

**EECA**

Energy Efficiency and  
Conservation Authority  
Te Tari Tiaki Pūngao

# Sustainable Biofuels in New Zealand

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**Energy Awareness Week**

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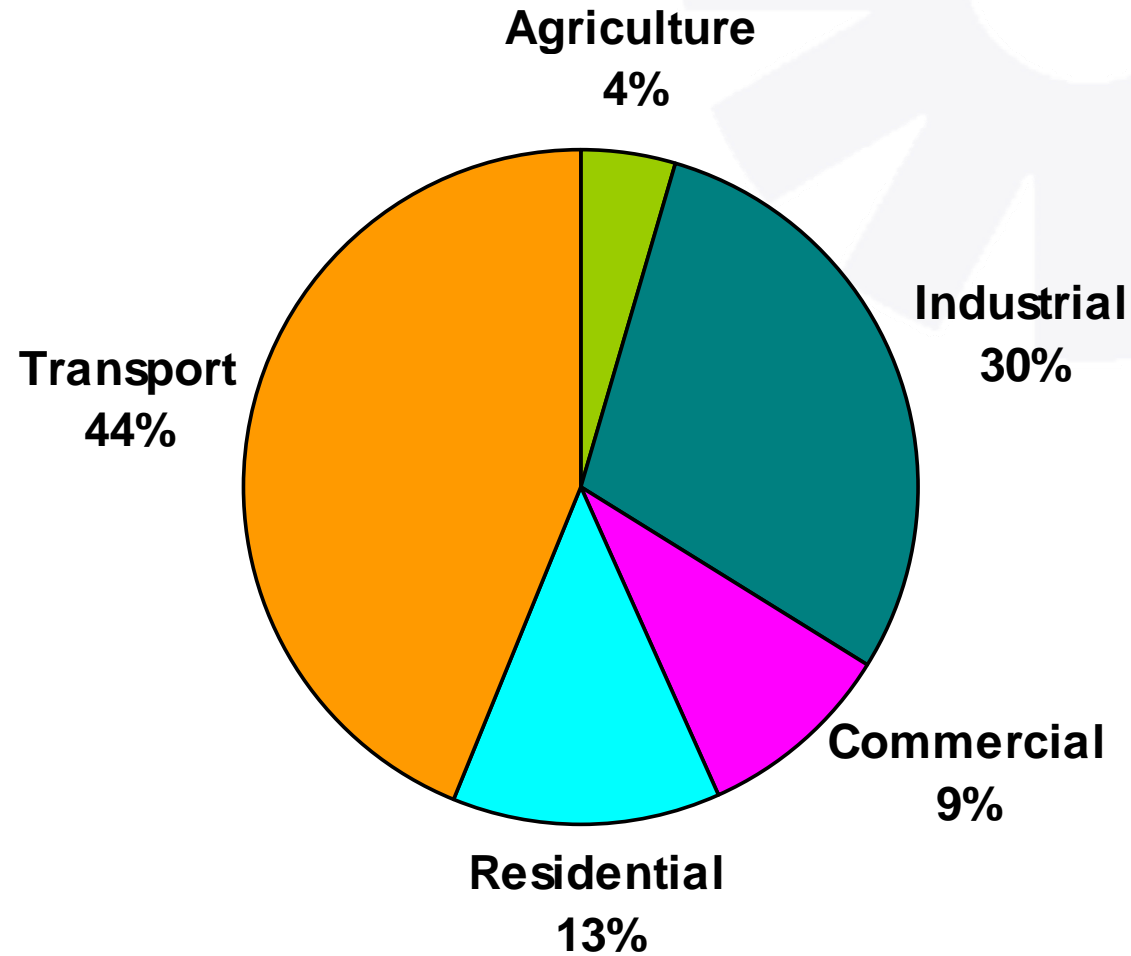
Improving energy choices

