Landcare Research
Manaaki Whenua

Developments in carbon footprinting and the value of certification

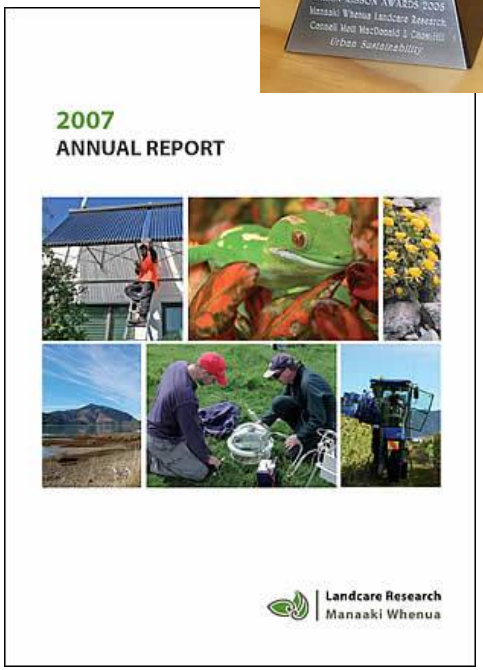
Ann Smith

Winery Engineering Association Conference
Blenheim, 18-19 September 2008

carboNZero Cert TM

Landcare Research

- New Zealand Government "Crown Research Institute"
- **Core business:** the science of terrestrial ecosystems & sustainable development
- **Vision:** Quality of life and economic well-being from healthy land environments
- Provides Business Solutions based on Solid Science



Great diversity of research

- Biodiversity & ecosystem processes
- Biosecurity & pest management
- Soils & landscapes
- Greenhouse gases & carbon sinks
- Sustainability in business & government
- Urban environmental management
- Informatics

carboNZero programme

- Measure
- Manage
- Mitigate
- Market

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Small Enterprise Certification

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TOYOTA

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trademe
Where Kiwis Buy and Sell

Agility
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trilogy

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Pitango

TrustPower

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TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI
VICTORIA
UNIVERSITY OF WELLINGTON

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HOUSE OF TRAVEL
How Kiwis see the World

House of Travel Wellington

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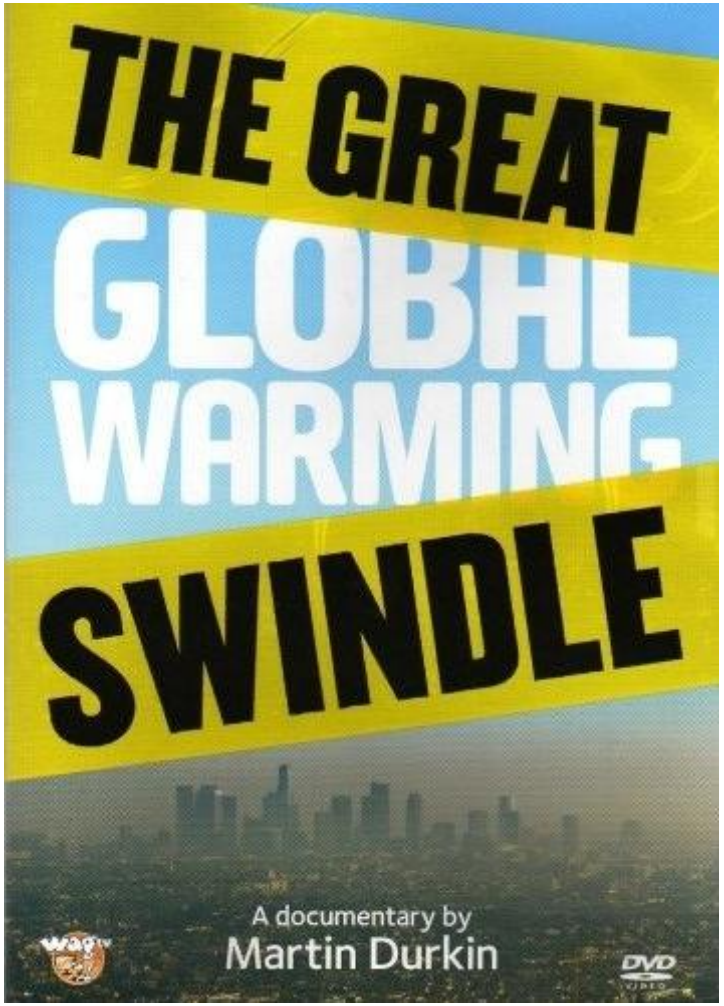
Three take aways ….

- Standards backed up by sector guidance are essential to provide a level playing field for measurement
- Disclosure is essential to ensure that claims are not misleading
- Credible certification is essential in order to trade on your carbon assertion

Overview

- Climate change
- Carbon footprinting
- Carbon neutral claims
- Certification
- Credibility & integrity

Whether you are a naysayer ….



