australian rangelands	Removal of feral camels from Australian Rangelands to achieve reductions in methane emissions.
Native forest from managed regrowth	Re-establishing native forest through managed regrowth on land that historically supported forest but is currently maintained as non-forest land.
Rangeland Restoration Projects	Increase the baseline Carbon Stocks in the Australian Rangelands to analogue storage levels
Landfill waste diversion projects	C&I and C&D Waste to alternative Fuel manufacture

Carbon Sequestration in Rangelands

- Rehab and reforestation of Australia's overgrazed rangelands could sequester and mitigate ~100 Mt CO_2e /a (CSIRO 2009)
- Direct relationship biomass and carbon storage
  - Increase biomass = increase carbon stocks
- Carbon accounting arid rangelands WA goldfields Carbon sequestration in vegetation potential 98.6 t CO2e / ha (Yamada et al 1999)

Mature woodland has baseline carbon of 98.6 t CO_2e per hectare

(98.6 t CO_2e * $23 t CO_2e) = $2,267 gross income per ha

Site A. Soil carbon: 25.2 t CO_2e ha^{-1}

Site B. Soil carbon: 86.5 t CO_2e ha^{-1}

Difference between sites = 61.3 t CO_2e.

(61.3 t CO_2-e * $23 per t CO_2e) = $1,409 gross differential income per ha

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Rangelands Restoration Methodology

- Definitions:
  - Includes areas of native grasslands, shrublands, woodlands and tropical savanna woodlands.
  - The predominant agricultural use, if any, is grazing of livestock on native vegetation or improved pastures.
  - The long-term moisture availability limits the commercial production of cultivated vegetation in most cases.

Sequestration

- Applies to projects that increase the baseline Carbon Stocks in rangelands using activities that may include:
  - the exclusion of livestock;
  - the management of the timing and the extent of grazing by domestic, feral and native grazing animals;
  - the use of mechanical earthworks for control of surface water and erosion;
  - Environmental plantings in degraded land systems; and
  - prescribed burning to reduce the frequency and related impacts of uncontrolled fires.
- Excluded:
  - soil;
  - reduction in methane emissions from reduced numbers of livestock and / or improved ruminant nutrition.

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Conditions

- Rangelands Australia wide **grazed for a minimum** period of 10 years.
- Occurs on land **below** analogue conditions min 10 years preceding project activity.
- Promotes re-establishment of Australian **native species** to that area.
- Historical management regimes resulted in a **reduction to analogue** conditions.
- Project activity will **not deplete** carbon stocks.
- The **natural fire frequency** should not be deliberately depressed to increase the natural vegetation to levels above analogue.
- **Historical land management 10 years** prior to commencement of project are known.
- **CENTURY** model used to calibrate baseline

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Assumptions

- Carbon stocks would remain **constant or decrease** in absence of project.
- **No Leakage** – due displacement of livestock to other areas.
- **Direct in-field measurement** verify the CENTURY model outcomes (Allometric Functions ~ wide range of tree and shrub species).
- Livestock emissions only included if the **stocking rate** within a reporting period exceeds the official carrying capacity that was recognised at Project Commencement
- **Excludes Soil Organic Carbon** - uneconomical to directly measure changes in soil carbon in the rangelands for a commercial CFI project

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Boolardy Station – Murchison, WA


