Discussion Paper on Biosolids, carbon and Climate Change

ANZBP Briefing

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Overview of Briefing

- Key aspects of the carbon pricing mechanism and other legislation
- Overview of discussion paper
- Recommendations
- Questions and discussion
- Next steps

Relevant legislation

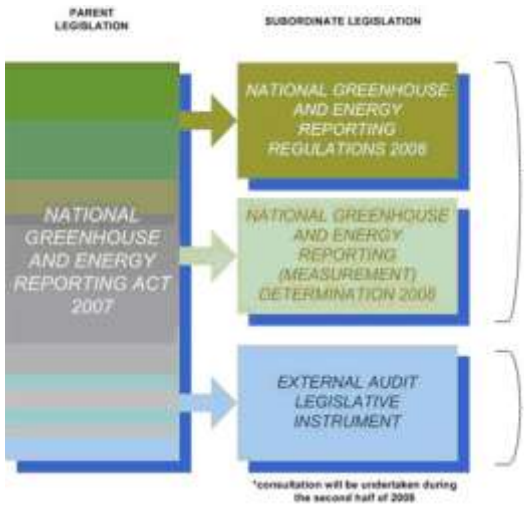
- NGERs
- Clean Energy Legislation
- Carbon Farming Legislation
- Renewable Energy Target

NGERs and reporting

Reporting protocols and how they link

- IPCC guidelines
- UNFCCC Guidelines
- National greenhouse gas inventory
- Company reporting

NGERs in more detail



- National Greenhouse and Energy Reporting Act 2007
- **Mandatory** reporting for corporate **GHG emissions** and **energy** production and consumption
- First reporting period **started** July 2008

NGERs Thresholds

Facility Threshold

25,000 tonnes CO_2-e
Eq to ~10,000 Kilolitres of diesel
Eq to $12m per annum @$1.20 per litre

Eq to ~500,000 GJ natural gas

100 Terrajoules energy
Eq to ~$1.4m per annum spend on electricity @ 5cents per kWh

Entity Threshold

50,000 tonnes CO_2-e

NGERs liability

Corporations (but extended with carbon price to "persons")

Controlling **corporation**

- at top of the corporate hierarchy in Australia

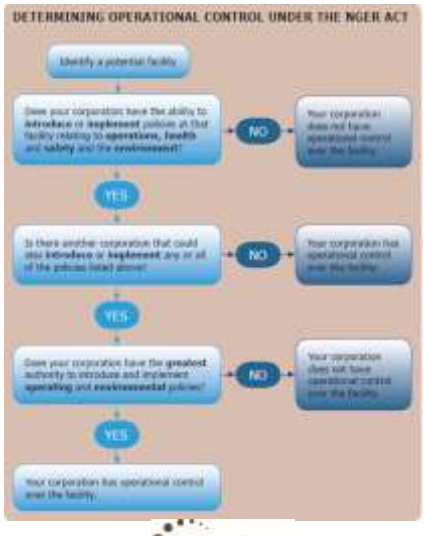
All **subsidiaries**

JVs or partnerships

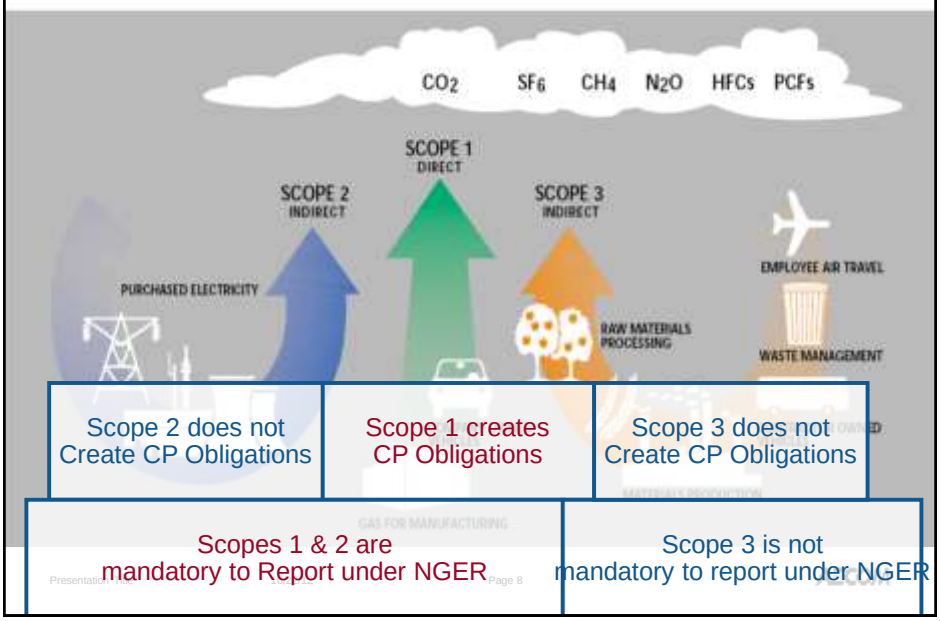
- for which a member of the group is the **responsible** entity