…. or a soothsayer

…. the market has decided

Marks and Spencer will spend £200 million going "green" as it becomes the frontrunner among retailers seeking favour with increasingly environmentally conscious shoppers. It aims to become carbon neutral by 2012. We are calling this Plan A because there is no Plan B.

Chief Exec Stuart Rose

For Tesco climate change involves more than listing a series of environmentally friendly actions, although those do play their part. It demands that we transform our business model so that the reduction in our carbon footprint becomes a central business driver.

Chairman Sir Terry Leahy

…. on emissions reduction

EUA & Secondary CER Prices

EUA Prices (EU-ETS)	Date	Dec 08	Dec 09	Dec 10	Dec 11	Dec 12
FUTURES (ECX)	27-May	€26.34	€26.95	€27.59	€28.31	€29.30
SPOT (BlueNext)	27-May	€26.20				

CER Prices (CDM)		Dec 08		Dec 09		08-12 Strip	
Broker		Bid	Ask	Bid	Ask	Bid	Ask
TFS Energy	27-May	NA	NA	NA	NA	NA	NA
Evolution Markets	27-May	€17.60	€17.75	€17.20	€17.40	€17.55	€17.85
CantorCO2e	27-May	€17.60	€17.70	€16.95	€17.40	€17.55	€17.85
Tullett Prebon	27-May	€17.50	€17.80	€16.80	€17.10	€17.50	€17.80
ICAP	27-May	€17.65	€17.85	€17.35	€17.55	€17.70	€17.90
MF Global Energy	27-May	€17.60	€17.70	€17.20	€17.40	€17.60	€17.80
Spectron	27-May	€17.60	€17.70	€17.30	€17.40	€17.65	€17.75
GFI Group	27-May	€17.60	€17.75	€17.25	€17.45	€17.75	€18.00
		Dec 08		Dec 09		Strip	
*Reuters CER Index	27-May	€17.67		€17.27		€17.73	
Net Chg/	% Chg	€0.32	1.84%	€0.26	1.53%	€0.30	1.72%
Implied Percentage/	€ Spread	67.09%	€8.67	64.07%	€9.68	64.27%	€9.86

Exchange		Dec 08	Net Chg	Volume	Dec 09	Net Chg	Volume
ECX CERs	27-May	€17.60	€0.32	11	€17.25	€0.25	0
Nord Pool CERs	27-May	€17.70	€0.30	131	€17.50	€0.40	33
Green Exchange	27-May	€17.70	€0.13	0	€17.50	€0.30	0
India's NCDEX (INR)	27-May	1,268.00	37.00	318			

VER Prices (Voluntary)		2005	2006	2007	2008	2009	2010
CCX Vintages (USA)	23-May	$7.20	$7.25	$7.25	$7.20	$7.25	$7.20

Climate change is the issue

GHG emissions is the problem

Price on carbon is the solution

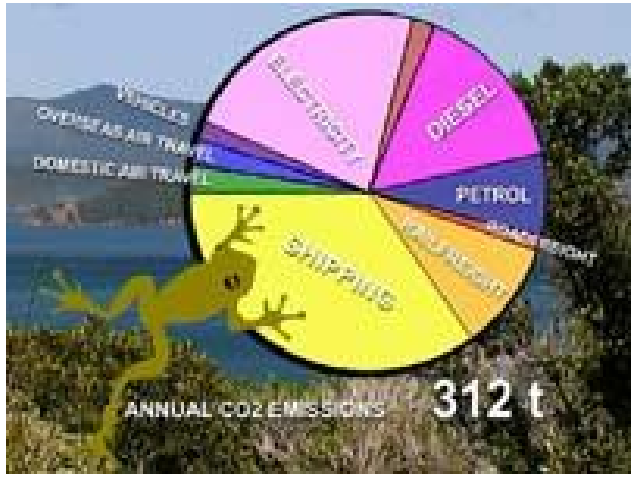
Carbon trading is the mechanism

1 tonne of CO_2e is the currency

Measurement is the main tool

Whether you aim to ….