# Presentation outline



Biofuels 101  
Food vs. fuel?  
Rainforests vs. fuel?  
Energy in: energy out?  
Flex fuel vehicles  
Summary

# New Zealand's energy use



# NZ renewable energy

Sector	% renewable
Residential	60%
Industrial	46%
Commercial	42%
Agriculture	15%
Transport	0.7% (electricity in rail and trolley buses)

NZ electricity generation: 66% renewable

Biofuels: 2% global transport fuel supply



# Biofuels 101

## Biodiesel

- Vegetable oils or animal fats
- B5 = 5% biodiesel



## Bioethanol

- Starches or sugars
- E10 = 10% ethanol



# Biodiesel internationally



B5 accepted by motor industry  
if fuel specifications met  
All diesel sold in France is B5  
B20 common in USA/Canada  
B20 at pump in Australia

Global feedstocks: Rapeseed,  
soy, palm  
NZ feedstocks: Tallow,  
used cooking oil, break crop  
rapeseed

# Ethanol internationally



World ethanol production 60+ billion litres

80%+ for fuel

Brazil is world leader

E10 in USA for 20+ years

E10 in Canada, Australia, China

E5 in Europe, India, Thailand

Global feedstocks: Sugar cane, corn

NZ feedstocks: Whey

# Food vs. fuel?

- US and European subsidies for biofuels were agricultural support to avoid food surpluses and create jobs
- Biofuels do not have to compete with food or prime agricultural land
- 2<sup>nd</sup> generation biofuel feedstock:
  - Municipal solid waste
  - Sewage
  - Algae
  - Forestry and forest wastes
  - Fast growing grasses on low grade land
- Oil prices key factor in 2008 food price rises

# Food vs. fuel?

US researchers from  
USDA making ethanol  
from city rubbish –  
sufficient city rubbish in  
US to supply 15% of US  
petrol consumption



City rubbish is where  
people are and fuel is  
needed – reduced need for  
fuel transport