Operational control

GHG protocol concept of "operational control" determines **who** should report in the case of **complex** ownership of corporate entities

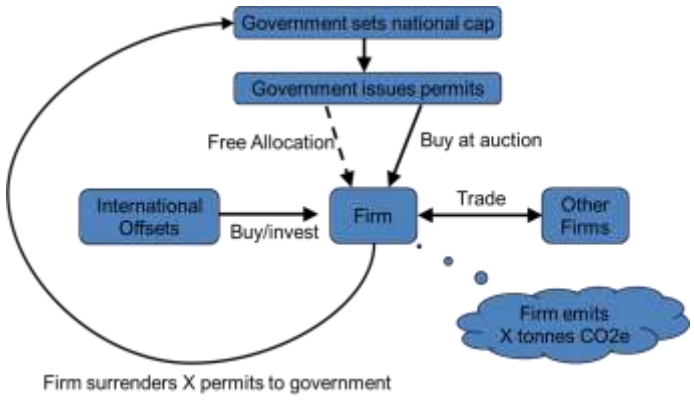


Coverage for NGERs and Carbon Price



Carbon Price Mechanism

Cap and trade explained



Sectors and gases

Stationary energy

Transport (partially)

Fugitive emissions

Industrial processes, and

Waste.

CO_2, CH_4, N_2O and synthetic greenhouse gases

Carbon Price – Key bits

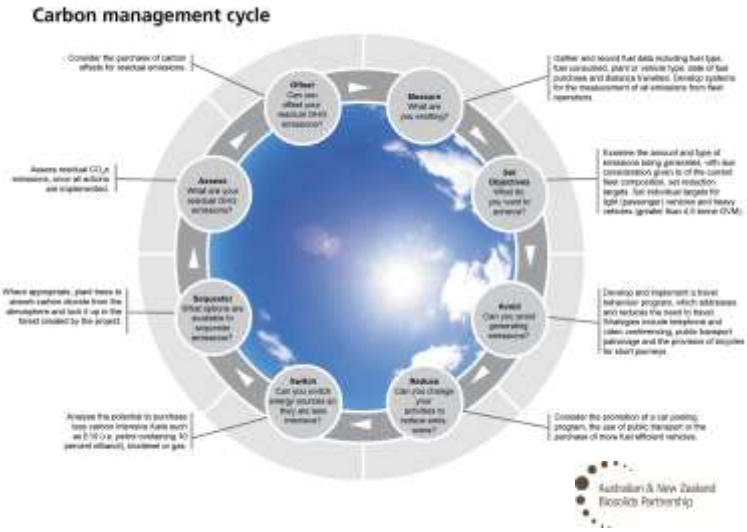
- Wide coverage ~70% of emissions sources
- Fixed Price until 2015
- Price starts at $23/tonne and rises at 2.5% +CPI for three years
- 5% limits on offset credits (Carbon Farming Initiative until 2015)
- Cap and trade system from 2015
- From 2015 use of international credits rises to 50%, with 12.5% from CERs and 37.5% from the EU system

More details on the carbon price

- Initial target between -5 to -25% off 2000 levels
- Significant support for emission intensive, trade exposed industries
- Revenue from permits to be “recycled” into the economy to support impacted sectors and to foster transition
- Householders over-compensated