- Report emissions
  - Compliance
  - Voluntary
- Reduce emissions
- Put a carbon label on products
- Claim to be carbon neutral



…. you need a carbon footprint

Scope and emissions sources

Scope 1 emissions

Fuel (petrol, diesel), coal, gas, process emissions from sources owned or controlled by company, e.g. boilers, vehicle fleet

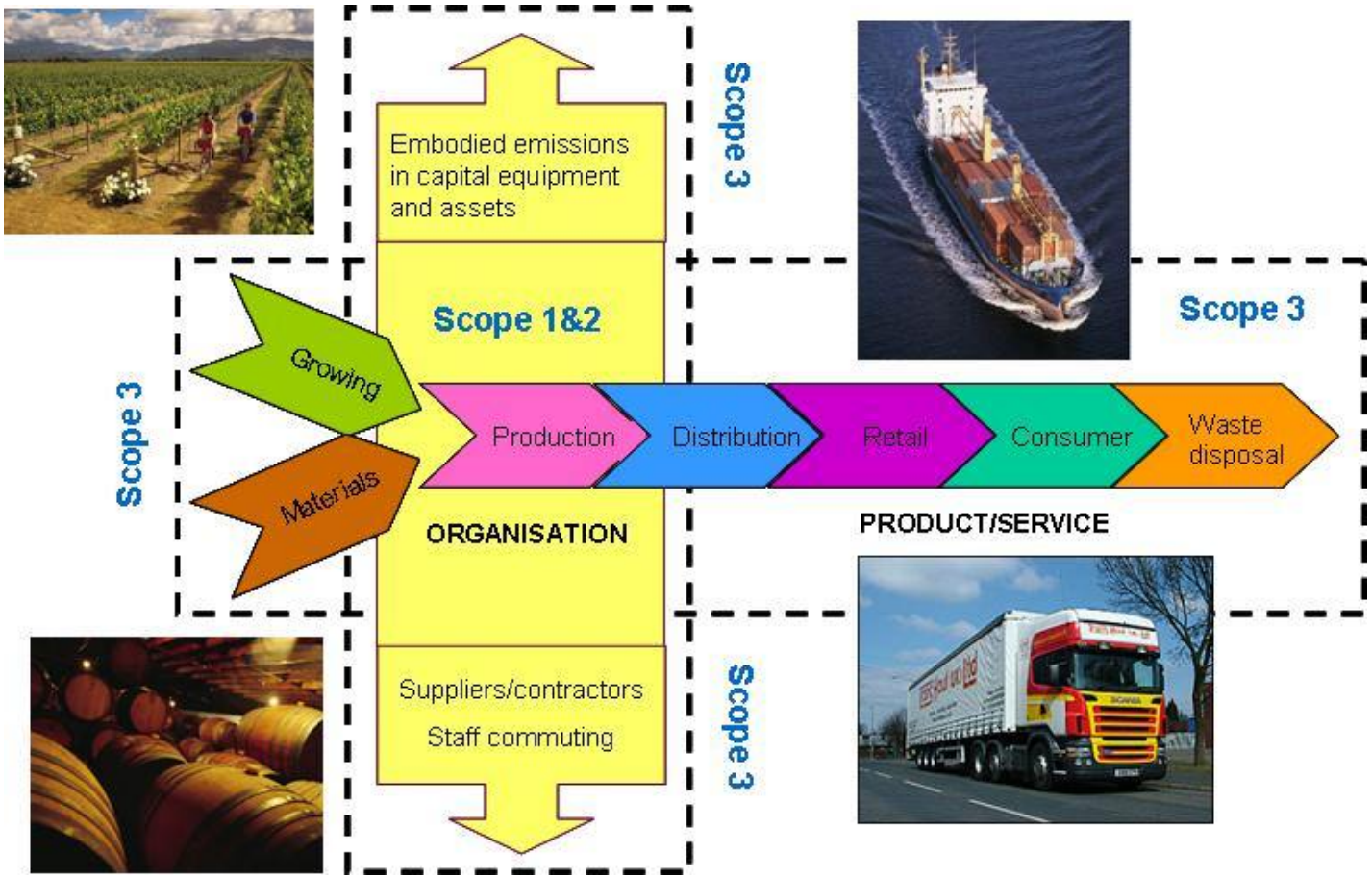
Scope 2 emissions

Purchased electricity

Scope 3 emissions

Contractors, suppliers, air travel, waste disposal, rental cars, taxis, couriers etc

Measurement methods vary ….



.... organisation versus product

…. compliance versus voluntary

KYOTO PROTOCOL 16 FEBRUARY 2005

EU-ETS

defra Carbon Reduction Commitment

Ministry for the Environment Manatū Mō Te Taiao NZ ETS

Australian Government Department of Climate Change Carbon Pollution Reduction Scheme

- Compliance - organisation
  - Scope 1 and 2
  - Owned and controlled
  - No double counting
- Voluntary - organisation
  - Scope 1, 2 and 3
  - Owned, controlled, influenced
  - Double counting expected
- Voluntary - product
  - Life cycle emissions
  - Owned and controlled by all players along the supply chain
  - Double counting expected

Some claim that ….

