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BIOGAS

LIQUIDBIOFUELS

WOODENERGY

Bioenergy & biofuels – a transition pathway for Taranaki

Brian Cox Executive Officer, Bioenergy Association

Bioenergy Association

- Represents NZ, Australian and Pacific bioenergy and biofuels players
- Interest Groups
  - Wood energy, waste-to-energy/biogas, liquid biofuels.
  - Development of policy, standards, market growth activities
- Membership based organisation
  - Promotion of member's products and capabilities
  - Advocacy
  - Quality Framework
    - Training and professional development
    - Best practice /Technical Guides
    - Adviser Registration
    - Wood Fuel Supplier Accreditation
    - Professional standards and complaints
  - Information and education
    - Workshops and conferences
    - Information sheets
- Portal to bioenergy information
  - www.usewoodfuel.org.nz
  - www.biogas.org.nz
  - www.liquidbiofuels.org.nz
  - Listing of biomass availability
  - Contact an expert
  - Equipment and services catalogues

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What is bioenergy

- Bioenergy is renewable energy made available from materials derived from biological sources.
- Biomass is any organic material which has stored sunlight in the form of chemical energy
  - Wood
  - Organic food waste
  - Agriculture cropping waste
  - Algae

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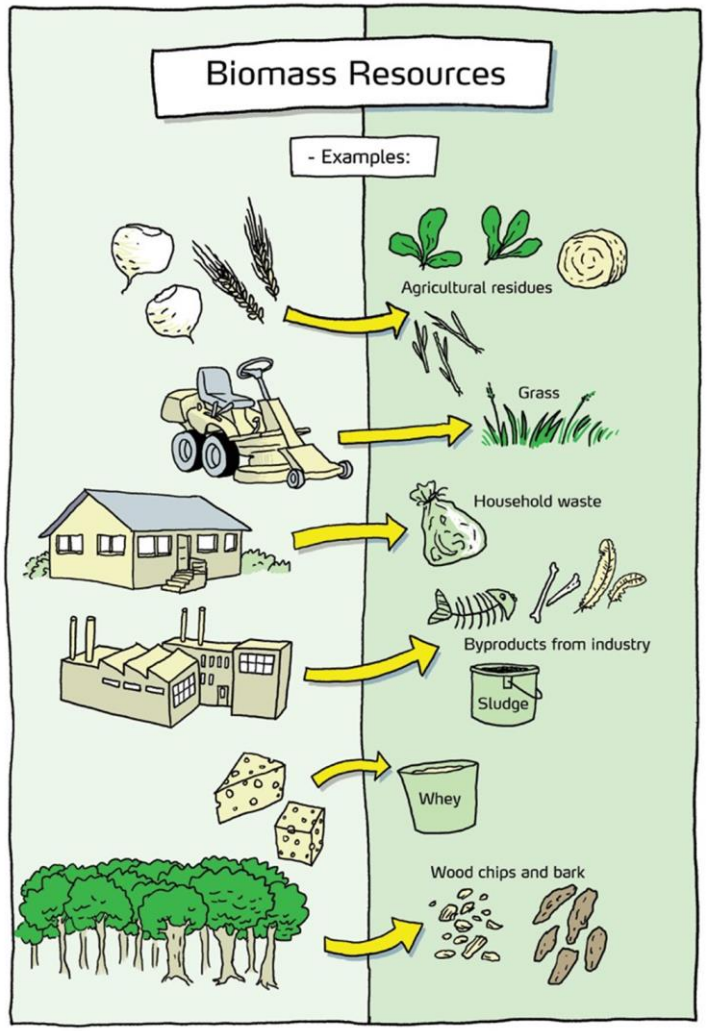
Utilisation of renewable natural resources