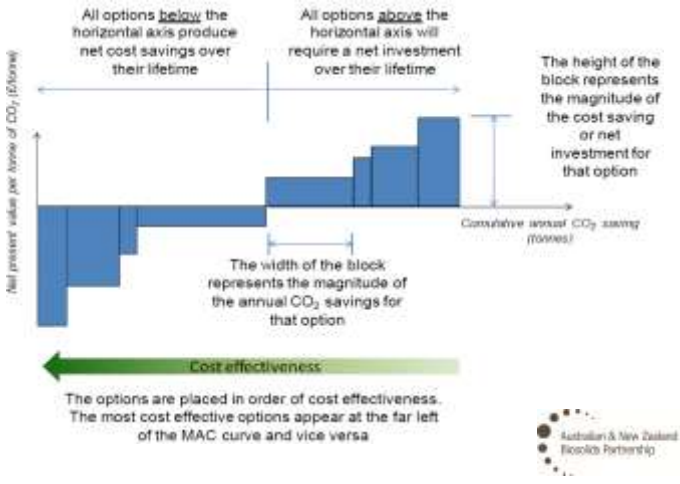
Emission reductions and offsets

Managing greenhouse gas emissions



Consider emission reductions: Marginal Abatement Cost Curves

How to interpret a MACC



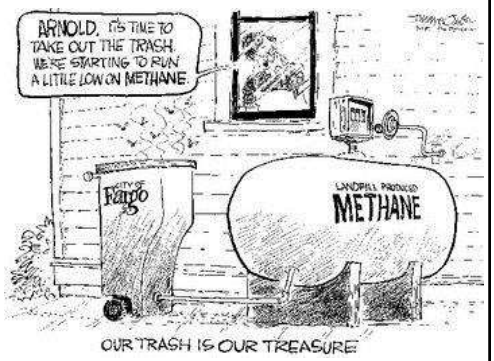
Carbon Farming Initiative

Carbon credits can be earned from:

- Flaring of methane from landfills
- Sequestration activities (soil carbon, tree planting, forest management)
- Emission reduction activities (managi feral animals, improvements in agricultural processes)

Other carbon opportunities

- Renewable energy legislation
- Low emission products
- More efficient production



What does a carbon price mean the biosolids industry?

What emissions are covered by the carbon price?

- NGER Act applies to all Scope 1 and Scope 2
- Carbon price only applies to 'covered' Scope 1 emissions
- Only covered emissions count towards emissions threshold
- Scope 1 methane, nitrous oxide and carbon dioxide
- Scope 1 emissions from combustion of liquid fuels, biogas, biofuels and biogas, and SF6 not included
- Anaerobic digestion, lagoons and stockpiling play large role in carbon liability

Which ANZBP partners will have a carbon liability?

- Liable Entities Public Information Database
- Gladstone Regional council
- Gold Coast City Council
- Gosford City Council
- Melbourne Water Corporation
- Power and Water Corporation, NT
- SA Water Corporation
- Water Corporation, WA

Which ANZBP partners will have a carbon liability?

- Need to understand impact of increasing customer base or WWTP augmentations on future liability
- Councils having to report under NGERs for the first time

What are the cost impacts?

- Direct cost of purchasing eligible emissions units
- Sydney Water – $900,000/year for wastewater treatment
- Indirect costs – increased costs of energy and other carbon-intensive products and services
- How can these be reduced or passed through to consumers?
- Carbon pass-through clauses?
- ACCC – must be reasonable and substantiated
- Importance of understanding total carbon footprint

What are the opportunities to generate carbon credits from the beneficial use of biosolids?

- Under the CFI, operators of WWTPs are not able to generate carbon credits
- Only sectors not covered under the CPM can generate credits from CFI projects
- However, other opportunities under the CFI from planting trees on surplus land
- Offset emissions and additional revenue stream

What are the opportunities to generate carbon credits from the beneficial use of biosolids?