- Accounting methods on both sides of the carbon balance sheet are too inaccurate to justify claims of real emissions reduction
- Or to support claims of carbon neutrality

Carbon Facts

Product Size 1 Cheeseburger (130g)

Amount Per Serving	
Kilograms CO_2 Equivalent 3.08	
Kilograms CO_2 2.43	Kilograms CH_4 .123
Total C: Energy Sources	243g
Transportation	
Fossil Fuel (Diesel)	120g
Fossil Fuel (Gasoline)	48g
Electricity Production	
Fossil Fuel (Natural Gas)	75g
Fossil Fuel (Coal)	0g
Other	
Total C: Non-Energy Sources	2840gCO_2E
Enteric Fermentation	81.0g (1864gCO_2E)
Manure	25.8g (656gCO_2E)
Other	5.2g (120gCO_2E)
Carbon/Product Ratio	23.7
Localism Rating	D+
Sustainable Production Rating	D+
overall carbon code: orange	

Others claim that …

- Accounting methods are too time consuming and onerous
- Third party verification is expensive and unnecessary
- Simple estimates can be justified by purchasing more offsets than needed.

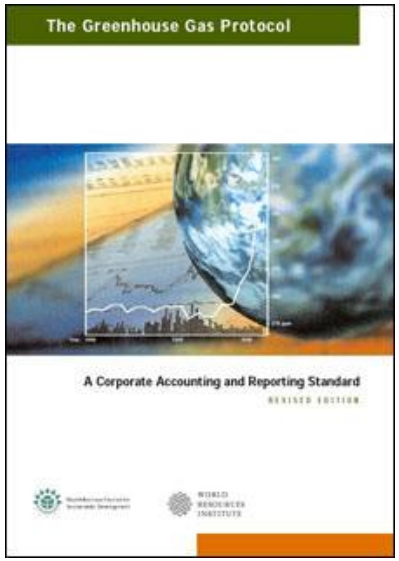
Identical claims …. different methods

This status means that CO_2 emissions from the shipping of wines have been measured and balanced to net zero through high quality GHG emissions reduction projects.

This status means that GHG emissions from the growing, production, bottling, packaging, and shipping of wines have been measured, managed, mitigated through high quality offsets and all steps verified.

No matter what standard you use …

- ORGANISATION
  - GHG Protocol corporate accounting
  - ISO14064 part one
- PRODUCT/SERVICE
  - ISO 14040 series
  - PAS 2050
  - GHG Protocol on supply chain



One standard can give ….

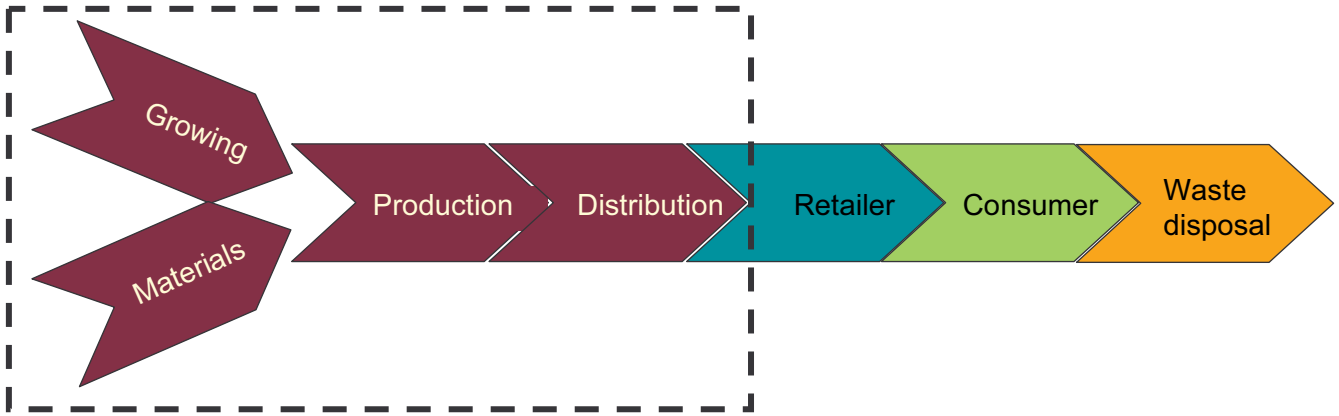
"If a requirement of ISO 14064 prohibits and organization or GHG project proponent from complying with a requirement of the GHG programme, the requirements of the GHG programme take precedence."

…. many possible answers

…. you will be challenged on ….

- Boundary
- Scope
- Inclusions
- Exclusions
- Data quality
- Emissions factors
- Quantification methodologies

What can you control or influence?

