



Robin Martin

CEO

Plastics New Zealand



What are Plastics?

- Derived from the Greek word PLASKOS meaning to mould
- Man-made material from atoms of carbon and hydrogen
- Made from small molecules (monomers) that link together to form polymers
- Two main groups
 - Thermoplastic
 - Thermosets



New Zealand Plastics Industry

- Turnover of \$4 billion
- Employs over 6000 people
- Over 400 business entities
- Enabling Industry
- Import all polymers (0.001%)



Benefits of Plastics

- Light
- Versatile
- Efficient
- Reduces waste



Properties of Plastic

- Rigidity
- Clarity
- Hardness
- Density
- Toughness
- Softening point





Additives

- To obtain the performance needed a range of additives can be used to meet the required performance standard



Additives

| | |
|-------------------------------------|--------------------------------|
| Increased rigidity..... | glass fibre or mineral fillers |
| Extend outdoor life..... | UV protectant |
| Heat stability improved..... | antioxidants |
| Increase toughness..... | impact modifier |
| Improve processability..... | lubricants |
| Reduce tendency to collect dust.... | anti static agents |
| Vary colour of plastic..... | dyes and pigments |
| Increase softness..... | platicizers |



Why use Plastics?

- Design freedom
- Energy Efficient production
- Save energy in transport
- Can be recycled
- Resistant to chemicals and corrosive environment
- Good surface finish
- Uniform colour
- Good electrical insulation
- Range of flexibility and impact strength



What can you do with Plastics?

Just about anything:

- Distribute food
- Transport people and products
- Package goods
- Insulate electricity
- Perform surgery
- Enjoy our leisure
- Weatherproof our homes
- Insulate our homes
- Irrigate our land
- Drain our land
- Encourage children to play
- Pay our bills

Intrinsic part of everyday life



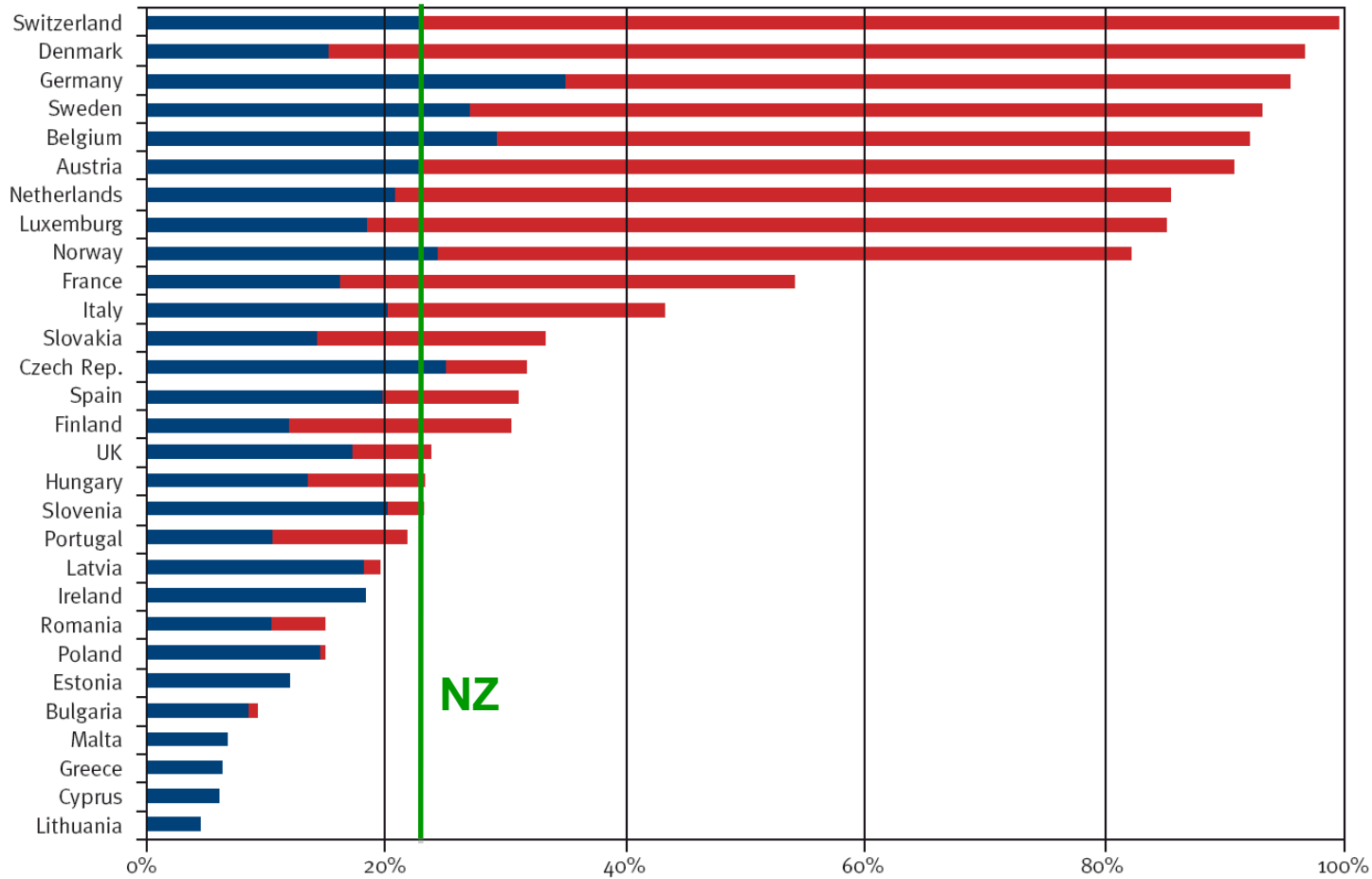
Can they be recycled?

- Industrial waste – 99% in NZ
- Industrial Post-Consumer waste
- Domestic Post-Consumer waste
- Challenges
 - Many different polymers difficult to identify
 - A number of different parties with different positions- consumer, local government, central government
 - Small NZ market
 - Expensive capital
 - Commercial imperative
 - No control on imports
 - Contamination



Figure 10. Recycling and energy recovery rate per country

■ Recycling rate 2007 ■ Energy Recovery rate 2007





Plastics New Zealand Activities

- 2003 Sustainability Initiative
- Signatories to Packaging Accord
- Mass Balance Survey – 20 years data
- Recyclers Survey since 2006
- Plastics ID Code
- Design for the Environment Guide
- Diploma in Design and Specification of Plastics since 2004
- Degradable Guide
- Waste to Energy Project



What is their value?

- Should never be sent to landfill as it is too valuable
- Subject to market forces
- Source of energy



International Trends

- Synthetic polymers will be material of choice
- Increase in new applications
- Reduced waste to landfill
- Increased use of waste to create energy
- Digging up old land fills



International Developments

- New feedstocks
 - Pine tree bark
 - Freezing works effluent
- Biodegradables
- Greenwash
- Scientific evidence regarding benefits of plastics