

Using LCA to Reduce Embedded Energy

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Prepared by Dr. Juanita Day, Group Manager Market Strategy and Sustainability, Amcor Australasia



Using LCA to reduce embedded energy

Fattening a pig by weighing it



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Unlocking competitive advantage in a carbon constrained economy

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Example

New sustainability seal for wine

THE company of wine people is among the first wine producers in SA to use the new sustainability seal on its 2010 vintage wines. The sustainability seal certifies that information such as the origin, vintage and cultivar of the wine are correct; sustainable wine production practices have been employed; the wine can be traced from the vine to the final product; and the wine is 100% precisely South African.

The seal forms part a voluntary environmental sustainability scheme, namely Sustainable Wine South Africa (SWSA), which meets international sustainability standards set for the wine industry and ensures consumers that the wine produced is top quality.

We support and encourage others in the South African wine industry to maintain a leadership position on integrity and sustainability, and we're applying this

new seal to every one of our 2010 vintage wines. In due course, all our wines will be sporting the new seal," says Chris O'Shea, executive director of sales and marketing at the company of wine people.

The company has already moved towards lightweight glass bottles to reduce carbon footprint, as well as introducing carbon footprint labels on every bottle, providing an eco-friendly wine pouch, and installing an effluent water and waste management system.

In order to qualify to use the new sustainability seal, regarded to be a world first, every link in the chain of production (vineyard, winery and bottling) must first be independently audited. All the company of wine people's suppliers are certified as well. This work was printed by Pynsec.

www.wisa.co.za

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Part 1 The Role of Packaging

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Responsible, Sustainable Packaging

Sustainable packaging protects the product's properties (e.g. taste, smell, sterility, function, appearance) to minimise waste.

Packaging protects

If the wrong packaging is used, then:

- Electronic goods are damaged
- Food goes to waste
- Medical products become non-sterile
- Cement goes hard
- Pharmaceuticals lose their potency



And all the resources embodied in those products are wasted.

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Responsible, Sustainable Supply Chain

4 DAYS 28 DAYS

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The Global Supply Chain

Energy use in the food chain

1 GJ = 4 Months 250 Miles

Packaging is about 10 - 15% of the total story, but influences all of it!

Source: European Perspective on Packaging & Sustainability, INCFEN, 2007

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The Global Food Supply Chain

FOOD WASTE

50% 5%

Developing Countries Developed Countries

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Part 2

Strategies for Competitive Advantage

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Environmental Strategies

Eco-efficiency:
Quantities of Materials and Energy

Eco-system/Sustainability Models:
Types of Materials and Energy and how these are used

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How can it be done?

Improving eco-efficiency can be achieved by traditional methods – by continuous improvement, setting clear targets and goals, financial rewards linked to objectives.

BUT

But true sustainability requires a bigger shift – a shift in values and a shift in ability to understand and apply organisational learning principles and practices.

<p>Eco-efficiency Values</p> <ul style="list-style-type: none"> • Linear thinking • Compete to succeed • Step-by-step planning • Separate issues – reductionist • Control is vital! • Simplify • Maximise profit • Rational analysis • Technical understanding • Quantitative expansion 	<p>Sustainability Values</p> <ul style="list-style-type: none"> • Systems thinking • Co-operate and collaborate to succeed • Understand the whole picture – clarity emerges • Interconnected, interdependent • Co-evolve with a changing environment • Work with the complex, evolving system • Equity and justice, restoration and profit • Emergence of wisdom • Socio-technical understanding • Qualitative improvement
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Source: 5th European Sustainability Group

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Eco-efficiency at Amcor

GHG Reduction

- 30% reduction GHG by 2013 from 2005/06 baseline
- Achieved a 4% improvement thus far

Using less water

- 65% reduction in water use by 2013 from 2005/06 baseline
- Achieved a 36% reduction in water use

Reducing waste to landfill

- 75 % reduction in waste to landfill by 2013 from 2005/06 baseline
- Zero waste to landfill is the long-term objective
- Achieved a 42 % reduction in total waste to landfill



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Eco-system Models

Take a deep breath. Hold it.