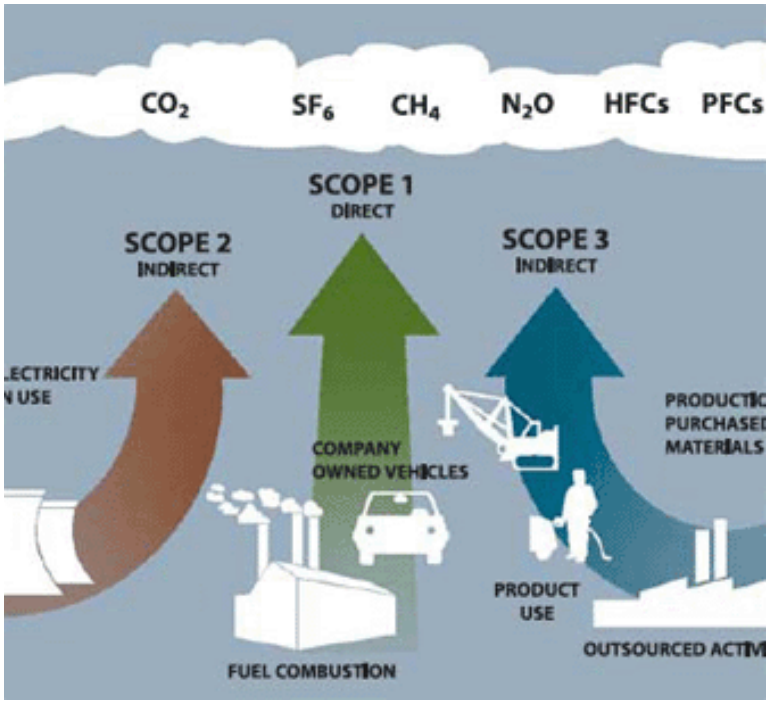


Whether you are exporting from Australia, Chile or New Zealand, the retail, consumer and end of life disposal emissions in the UK will be identical

Back to first principles ….

Measurement should:

- help reduce emissions
- influence players in supply chains to reduce emissions
- help consumers to make purchasing decisions to reduce emissions



…. will it reduce emissions?

International sector standards ….

- Boundary
- Scope
- Inclusions
- Exclusions
- Data quality
- Quantification methodology