Eco-Rolls, Murchison WA

Ponding Bank trials, Murchison WA


Eco-Rolls, Woolleen Stn, Murchison WA


Ponding Bank trials, Goldfields WA

Compliance grade ACCU's – Goldfields WA

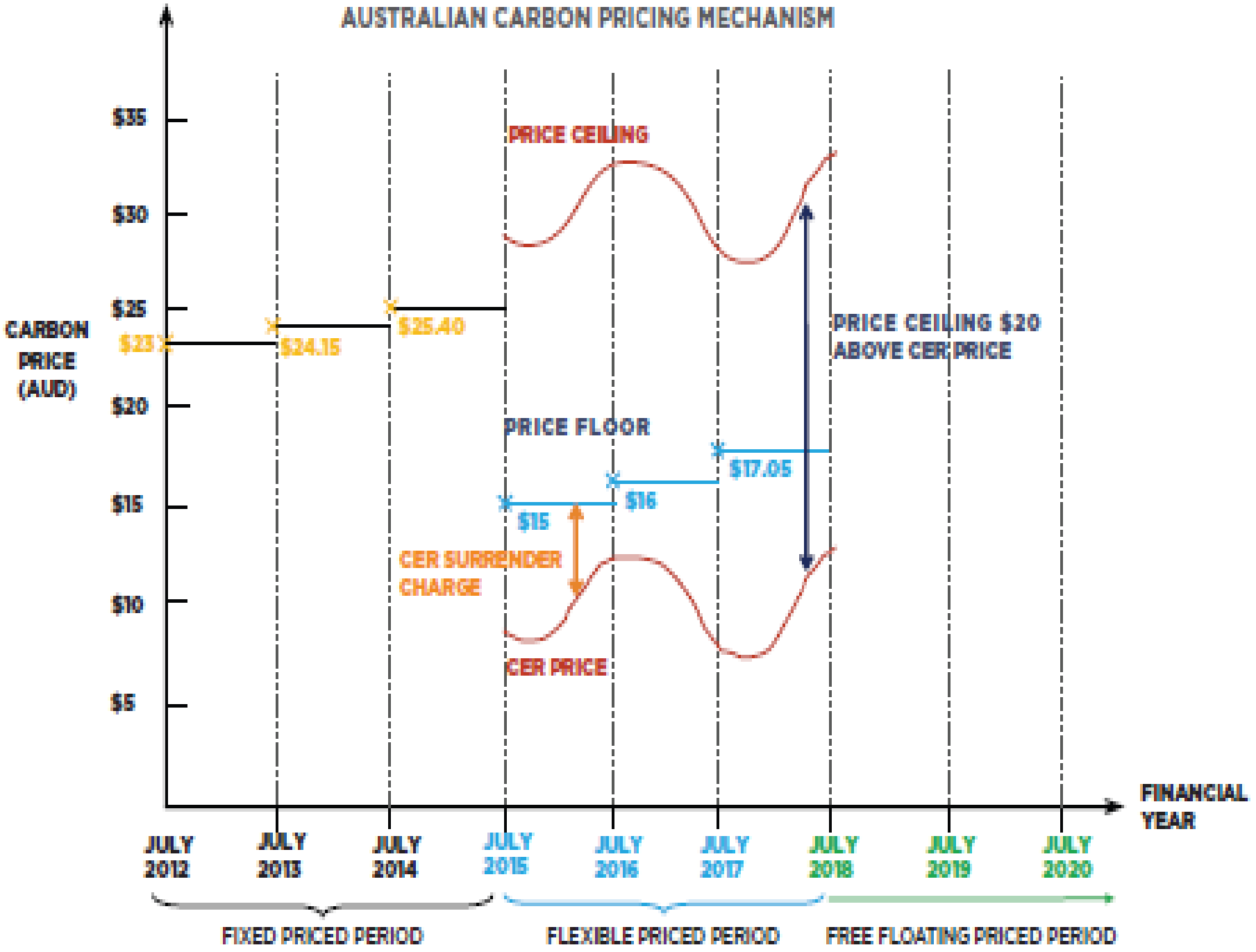
Environmental Plantings, NE Wheatbelt, WA

Carbon Markets

Carbon Markets – Cycle of Capital

Synthetic Market Establishment Carbon Pricing Mechanism (CPM)

Fixed Price Period (2012 – 2015)	Flexible Price Period (2015 >) ETS
$23 t CO_2e (2.5% annual inflation)	Floor Price $15 t CO_2e (2.5% inflation) $20 collar on EUR price
Up to 5 % ACCUs	100 % ACCUs
No International Credits (EUA, CER, ERU)	50% International Compliance Units (EUA, CER, ERU)
Carbon Permits from Federal Govn't	Carbon Permits from Federal Govn't

