Energy from Waste in a 2° world: LCA and Australian Carbon Policy

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Energy from waste in a 2° world
LCA and Australian carbon policy

Dr Mary Stewart | 3 June 2016
Overview of presentation

• Why the focus on energy and carbon?
• How energy and carbon policy has evolved in Australia and how LCA has been useful
  – 1994 to the present
  – Energy and greenhouse reporting
  – Offset programs
  – Cap and trade schemes
  – The rise and fall of Tony Abbott
  – Reverse auctions and the policies on the horizon
• Applications to energy from waste where possible.
Government attitudes to EfW technologies

“Incineration is a mature technology, long used all over the world and still widely used in Europe, among other places. In Australia the last solid waste incinerator, the Waverley Woollahra facility in South Sydney closed in 1997. At the time, community and government concern over stack emissions and the availability of relatively low cost landfilling made continuation of waste incineration a politically unpalatable option. Since then, acceptance of other forms of AWT has all but eliminated mass burn incineration as a viable waste processing option”

Draft Victorian Waste and Resource Recovery Policy, October 2012, Vic Department of Sustainability and Environment

Australian carbon policy

CHANGE

- IS THE ONLY -

CONSTANT

Heraclitus 500BC
Australian energy and carbon policy - 20 years of change

- Energy and greenhouse reporting
- Carbon offsets
- Carbon trading
- Renewable energy
Australian energy and carbon policy - 20 years of change

1995
- Greenhouse Challenge Plus: Voluntary reporting

2001
- Mandatory Renewable Energy Target (MRET): Some political manoeuvring

2007
- National Energy and Greenhouse Reporting Scheme: Financial rigour in reporting
- National Carbon Offset Scheme (NCOS): Watering down to reduce the effort

2010
- Clean Energy Regulations (CER): Carbon trading with an initial fixed price period

2011
- Carbon Farming Initiative (CFI): Starts with soil carbon
- NCOS revisions: Possible to take part again, boundary is still a problem

2013
- CER repealed

2014
- Direct Action and the Emissions Reduction Fund: Reverse auctions and some boundary challenges, transition of the CFI

2016
- MRET extended to include energy from biomass: Some CFI aspects
Energy and greenhouse reporting: Voluntary

- Greenhouse Challenge predated Greenhouse Gas Protocol by at least two years
- Some initial attempts to include scope three emissions
- Would have been better if LCI and LCA information was more widely available
- Constants developed which were applied for years
  - Be mindful of how information will be used
  - Information can outlast its author
  - Information can outlast the project or assessment
- Boundaries were not consistent
- Materiality was of little interest
Offset programs

- **Greenhouse Friendly**
  - Explicit requirement for LCA expertise, LCA expert panel

- **Could be very time intensive, reduced access for smaller companies**

- **We lost work because we insisted on strict adherence to LCA boundary definitions**
  - The work came back when we were shown to be right

- **$ value of information accuracy.**
Energetics ‘Greenhouse Friendly’

- Total 2,153 tonnes CO$_2$-e
- Materiality limit of 5% = 107 tonnes CO$_2$-e
- AUD13 per tonne CO$_2$-e (2012)
- ~AUD1400
- Three hours of my time.
Offset programs

- Moved to NCOS
  - Reduced cost of certification
  - Reduced focus on boundary
  - No longer required LCA expertise

- We did not transition because of concerns about boundary

- As information has become more available and concerns better addressed there has been a shift to rigour in boundary definition.
## Offset projects