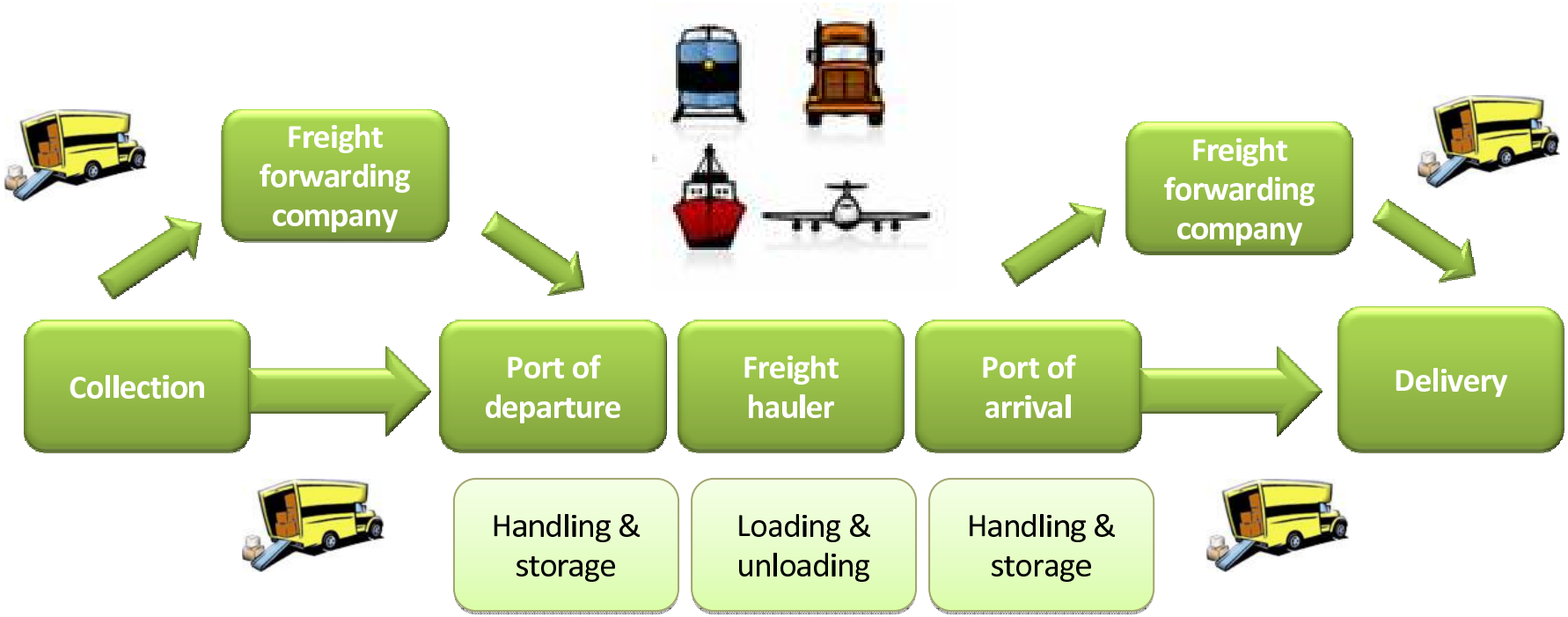
…. needed to make fair comparisons

National datasets are needed ….

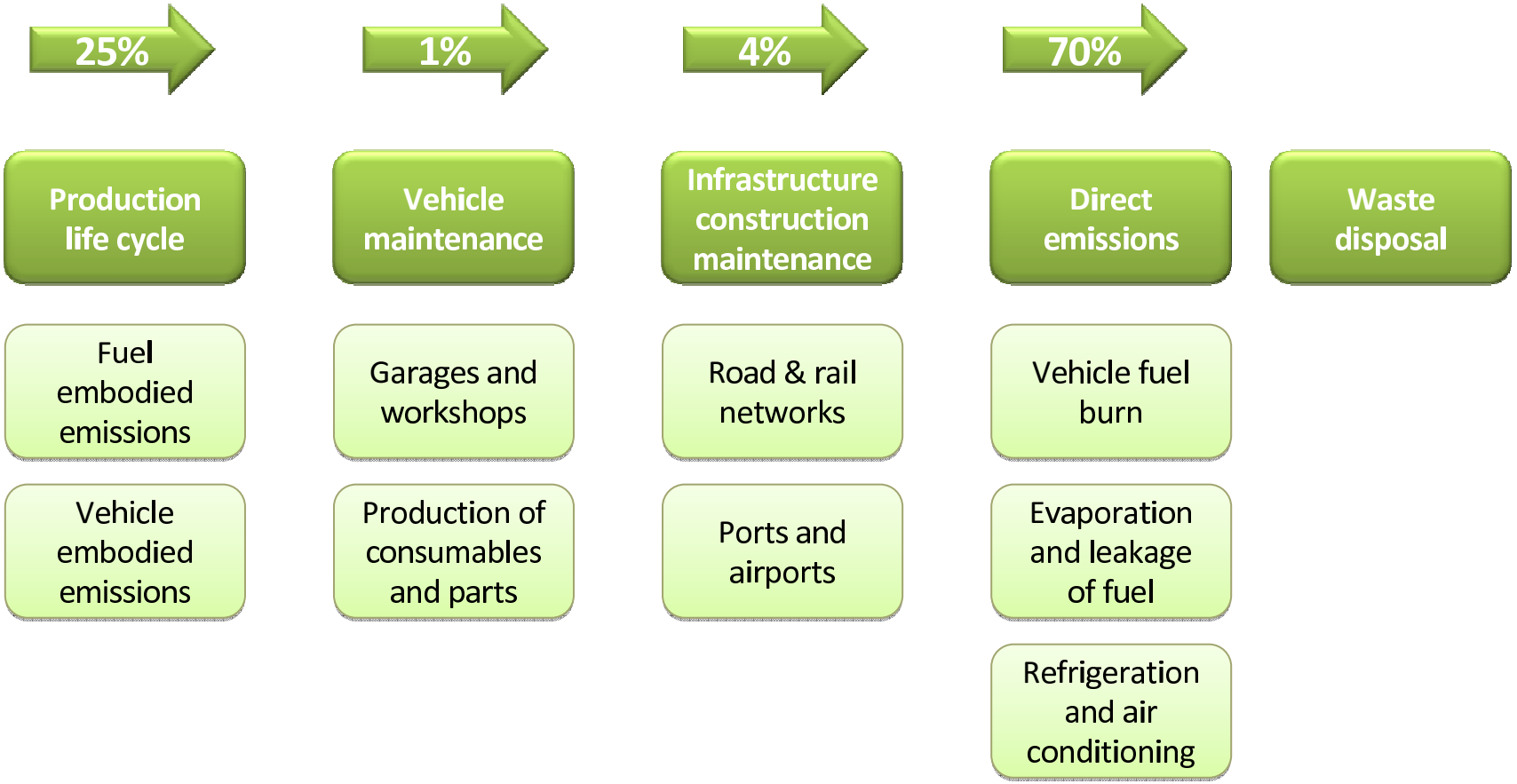
- Emissions factors
- Activity rather than derived data
- Bottom up rather than top down data

…. to demonstrate reduction efficiencies

Freight case study



Freight life cycle emissions



Calculation of freight emissions

- Fuel based
  - Litre fuel x kg CO_2/litre fuel = kg CO_2
- Vehicle based
  - Number vehicles x km X litre fuel/km
    x kg CO_2/litre fuel = kg CO_2
- Tonne-km based
  - Litre fuel/km x kg CO_2/litre fuel
    x tonne-km/cargo capacity x fill rate = kg CO_2
- Tonne-km based (simple)
  - Tonne-km x default value for kg CO_2/tonne-km = kg CO_2

To remove uncertainties ….