You have just sucked in oxygen, which your body pulls around its systems to release energy from sugars, producing CO₂ as a waste product.

OK. Breath out.

The air is now enriched with CO₂ waste. This will be recycled back into oxygen and sugars by green leaves using the sun's energy. All of this is done at a concentration that will not kill you.



SOLAR – CYCLIC – SAFE

Source: The Three Secrets of Green Business by G. Kane

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Eco-system Models

SOLAR:

Use solar income, as opposed to fossil fuels which are stored solar energy

CYCLIC:

Waste = Food
Nothing goes to waste, all material flows should be useful or designed out

SAFE:

Respect diversity and be compatible with the natural world



Source: The Three Secrets of Green Business by G. Kane

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Performance Measures

Product	SOLAR	CYCLIC	SAFE	EFFICIENT
Recycled Paper		☺☺		☺
Fluorescent Light Bulbs			☺	☺☺
Recycled Glass		☺☺		☺☺
Recycled Aluminium		☺☺		☺☺☺

Source: Adapted from The Three Secrets of Green Business by G. Kane

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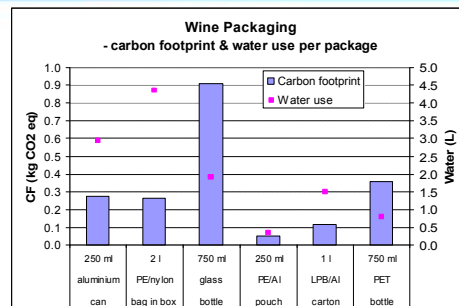
Product Stewardship at Amcor



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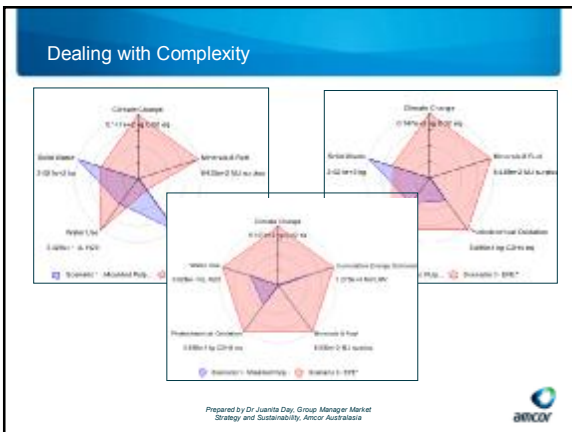
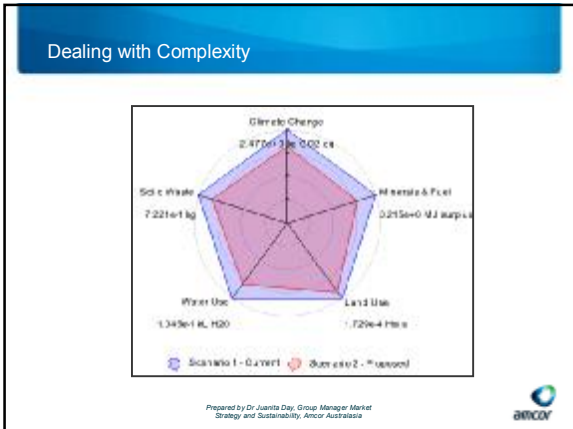
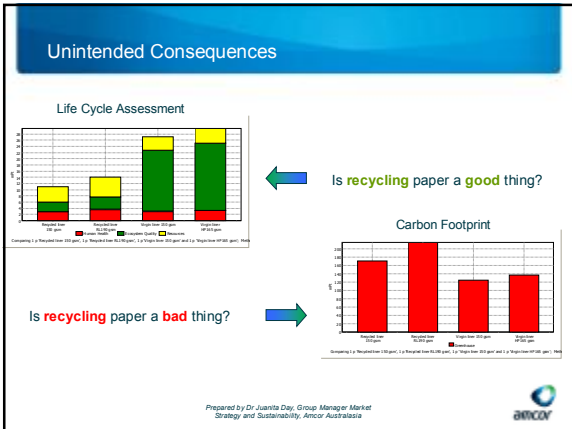