<table>
<thead>
<tr>
<th>Abatement type</th>
<th>Number of projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landfill gas power generation</td>
<td>9</td>
</tr>
<tr>
<td>Landfill gas flaring</td>
<td>6</td>
</tr>
<tr>
<td>CFL and low flow showerhead give aways (to end June 2009)</td>
<td>4</td>
</tr>
<tr>
<td>Diversion of waste to compost</td>
<td>2</td>
</tr>
<tr>
<td>Forest carbon sinks</td>
<td>2</td>
</tr>
<tr>
<td>Avoided deforestation</td>
<td>1</td>
</tr>
<tr>
<td>Diversion of waste to alternative fuels</td>
<td>1</td>
</tr>
<tr>
<td>Diversion of waste to compost and recovery of recyclables</td>
<td>1</td>
</tr>
<tr>
<td>Non-landfill gas flaring</td>
<td>1</td>
</tr>
</tbody>
</table>
Offset methodologies

- Rigorous around boundary definition
  - Require financial additionality

- Very clear on how to define
  - Eligible wastes
  - The current/baseline system
  - The project system
  - Applicable time horizons

- Very specific about impact assessment methodologies
  - Supply information estimates if you need them

- Specify information management, reporting and audit.
Offset methodologies

- Rigorous around boundary definition
  - Require financial additionality
- Very clear on how to do:
  - Eligible wastes
  - The current/baseline system
  - The project system
  - Time for legacy waste
- Very specific about impact assessment methodologies
  - Support with estimates if you need them
- Specify information management, reporting and audit.

Regulations don’t require LCA experts but require the expertise...
Energy and greenhouse reporting: Mandatory

- Most robust energy and greenhouse reporting scheme globally
- Responsibility of the corporation
  - CEO can be criminally liable if intentionally misleading information is lodged
- Very clear definition of responsible entity and boundary
  - Supported the payment of the carbon price
  - Uniform for energy and climate change programs
  - Challenges with contractor sites addressed
- Audits are mandated
  - Auditors are registered with the government
  - Audits are conducted to financial audit quality
Renewable energy

• **RET target of 33TWh in 2020 and 66TWh in 2030 from approved energy source**
  
  − Energy from waste is currently not an approved technology
  
  − Current projects very likely to meet 2020 target
  
  − Many studies argue we will not meet 2030 without energy from waste

• **Extending RET to include biomass to energy (industrial heat)**
  
  − Consistent with RET
    
    o To encourage the additional generation of electricity from renewable sources
    
    o To reduce emissions of greenhouse gases in the electricity sector.
Renewable energy: a path ahead for EfW

- **Clean Energy Finance Corporation**
  - Works with co-financiers to securing financing options for the clean energy sector

- **CEFC has noted the gap around EfW and bioenergy in Australia**
  - CEFC has estimated that the investment potential for EfW in Australia by 2020 is between AUD3.5 billion and AUD5 billion

- **EfW has been identified as playing a part in Australia meeting its COP21 commitments.**
Carbon trading: a long and winding road

- **Clean Energy Regulations**
  - Carbon trading scheme with an initial fixed price period
    - Started at AUD23 per tonne CO$_2$-e
  - Emissions intensive industries partially exempt
  - Was drafted and implemented in around 18 months
  - Very politicised
    - Price makers: ensure pass through was fair
    - Price takers: increased cost of doing business

- **Understanding LCA and having access to LCA and LCI information** meant we were ahead of the market in our advise.
Carbon trading: a long and winding road

**Carbon impacts**

- **Cost and profit impacts**
  - Direct cost for carbon emissions
  - Increases in energy costs
  - Increases in indirect costs through the supply chain
  - Dependent on ability to pass costs to customers

- **Compliance issues**
  - Measurement and reporting
  - Carbon inventory and calculations
  - Carbon reporting and compliance
  - Investors' statements - ASX and ACCC are scrutinising statements made about carbon impacts

- **Business system updates**
  - IT and accounting systems
  - Trading, risk management and systems
  - Contract changes to incorporate carbon

- **Working with your supply chain**
  - Customers
  - Suppliers and supply chain
  - Competitive position

- **Business opportunities**
  - Emissions reduction opportunities
  - Carbon offset opportunities
  - Renewable energy
  - New products, services, offerings