- Changing tonne-km does not necessarily result in reduced emissions
- Difficult to obtain exact distances travelled by freight
- Difficult to be certain which type of vehicle will be used
- Routes get changed and different modes of transport may be used
- At best, the use of average emissions factors applied to tonne-km may estimate 70% of the emissions due to freight movements and then there is up to 30% error in the derivation of the emissions factor

We have to change ….

- Litres of fuel on invoices from contractors
- Refrigerant volumes on invoices from maintenance engineers
- Cargo scanned on and off freight vehicles and invoices with weight, distance travelled and type of vehicle
- Verified emissions factors provided by freight haulers

…. the way we do business

Whatever your GHG assertion….

- You need to be understood believed, trusted:
  - Accurate and not misleading
  - Substantiated and verified
  - Relevant to the company, product or service
  - Used in the appropriate context or setting

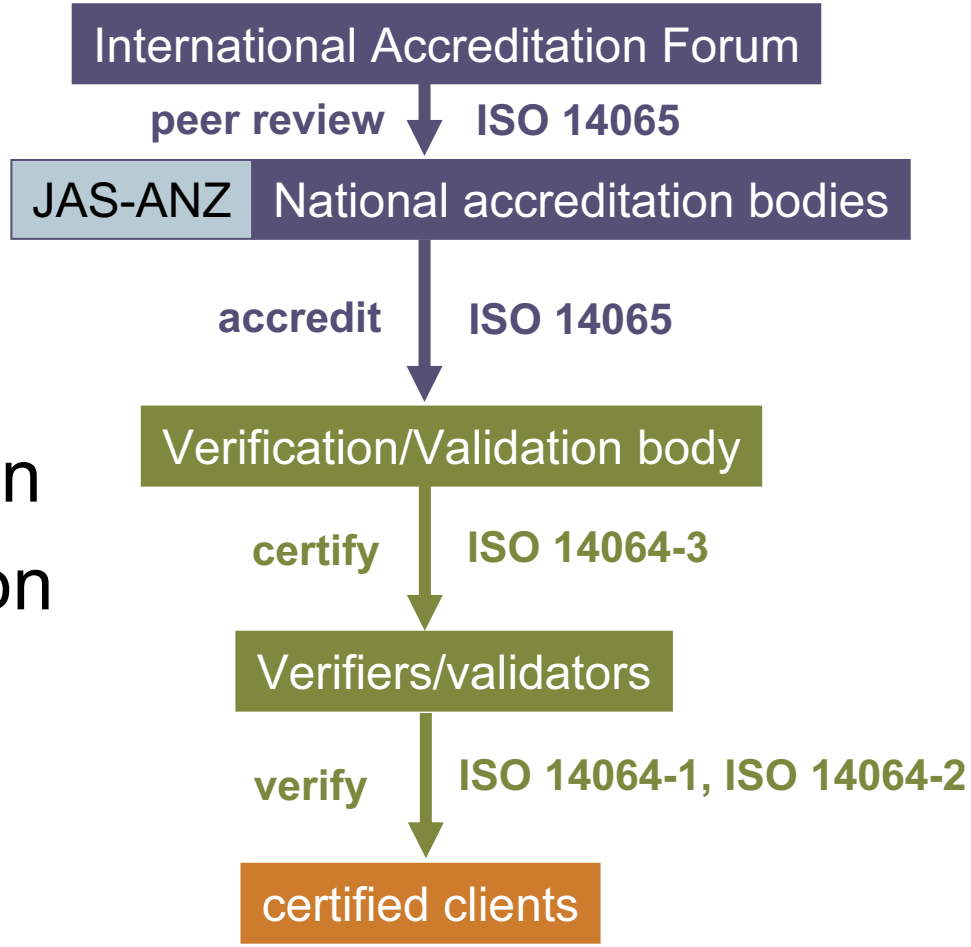
Consumer and advertising law

- NZ Commerce Commission
  - $NZ 60,000 fine for an individual
  - $NZ 200,000 fine for an organisation
- Australian Competition & Consumer Commission
  - fine up to $Aus 1.1 million
- UK Advertising Standards Agency
  - dealt with 561 complaints about 410 advertisements in 2007

Australian Competition & Consumer Commission

Credible claims ….