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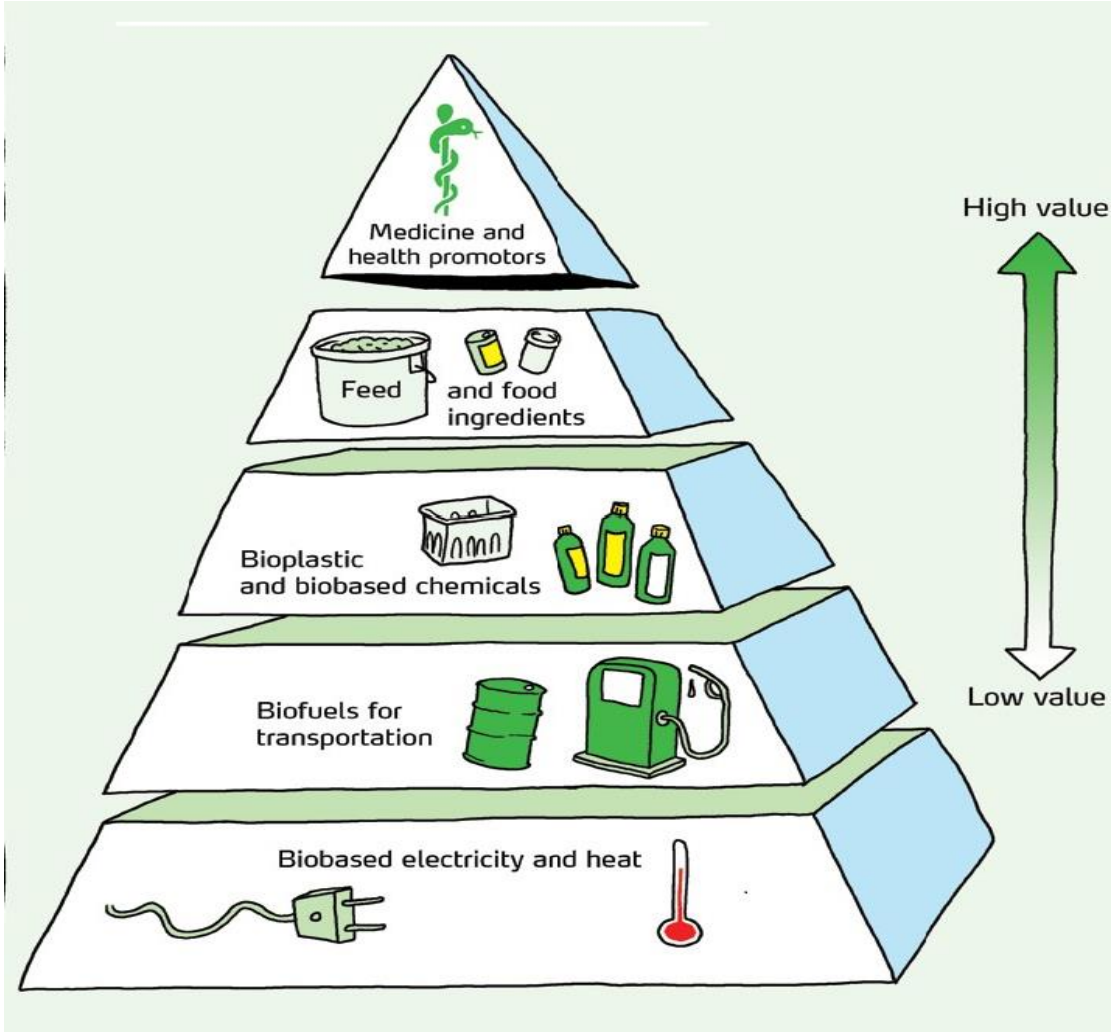
The waste pyramid of value



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Is this a problem or an opportunity?

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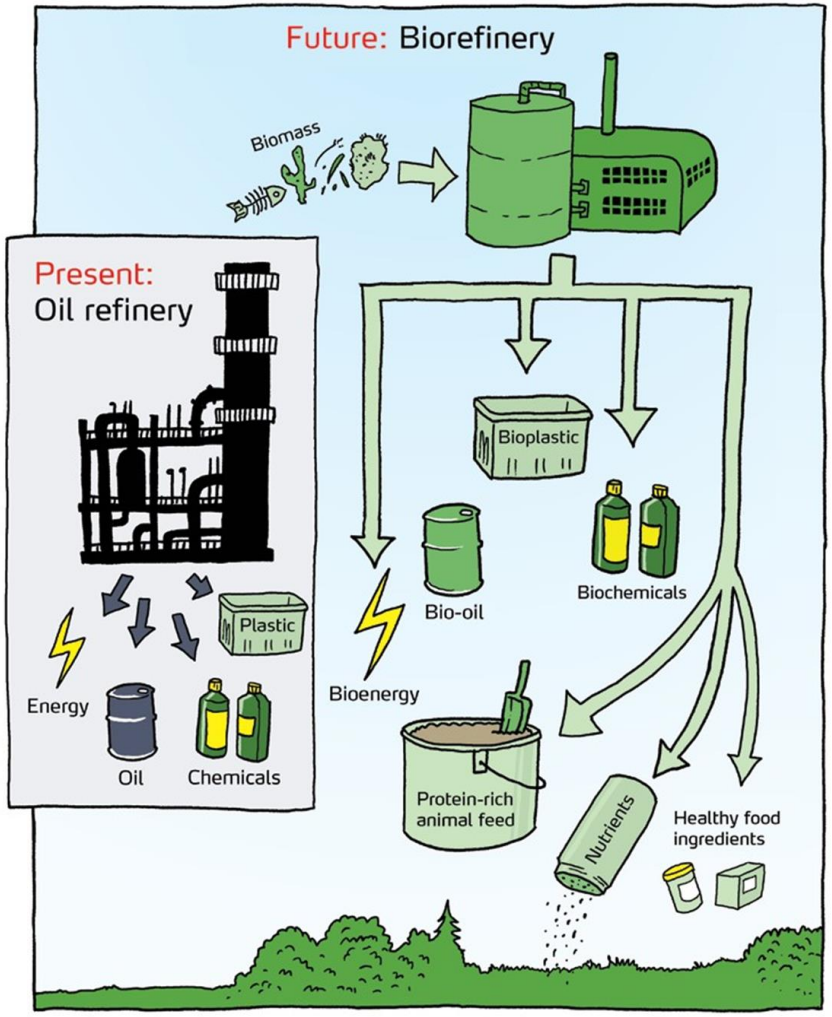
New business opportunities



