

# Organic Waste – best management options

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# Introduction

- Why organic waste?
- Current ‘best practice’
- Collections data
- Technology advances
- Any changes in recommended ‘best practice’?

# Why organic waste?

- Green waste, food waste
- Around 50% of the waste stream
- Potential for environmental harm
- Conversely – potential for environmental improvement
- Improved efficiency of resource use

# How should we do it?

- Weekly, kerbside, food waste collection
- RTS and home composting for green waste
- Fortnightly rubbish collections
- Organic wastes mostly kept separate

# How should we do it?

## Food waste collections

- Kitchen caddy – vented, liners
- Kerbside container – 25–35L
- Collected using RCVs
- Weekly collection
- Rubbish collection frequency reduces
- Processed in a range of facilities

# How should we do it... in New Zealand

- Lots of research and trials over the last few years
- WMF funded projects – public information
  - BoP vermicomposting trial (2009)
  - Waikato pyrolysis study (2009)
  - Nappy composting Wellington (2009, 2010)
  - Waste 2 Gold Rotorua (2009)
  - Xtreme waste study and trials (2009, 2011)
  - Ecostock packaged food (2010)
  - Commercial collections Auckland & Wellington (2011)

# How should we do it... in New Zealand

## Existing collection services

- Timaru (2006) alternate week recycling/rubbish
- Christchurch (2009) alternate week recycling/rubbish
- Selwyn (2006) weekly rubbish, alternate week recycling

## Green waste only

- Whakatane
- Kawerau (60L weekly rubbish)
- Taranaki

# How should we do it... in New Zealand

## Performance

Scheme/Study	Participation Rate	Capture Rate	Kg per participating hh/yr	Kg per hh/yr
Italy (aggregated data)	80%-90%	75%	182	154
Catalonia (Spain)	80%		192	154
WRAP food waste trial (UK)	41% to 83% (average 62%)	59%	167 - 177	
Bristol (UK)			140	79
Ealing trials (UK)	36%	27%	162	59
Christchurch food waste trials (2002)	23% (opt in)		208	-
Christchurch 2009 on	50-60% set out	50%	296 132 (food waste)	
Timaru	63% set out	40% + 53-60% of food waste	600 149 (food waste)	109 (food waste)
Selwyn			700	



# How should we do it... in New Zealand

## Performance – what can we conclude?

- Co-collected food and garden waste may not be such a bad idea here?

However, still need to consider:

- Adding large quantities of green waste to the collected waste stream
- Processing, seasonal variation, charging, private green waste sector
- Potentially lower capture rates for food waste
- Manual handling
- Higher infrastructure costs

# How should we do it... in New Zealand

## Other issues to consider

- Frequency of collection
- Can rubbish collections be reduced
- Rubbish collection containment
- Cost of processing – volume, type of waste
- What processing is available
- Manual handling – contamination management
- In-house containment – caddies, liners
- Contamination – tolerance of processing
- Whole system costs - processing