# Food vs fuel? NZ

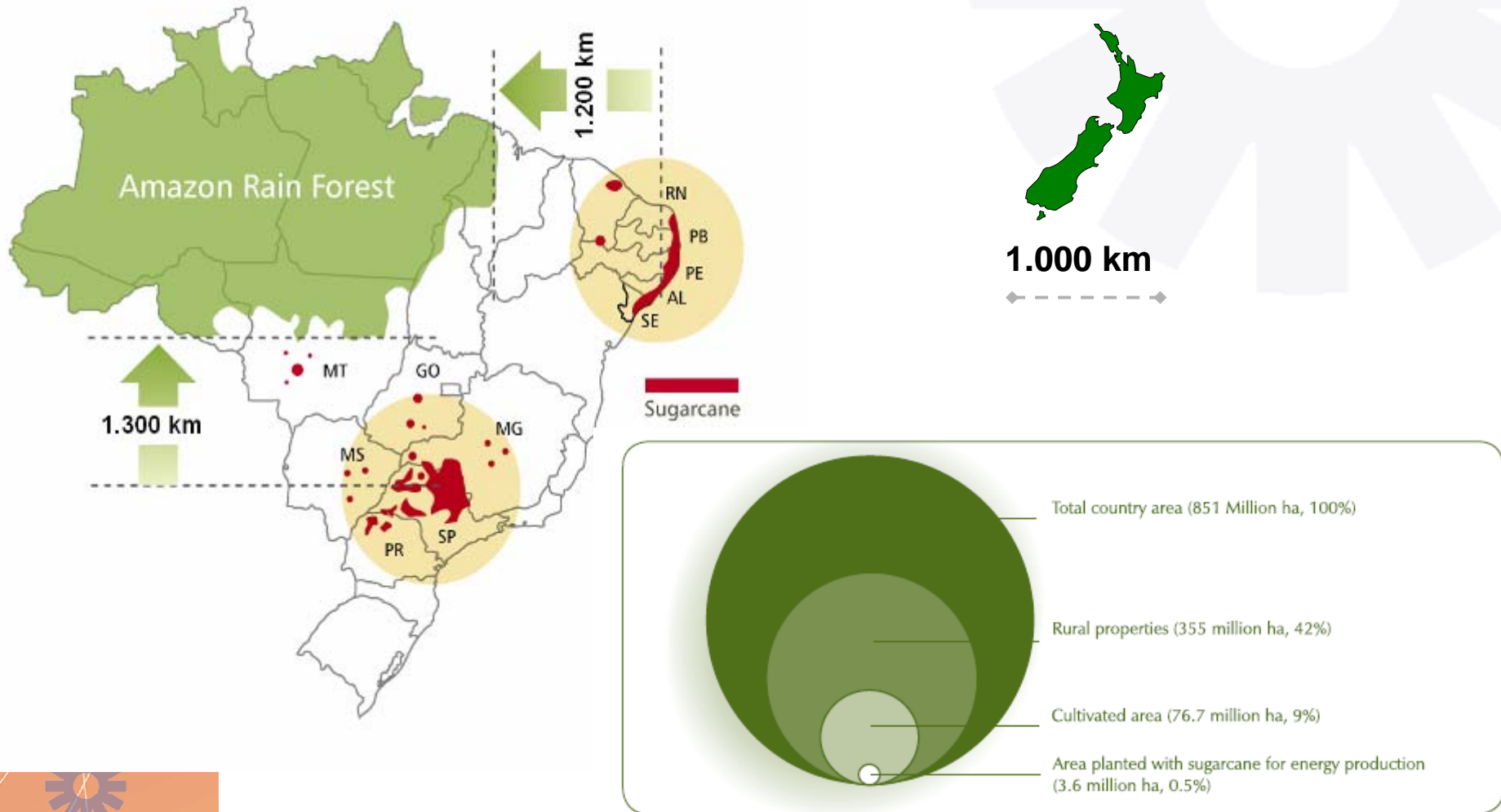
Scion estimate 3.5 million Ha of marginal, low grade land available for biofuels in NZ, sufficient for current transport fuel demand

Scion working with Carter Holt Harvey on *pinus radiata* residues to ethanol

Willow for ethanol growing around Lake Taupo – also reduces nitrate run off into lake

Several NZ research groups working on algae grown on sewage ponds for biofuels

# Sugarcane production in Brazil



Source: IBGE (2007).