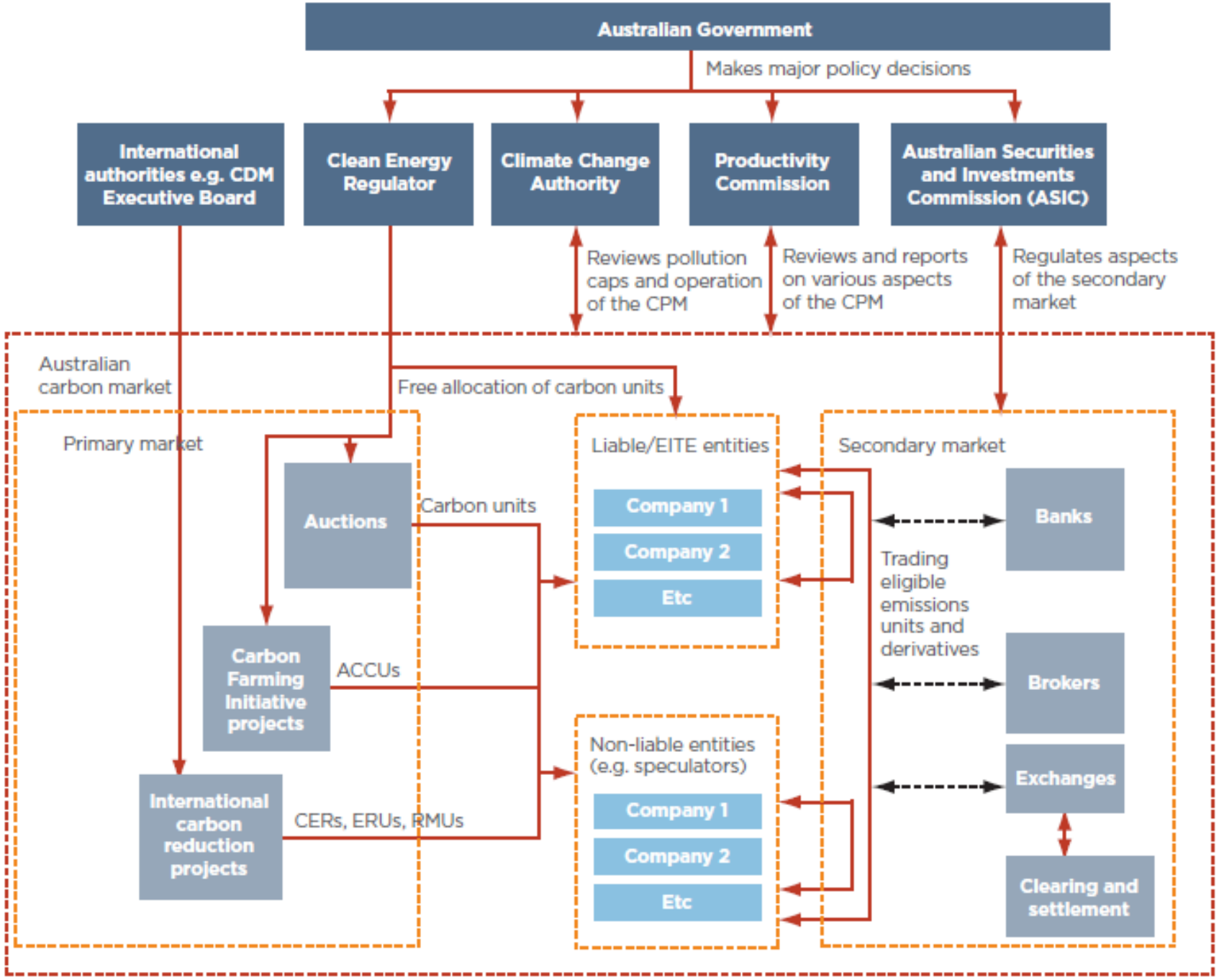

AUSTRALIAN CARBON PRICING MECHANISM
$35
$30
$25
$20
$15
$10
$5
CARBON PRICE (AUD)
$23
$24.15
$25.40
PRICE CEILING
PRICE CEILING $20 ABOVE CER PRICE
PRICE FLOOR
$17.05
$16
$15
CER SURRENDER CHARGE
CER PRICE
FINANCIAL YEAR
JULY 2012
JULY 2013
JULY 2014
JULY 2015
JULY 2016
JULY 2017
JULY 2018
JULY 2019
JULY 2020
FIXED PRICED PERIOD
FLEXIBLE PRICED PERIOD
FREE FLOATING PRICED PERIOD

Markets and Taxes Evolve

Income Tax Assessment 1936
+ > 160 amendments

Income Tax Act Assessment 1936

Who are the Carbon Market players?