# Organics Treatment Technology

- On site disposal
- Composting
- Digestion

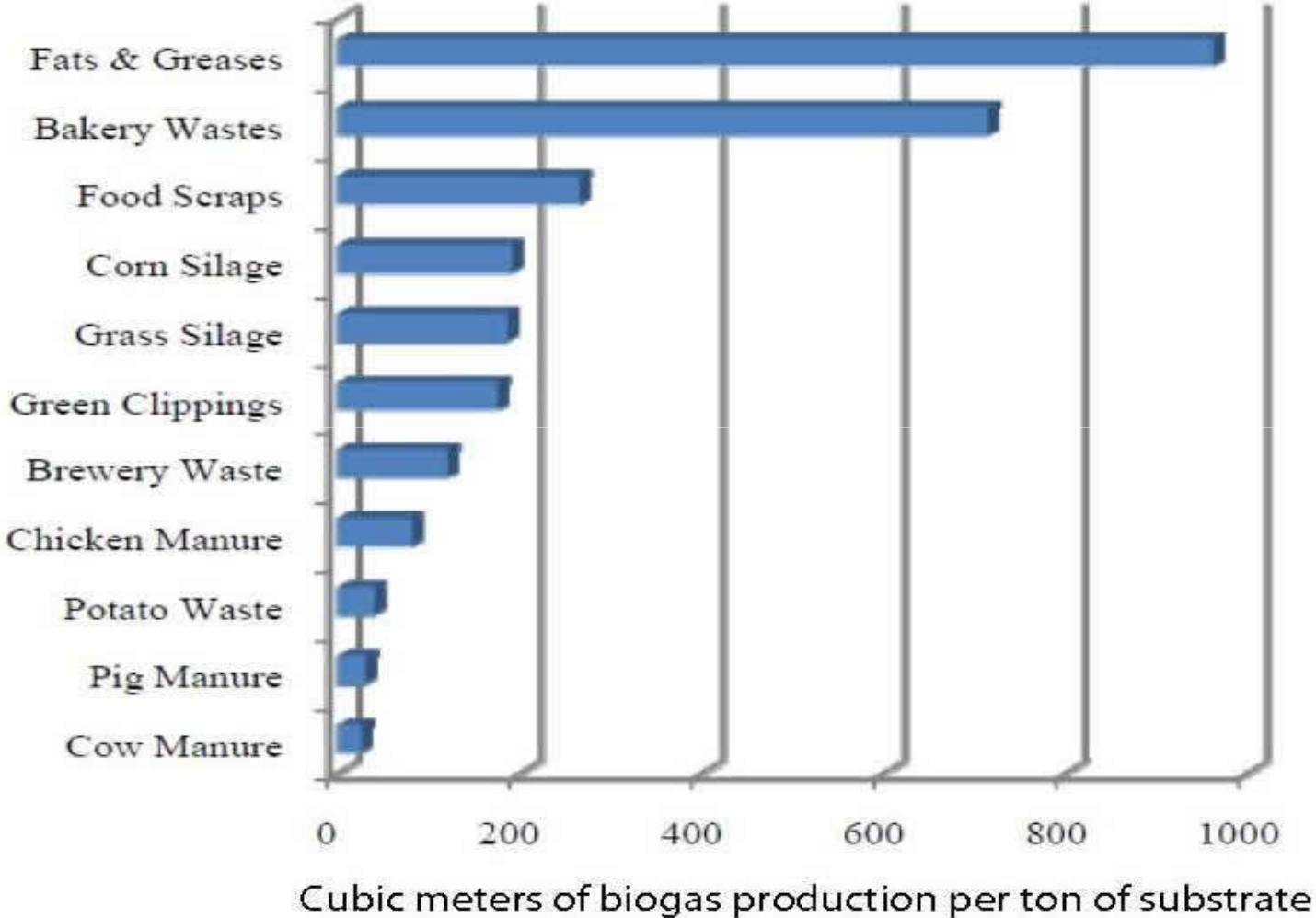
# On Site Disposal



# Digestion



# Digestion feedstock



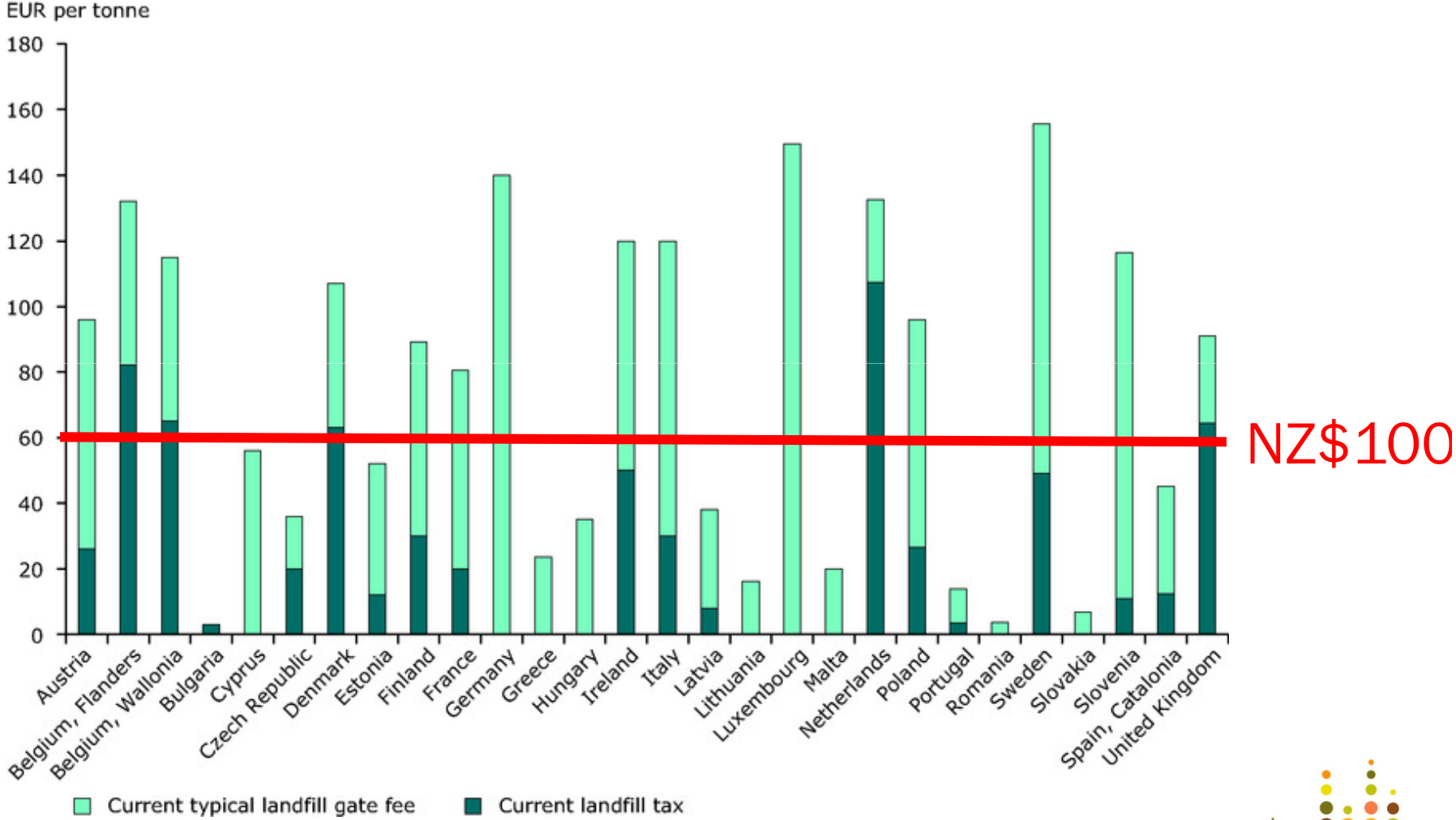
# Key drivers

Economics

Regulations

Social responsibility