- Not really relevant that WWTP operators can't generate credits from biosolids
- Biosolids industry will still benefit from creating a market for biosolids
- 'Low carbon' alternative to fertiliser
- 'Low carbon' or renewable fuel source
- CFI and biochar

NGER issues for biosolids under the CPM

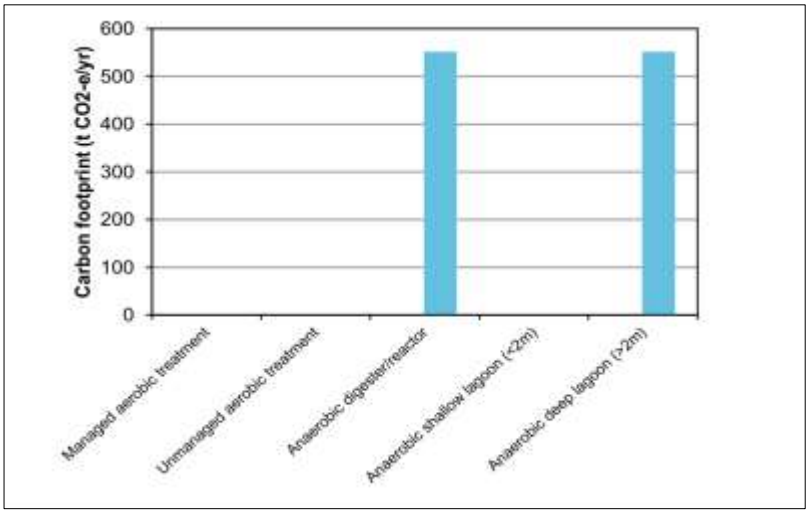
- Uncertainty in estimating emissions from biosolids
- Limited guidance provided by NGER guidelines and WSAA industry guidelines
- By necessity NGER is high-level and general in nature
- Only addresses a limited range of configurations of biosolids treatment process
- Doesn't specifically account for biosolids stockpiled on site or incineration of biosolids
- Results of online survey

NGER issues for biosolids under the CPM

- Provides limited number of default categories of wastewater treatment, each with its own methane correction factor
- Assumes that wastewater and sludge systems behave the same way in terms of emissions
- Categories are too high level to differentiate the actual emissions-intensity of different biosolids treatment options
- No guidance provided as to how biosolids treatment processes should be classified according to default categories (and therefore which MCF to apply)

Australian & New Zealand Biosolids Partnership AECOM

NGER issues for biosolids under the CPM



Australian & New Zealand Biosolids Partnership AECOM

NGER issues for biosolids under the CPM

- Use of landfill methodology to estimate emissions from stockpiled biosolids
- Default methane emission factor not appropriate for wastewater or biosolids treatment
- Method 1 vs. Method 2
- Can result in over- or –under estimation of 'actual' emissions
- Are WWTP operators overestimating their carbon price liability???

Next steps

Next steps for the Water Sector/ANZBP – NGER Issues

- Definition of a facility
- Using the correct methods for estimating emissions
- Industry-specific guidelines for estimating emissions
- Default values for emissions from biosolid stockpiles
- Industry-wide research to develop a new method for stockpile emission evaluation
- Formal definitions for biosolids processes
- Biosolids specific theoretical methane emission factors

Next steps for the Water Sector/ANZBP – NGER Issues

- Review research to identify emission factors more appropriate for biosolids in Australia
- Additional research regarding appropriate default methane correction factors
- Industry-wide approach for determining which processes fall within each default category
- Definitions of different lagoon systems and undertake research to develop emission factors for the different configurations

Next steps for the Water Sector/ANZBP – NGER Issues

- Industry-wide methodology for determining the depth profile of lagoons
- Emission factors to account for differing depths potentially occurring within the same lagoon
- Case studies for using Method 1 versus Method 2

Next steps for the Water Sector/ANZBP – CPM Issues

- Case studies of using a carbon footprinting approach
- Sensitivity analysis – impact of key parameters on direct and indirect emissions
- MACC for a range of options
- Continue work started by AECOM which looks at overall Scope 1, 2 and 3 by adding a number of other biosolids process options
- Sensitivity analysis on results to provide guidance on which areas require further work and research

Next steps for the Water Sector/ANZBP – CPM Issues

- Methodology to determine overall impacts of biosolids treatment and processing
- Guidance for developing projections that link increases in demand, plant expansion and developments in technology to emissions and associated carbon liability
- Value of biosolids across the variety of end uses and barriers to their full inclusion and use
- Regulatory or policy developments to most benefit biosolid producers
- How biosolids could underpin the creation of both CFI credits and RECs

Next steps for the Water Sector/ANZBP on using biosolids in a carbon - constrained economy

- Maximise opportunities for investing and research in renewable energy and energy efficiency technologies
- Australia-specific research into the potential of biosolids-amended soils to sequester soil carbon over the long term

Thank You

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