# Rainforests vs. fuel?

Some palm oil from Malaysia, Indonesia and some soy from Brazil is a concern

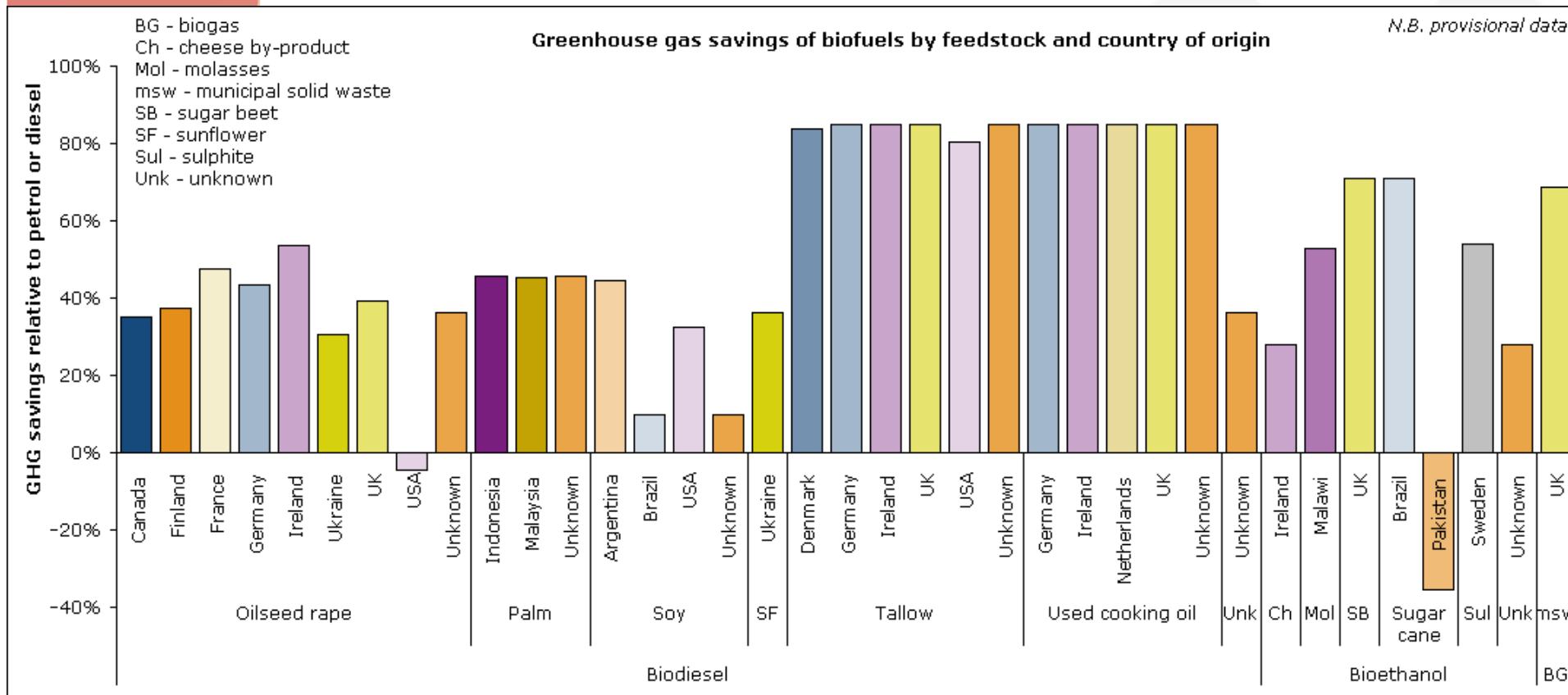
Most palm oil goes for soap, margarine and processed foods, soy for cattle feed

EECA working to provide information on the sustainability of biofuels sold in New Zealand

**RSPO**

Roundtable on Sustainable Palm Oil

# Greenhouse gas savings by feedstock and country



Source: UK Renewable Fuel Agency, March 2009

# Energy in: energy out?

NZ tallow biodiesel energy and greenhouse gases:

Stage	Stages in calc.	Energy input : Output ratio	Energy saving %	Greenhouse Gas Reduction
1. Biodiesel production and transport	1	0.18	85 %	93%
2. Plus rendering	1+2	0.48	60%	69%
3. Plus farming and meat processing	1+2+3	0.50	58%	49%

# Biofuels already in NZ

Gull and Mobil selling bioethanol petrol blends in some North Island service stations.



Waikuku Shuttle Driver  
John Hrynkewycz

Metro bus and NZ  
Bus B5 and B20  
trials  
Fishing fleet in  
Lyttleton using  
B60 and B100  
Kiwirail trialing  
biodiesel blends

# Flex-fuel vehicles



2006 FORD **TAURUS FFV**



- Can use E85 or petrol in the same tank
- No additional cost to ordinary cars
- 6+ million FFV on road in US
- 90% of new car market in Brazil within  
4 years (1.25 million FFV per year)
- Holden plan E85 Commodore by 2010

# Electric Vehicles



# Summary

Not all biofuels are created equal –  
need to differentiate

Biofuels part of the solution – also  
need more walking, cycling, public  
transport, more efficient vehicles  
electric vehicles...

[www.biofuels.govt.nz](http://www.biofuels.govt.nz)