*energetics*
Carbon trading: a long and winding road

<table>
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<th>Carbon impacts</th>
<th>Implications for your business</th>
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| **Cost and profit impacts**     | • Direct cost for carbon emissions  
• Increases in energy costs  
• Increases in indirect costs through the supply chain  
• Dependent on ability to pass costs to customers |
| **Compliance issues**           | • Measurement and reporting  
• Carbon inventory and calculations  
• Carbon reporting and compliance  
  • Investors statements - ASX and ACCC are scrutinising statements made about carbon impacts |
| **Business system updates**     | • IT and accounting systems  
• Trading, risk management and systems  
• Contract changes to incorporate carbon |
| **Working with your supply chain** | • Customers  
• Suppliers and supply chain  
• Competitive position |
| **Business opportunities**      | • Emissions reduction opportunities  
• Carbon offset opportunities  
• Renewable energy  
• New products, services, offerings |
Direct Action and the Safe Guard Mechanism

- Safe guard mechanism starts on 1 July 2016
- Aim is to ensure emissions from large facilities/sites do not increase
- Need to propose a baseline and measure your performance relative to this
- There appear to be no repercussions for companies at present
  - The legislation contains a framework which can be extended to a carbon trading scheme
  - This would require ministerial input, it does not need to go to parliament to enact this change
  - Elections on 2 July may decide which way we go
And where to next?

- Increased disclosure
  - Improved disclosure?
- Supporting divestment decisions and strategic direction.

Source: Carbon Intensity, Physical Asset Lifespan and EBIT Margin or Key Sectors Exposed to Climate Scenarios Source: 2° Investing Initiative, 2014
..... towards 2030

Meeting Australia’s 2030 emissions reduction target

To understand the task ahead for Australia to meet our target and reduce greenhouse emissions by 28% below 2005 levels, Energetics has modelled a range of measures that can be pursued under the Federal Government’s current suite of policies, and also potential, future policy initiatives.

Energetics’ modelling of Australia’s abatement opportunities

The following is based on Appendix A of Energetics’ report for the Department of the Environment, “Modelling and analysis of Australia’s abatement opportunities”, which assesses the emissions reduction potential across the economy from 2016–2050. More than 30 opportunities were identified and grouped as outlined below, for more information, and to view the report, please visit Energetics’ website - energetics.com.au.

You can also see the impact of the timing of different opportunities and the contribution each make to achieving our 2020 national target through Energetics’ Interactive Emissions Reduction Curve, also in Appendix A of the report.

..... towards 2050

Energetics’ modelling of Australia’s abatement opportunities

Built environment
- Commercial new builds and retrofits
  Improved electricity consumption in commercial new builds due to improved building design (for example passive heating and cooling, better insulation, more efficient base building energy consumption).
- Residential new builds
  Differential between standard residential design and 8 star efficiency residential new builds.
- Solar PV (distributed residential and commercial)
  Differential between the projections included in the Department’s baseline, and the AEMO high solar PV projection with allowance made for WA.

Low Carbon Precincts
- Integrated urban transport system design
- Precinct scale designs for new developments

Digital Infrastructure
- Smart hubs / teleworking
- Intelligent traveller information systems
  Automated traveller information systems on road conditions and environmentally friendly driving, includes eco-cruise control and eco-navigation.

Where have we been today?

• Energy from Waste in the Australian context
• Australian energy and carbon policy through the years
• How LCA knowledge and information has been invaluable to us
• Where we see the call for these skills and tools in the future.
Meet our people
Brisbane | Melbourne | Perth | Sydney

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Learn more

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Learn more about energy and carbon issues by reading the latest news from our thought leaders.

Upcoming events
Talk to us at a webinar, conference or a training course.

Energy productivity
Access resources and research to help you create new productivity benefits for your business

Emissions Reduction Fund
Learn more about government regulations and key dates

Energy markets
Get energy market updates to help you with your procurement decisions

COP21
Follow the conversation - The importance of COP21 to Australian business
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