- Science-based
- International best practice
- Third-party verification
- Accredited certification
- Disclosure



Value of certification ….

- Give stakeholders confidence in your claim
- Avoid accusations of greenwash
- Market advantage
- Sector leadership
- Stand apart from the cowboys
- Unsubstantiated claims can be challenged
- Certification is a fact

Disclosure …. nothing hidden

Summary of carboNZero certification:
Christchurch International Airport Limited

carboNZero

Christchurch International airport Limited

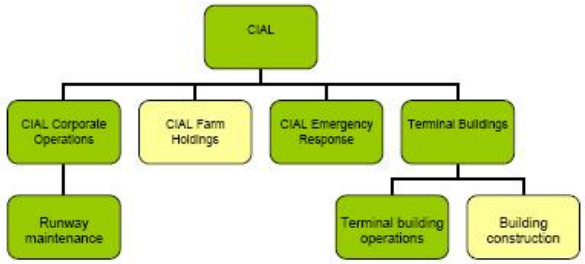
Introduction – Christchurch International Airport Limited (CIAL) owns and operates New Zealand's key southern gateway and is a vital hub for the South Island's tourism and freighting industries. CIAL's core business is the efficient and safe operation of Christchurch International Airport.

CIAL was established as a limited liability company in 1988 and ownership is now shared 75% by Christchurch City Holdings Limited and 25% by the New Zealand Government.

Programmes have progressively been implemented to ensure best practice environmental management at the airport. Examples include an environmental audit programme for CIAL and airport businesses and the undertaking of comprehensive energy audits of terminal operations.

CIAL believes it is essential that positive steps are taken to address the climate change concerns of international travellers visiting New Zealand, while also taking ownership as a responsible corporate citizen.

Boundary – the diagram below shows the organisational structure used for describing CIAL's greenhouse gas (GHG) emissions inventory, and what business units were included in the carboNZero certification. Yellow business units were excluded from the certification.

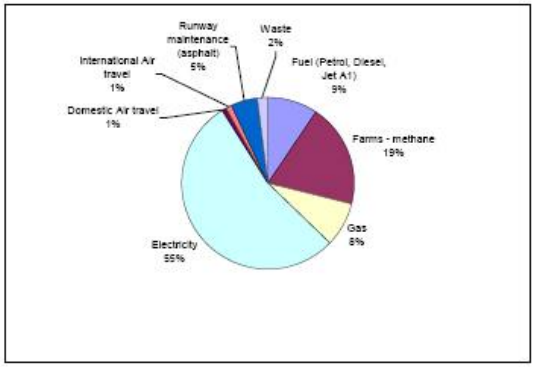


GHG emissions profile – the diagram below shows the operational GHG emissions for CIAL by emissions source . CIAL's total emissions for this period were 5236 tonnes carbon dioxide equivalents (CO_2e) comprising 3638 tonnes CO_2e operational emissions and 1598 tonnes CO_2e non-operational emissions.

www.carbonzero.co.nz

Summary of carboNZero certification:
Christchurch International Airport Limited

carboNZero



GHG emissions reduction commitments – CIAL has developed a GHG emissions reduction plan. Some projects in this plan include:

- CIAL vehicle fleet – adapting vehicle replacement policy to include fuel efficiency considerations.
- Airfield operations – recycle 10% of asphalt during runway maintenance programme.
- Terminal building – implement monitoring and targeting programme to identify and address energy inefficiencies within the terminal building.

Offset – 969 tonnes CO_2e from EBEX21[1] and PRE[2] landfill gas and windpower projects. Carbon credits were not required to offset emissions from purchased electricity because all electricity is purchased from Meridian Energy. Emissions from Farm Holdings and one-time emissions from new building construction were excluded from the offset required for certification.

Verified by – PricewaterhouseCoopers.

Base Year – 01/01/2006 to 31/12/2006.

Certification status – carboNZero certified "organisation" covering terminal buildings (operations), corporate operations, emergency response, airfield and infrastructure maintenance.

Valid until – 30 September 2008.

[1] EBEX21 – Emissions Biodiversity Exchange in the 21st Century project creates carbon credits through the regeneration of native forest on private land – see www.ebex21.co.nz

[2] PRE - Projects to Reduce Emissions is a New Zealand government scheme that awards emission units to eligible initiatives that reduce greenhouse gas emissions – see www.mfe.govt.nz

www.carbonzero.co.nz

The Times, London

"The most important restaurant to open in London in the past 200 years."

Huia

Three take aways ….

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- Disclosure is essential to ensure that claims are not misleading
- Credible certification is essential in order to trade on your carbon assertion

More information

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