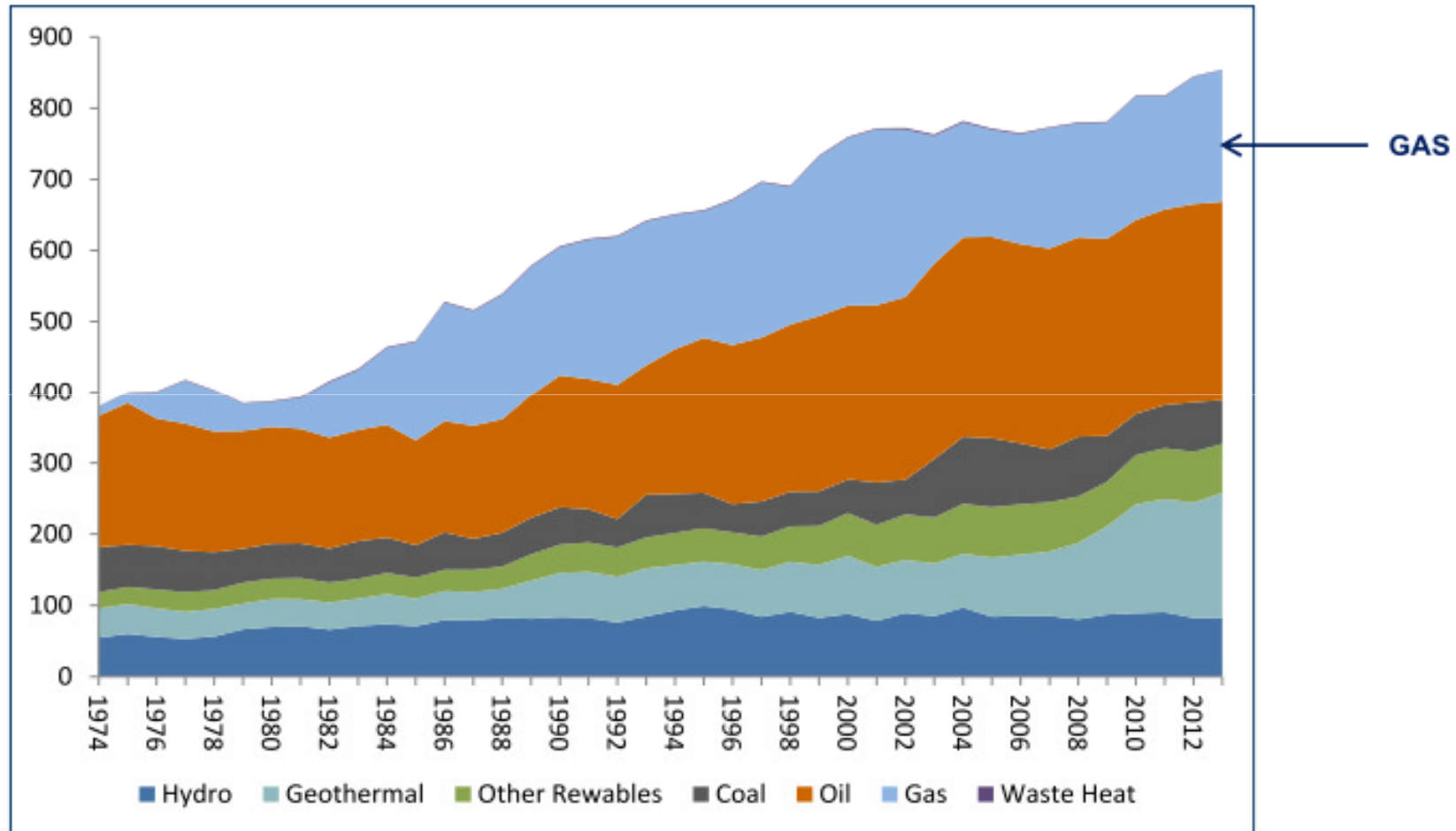
# Landfill Costs





# Energy Market

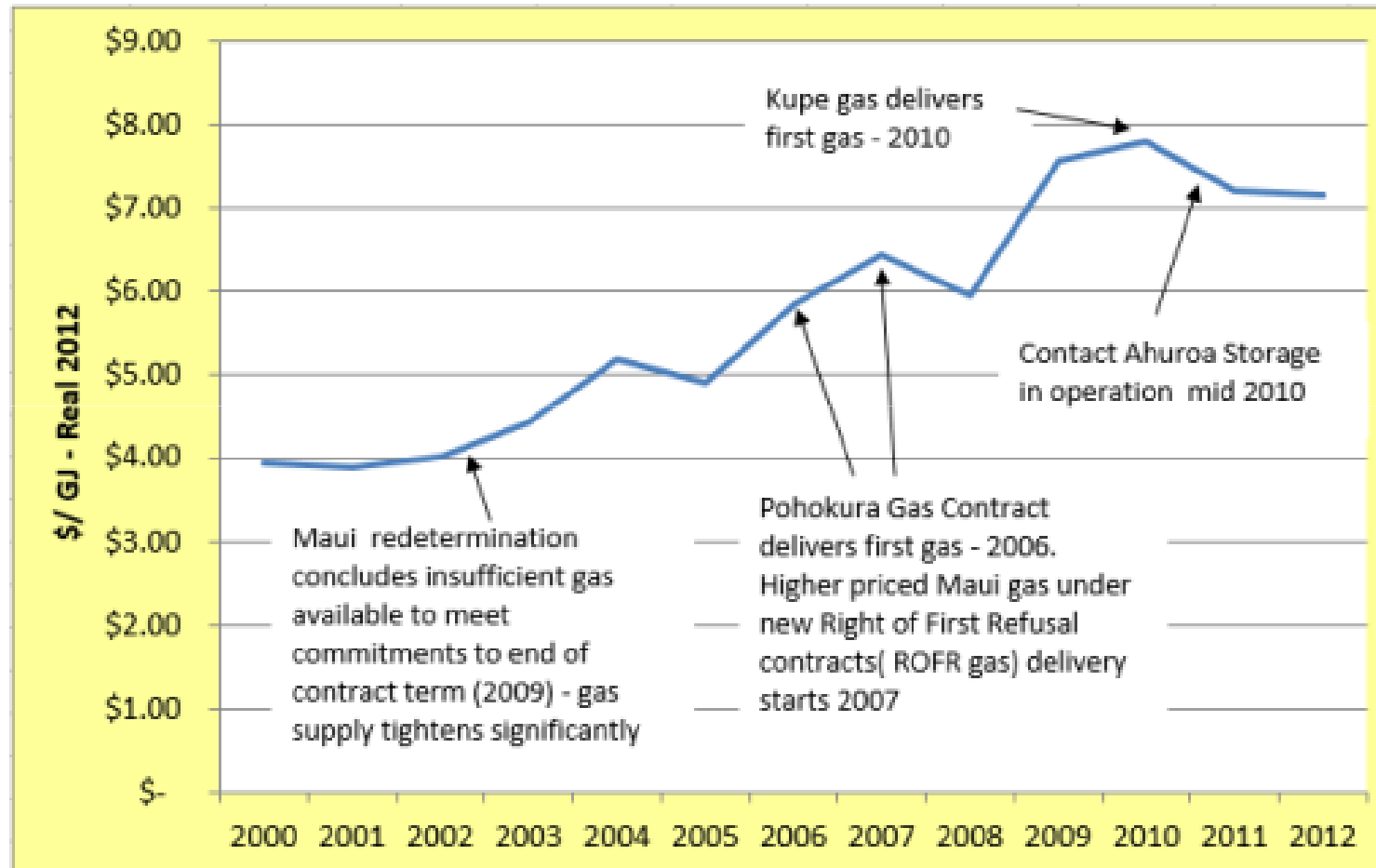
Primary Energy Composition 1974-2013



Source: 2014 Energy in New Zealand

# Gas Price

## Wholesale Gas Price (Real 2012)



Source: Arete Consulting Ltd

# What's Food Waste?

## Constituents:

- Sugars
- Cellulose
- Hemicellulose
- Fats
- Proteins
- Lignin
- Moisture usually high (~70% or so)
- Total C ~12.5% or so fresh matter
- Varying N, P, K content
- Net Calorific Value from 3 - 5 GJ/tonne

# Questions?

# Contact Details

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 thank you

Anaerobic digestion (AD) is now a key technology for recycling biowastes in the UK, it produces large volumes of effluent ('digestate') that are applied to agricultural land. However digestate is a loss centre for AD businesses,

# Food Only vs Mixed

