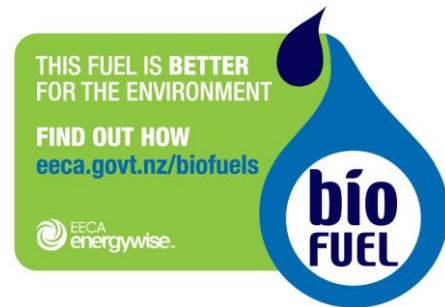




Energy Efficiency and
Conservation Authority
Te Tari Tiaki Pūngao

Sustainability reporting



Trevor Johnson, Advisor, Energy Supply

BANZ Workshop 22 April 2010



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Sustainability

Key concerns in New Zealand:

- Reduction in CO₂ compared with fossil fuel
- Impact on food production
- Affect on biodiversity and land with high conservation value



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Background

- NZEECS action for EECA
- Show NZ biofuels are sustainable
- Have a basis to fairly compare different biofuels



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Emissions

- URS followed the RFA's reporting convention of
 - kg CO₂e / tonne biofuel

OR

- g CO₂e / kg

e.g. Sample biodiesel:

850 g CO₂e / kg



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Conversion Factors

Diesel (Automotive Gas Oil):

MED – New Zealand Energy Data File (50 ppm S)

0.839 kg/litre

45.72 MJ/kg

38.37 MJ/litre

Biodiesel:

40 MJ/kg



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Conversion Factors

Bioethanol:

0.789 g/cm³

31.1 MJ/kg

23.5 MJ/litre

(Wikipedia)



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Conversion

Calculation of savings is done on an energy basis

Converting sample biodiesel

$$\frac{850}{40} = 21.3 \text{ g CO}_2\text{e} / \text{MJ}$$



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Reference Fuel

“NZ Fuel and Electricity Life Cycle Emission Factors 2009”

Prepared by Andrew Barber
AgriLINK N Z Ltd

Life Cycle Emissions For NZ Diesel:

$$70.73 + 11.37 = 82.10 \text{ g CO}_2\text{e / MJ}$$



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Reference Fuel

“NZ Fuel and Electricity Life Cycle Emission Factors 2009”

Prepared by Andrew Barber
AgriLINK N Z Ltd

Life Cycle Emissions for NZ Petrol

$$67.03 + 11.37 = 78.40 \text{ g CO}_2\text{e / MJ}$$



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Calculation

For sample biodiesel:

Calculation is

$$\frac{82.10 - 21.3}{82.10} \times \frac{100}{1}$$

$$= 74\%$$



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Reporting Ranges

For B100

Percent reduction compared with mineral diesel

- Over 80
- 65-80
- 50-65
- 35-50



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Reporting Ranges

For B20 blend

Percent reduction compared with mineral diesel

- 16-18
- 13-16
- 10-13
- 7-10



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Own Statements

We requested statements from producers about their biodiesel in respect of:

- Impact on food production
- Affect on biodiversity and land with high conservation value

As well as feedstock used and country of origin



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Reporting

EECA Website

- www.eeca.govt.nz/node/8082



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Future Issues (1)

- Definition of waste products / by products / co-products

This particularly affects the boundary between what is counted and what is not

The RFA has recently published a paper on the topic:

“Methodology and Evidence base on the Indirect Greenhouse Gas Effects of using Wastes, Residues, and By-products for Biofuels and Bioenergy”



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Future Issues (2)

- Land use change
- Water resources
- Soil degradation
- Land rights



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Questions