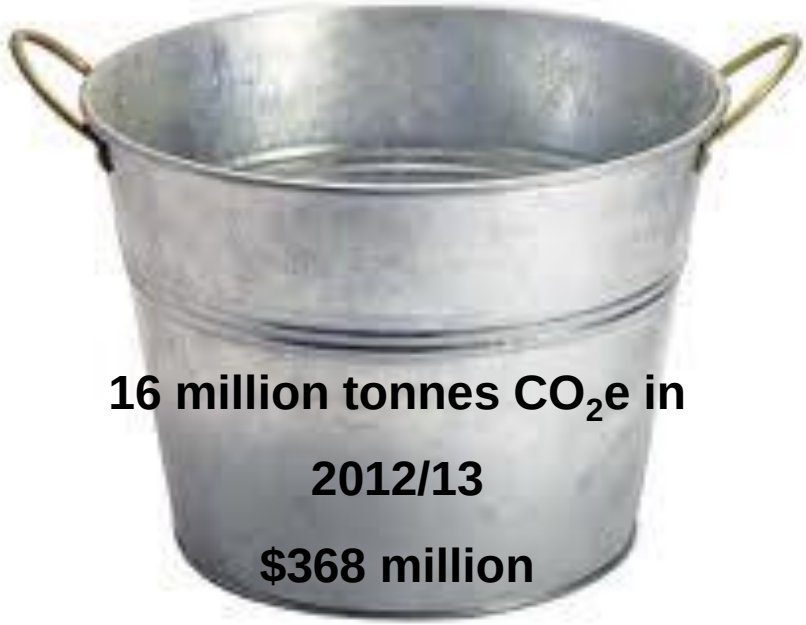

Australian Government
Makes major policy decisions
International authorities e.g. CDM Executive Board
Clean Energy Regulator
Climate Change Authority
Productivity Commission
Australian Securities and Investments Commission (ASIC)
Reviews pollution caps and operation of the CPM
Reviews and reports on various aspects of the CPM
Regulates aspects of the secondary market
Australian carbon market
Free allocation of carbon units
Primary market
Liable/EITE entities
Secondary market
Auctions
Carbon units
Company 1
Company 2
Etc
Banks
Trading eligible emissions units and derivatives
Carbon Farming Initiative projects
ACCUs
Brokers
Non-liable entities (e.g. speculators)
Exchanges
International carbon reduction projects
CERs, ERUs, RMUs
Company 1
Company 2
Etc
Clearing and settlement

How Big is the Bucket?

SUPPLY

Less than 1 million tonnes CO_2e

DEMAND



16 million tonnes CO_2e in 2012/13

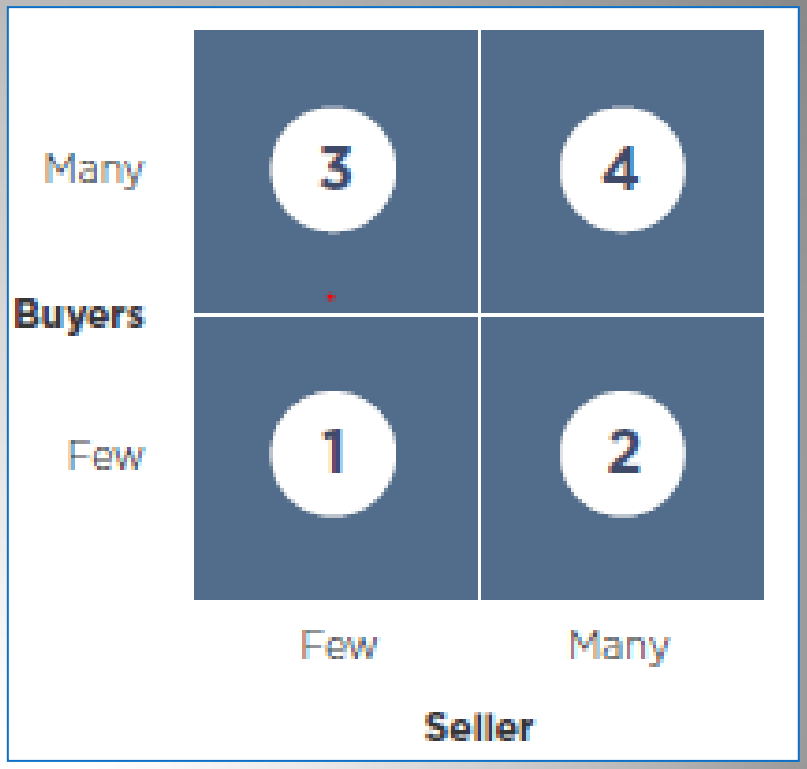
$368 million

Market Implications - CFI

- CFI – time to develop and become established.
- Supply – short of compliance ACCU's initially.
- Opportunity – lock in supply at known price over long term.
- Forward market – growth of derivatives trading.
- OTC vs Exchange Based trading.
- Increased trade with International Markets.
- Market evolution cannot be predicted!

Evolution of the Market

1. Concentrated Market
   - LT contracts dominate
2. Buyer Dominance
   - Buyers influence pricing / structure
3. Seller Dominance
   - Sellers influence market
4. Efficient Market
   - Transparent price signals in short and long term



Liabilities to Assets