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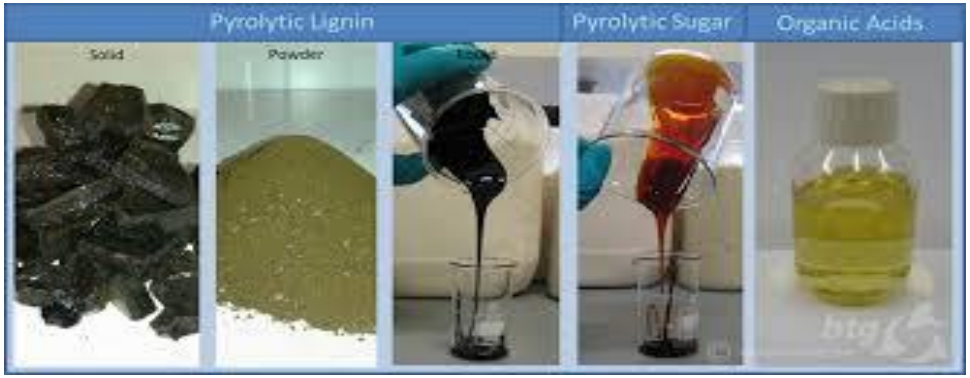
Transition to a post petroleum era

Heat, electricity and transport fuel



Future biochemicals and bio-based materials



Higher value added products delivering quality regional job growth and displacing substantial fossil fuel generated carbon

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Higher value bio-based products we could produce

Xylose

$1.5 Billion Market

- Food Additives
- Xylitol
- Personal Care Products
- Pharmaceuticals

Lignin

$64 Billion Market

- PVC Additive
- Adhesive & Epoxy Resins
- Polyurethane
- Carbon Fiber

Cellulose/Ethanol

$35 Billion Market

- Transportation Fuels
- Fuel Additives
- Solvents
- More Economical Feedstock for Pulp & Paper plants

A solution for all of us

- All of the community are involved
  - There are big and small opportunities
- Low cost solutions have a good financial return
  - the climate benefits come free.
- Three biomass resource opportunities:
  - Waste to energy/biogas
  - Process heat
  - Gaseous and liquid transport fuels
- Each resource area has quite specific market development focus:
  - Biogas separation of waste resources into separate streams
  - Woody fuels - access to plantation forests, value chain and life cycle economics - heat
  - Transport biofuels demonstration - land transport, marine and aviation.
- Integration of parties with shared knowledge base, influencing government and policy, sector development.

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The vision for 2050

- Zero organic waste to landfill
- Food processors have adopted circular economy principles and improved business resilience.
- New business is established from extracting value from residual organic waste
- Coal and gas for process heat is replaced by biomass fuel and electricity
- Using gaseous and liquid biofuels as renewable fuels for heavy transport, rail and marine
- Farmers are utilising biomass and waste as a tool for offsetting 100% biological emissions

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Immediate Taranaki transformation

- Utilising municipal organic waste instead of disposal – extracting value
- A circular economy approach for farming
  - Offsetting animal emissions
  - New business opportunities for farmers
- Improved food processor business resilience
  - Utilisation of waste to produce on-site energy
  - Avoiding waste disposal costs
  - Sale of high grade fertiliser
- Extracting value from waste water treatment facilities
  - Liquid trade waste processed in WWTP

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Zero organic waste to landfill

- New Plymouth already has this policy
- Get behind Council
- Hold the community to account
- Public reporting of reduction in disposal progress

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Food processors have adopted circular economy principles.

- Encourage food processors to use their waste
  - On-site heat
  - On-site electricity
  - Use biomethane as a vehicle fuel
- Make it a condition of consents
- Encourage food processors to report on waste leaving the site
- Reward food processors for taking action

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New business from extracting value from residual organic waste

- Make this a focus of regional development
- Showcase the leaders
- Use existing skills and capabilities
- Promote this as a Taranaki strength

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Coal and gas for process heat is replaced by biomass fuel and electricity

- Inventory of fossil fuels use for process heat
- Annual report card on the region's use of fossil and renewable energy
- Identify who is using fossil fuels – monitor and report on their use

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A renewable liquid fuel for heavy transport, rail and marine

- Regional inventory of fossil fuel use in transport
- Annual report card on the regions use of fossil and renewable energy in transport
- Demonstrate biofuel use by manufacturing biodiesel from used cooking oils for fishing fleet and support boats

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Farmers are 100% offsetting biological emissions

- Farmers to process dairy effluent into biogas
- Produce wood fuel from shelterbelts, erosion plantings, riparian planting
- Demonstration of circular economy principles for farm operation

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Transformation must come from the people

- Taranaki's future must be community driven
- Big business will do what is good for big business
- Taranaki's opportunities for transformation can come from all of us
- Biomass is the most versatile renewable energy source to replace petroleum
- But bioenergy and biofuels markets are complex and require leadership and facilitation from central and local government.

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