Unintended Consequences



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Greenwashing

Beware of "Greenwashing":
The act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service by

- Hidden trade-offs
- No proof
- Vagueness
- Irrelevance
- Focussing on the lesser of two evils
- Lying

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Part 3

Amcor Materials and Designs

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Corrugated Packaging

SureFresh™

- RPC Alternative
- Recyclable
- Transport Efficiency
- Storage Efficiency
- No Return Transport
- No Washing

Photo SureFresh™

- Differentiation
- Recyclable
- Transport Efficiency
- Storage Efficiency
- No Return Transport
- No Washing

ChillFresh™

- EPS Alternative
- Insulation
- Recyclable
- Transport Efficiency

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Cartonboard Packaging

HydroArmour™



- EPS Alternative
- Recyclable
- Transport Efficiency
- Storage Efficiency

TrayBon™



- Steel Tray Alternative
- Recyclable
- No washing of trays
- Bake & Distribute
- Less waste



- Recycled Content
- Recyclable

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Beverage Cans



- Right-sizing (less product waste)
- Glass Bottle Alternative
- Light-weighting

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Flexibles – Pack Design

Cheerpack™



- Glass Alternative
- Recloseable
- Tamper Evident
- Transport Efficiency
- Storage Efficiency

Novapeel™



- Foil Alternative

E-Close™



- Foil Alternative
- Recloseable
- Easy open

NaturePlus™



- Compostable
- Renewable Content
- Easy Peel

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Flexibles – Materials Development



- Parchment Print**
- Textured Ink, Feels Like Paper
 - Reverse Printed
 - Gloss/Matt Lacquer Options



- Transfer Foil Board**
- Alternative to Metalized Boards
 - Recyclable



- NaturePlus™**
- Renewable OR Compostable
 - Soft Feel
 - Contact Clarity



- Bio-degradable Products**
- For separation & disposal

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Glass

Wine Bottles

- Light-weight Range
- Recyclable
- Pure
- Long Shelf-life
- High Barrier



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Logistics

Transport Carbon Footprint Estimator

For GHG (greenhouse gas) the emissions factors are:

- 25% load efficiency – 0.38 kg CO₂/t.km
 - 50% load efficiency – 0.20 kg CO₂/t.km
 - 75% load efficiency – 0.14 kg CO₂/t.km
 - 100% load efficiency – 0.11 kg CO₂/t.km
- Load efficiency percentage is for articulated trucks, based on weight loading.*

So to use these factors the steps are:

- Choose the appropriate truck load efficiency.
- Multiply the emissions factor by the number of tonnes*.
- Multiply by the distance.
- Result is in kg CO₂.



*Note that the meaning of 'number of tonnes' will vary depending on the aim of the study - may be the tonnes on the truck (to get emissions per truck load) or tonnes of a particular product(s) per year (to get transport emissions for a product per year).


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Logistics


The steps are:

- Choose the appropriate truck load efficiency.
- Multiply the emissions factor by the number of tonnes.
- Multiply by the distance.
- Result is in kg CO₂.




The calculation is:
 30 t truck; 22 t load = 22/30 X 100 = 73 %
 Choose 75 % efficiency = 0.14 kg CO₂/t.km
 One delivery per day for a year = 8 030 t (22 X 365)
 Distance A = 80 km Distance B = 800 km
 (50 miles) (500 miles)
 0.14 X 8 030 X 80 0.14 X 8 030 X 800
 = 90 000kg CO₂ = 900 000kg CO₂
 = **90 t CO₂** = **900 t CO₂**

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Part 4

Amcor Services



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Amcor Services

- Strategy Development
- Measurement, Benchmarking & Reporting
- Packaging Design & Innovation
- Food Contact and Material Safety
- Value Chain Improvements
- Waste Management & Resource Recovery




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Part 5

Amcor Reputation



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Recognition – Building a Reputation





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Questions?

*We believe in responsible packaging.
 We Passionately + Relentlessly apply art + science
 to enhance the products people
 use in everyday life —
 today + tomorrow.*

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