



Energy Efficiency and
Conservation Authority
Te Tari Tiaki Pūngao

Making the most of our bioenergy industry



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Overview

- *I am here today because I believe there is a huge bioenergy potential in New Zealand*



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What is EECA?



Residential



Business

***Inspiring energy efficiency –
advancing renewable energy***



Products



Energy supply



*Government & local
govt*



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Why energy efficiency and renewable energy?

- Balance supply and demand
- Cost-effective way to get multiple benefits
- Potential to significantly reduce NZ's \$16 billion energy bill
- Reduces emissions
- Helps to meet our climate change objectives
- Significant health benefits – warm, dry homes
- Improved local air quality
- Environmental benefits – less infrastructure
- Fewer transmission towers
- Builds on NZ's clean, green image
- Boosts regional economy
- **Stronger businesses – good for the bottom line**

This Government's energy aims

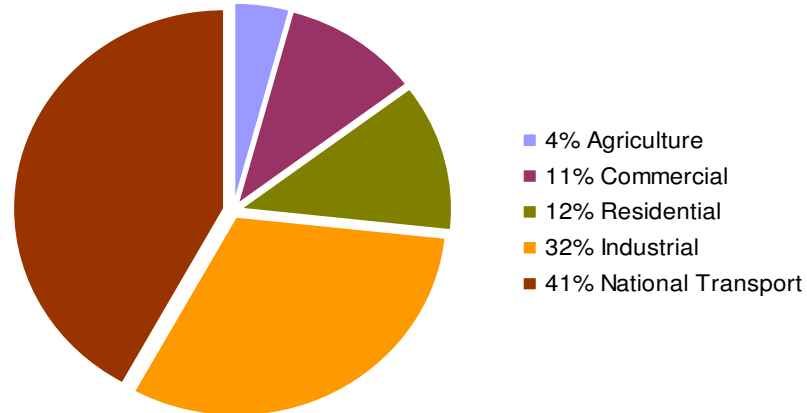
To support:

- Economic growth
- Energy security
- Affordability
- Environmental responsibility
- ***Bioenergy can respond to all these drivers***
- ***Government sees energy as a key part of it's economic transformation agenda***



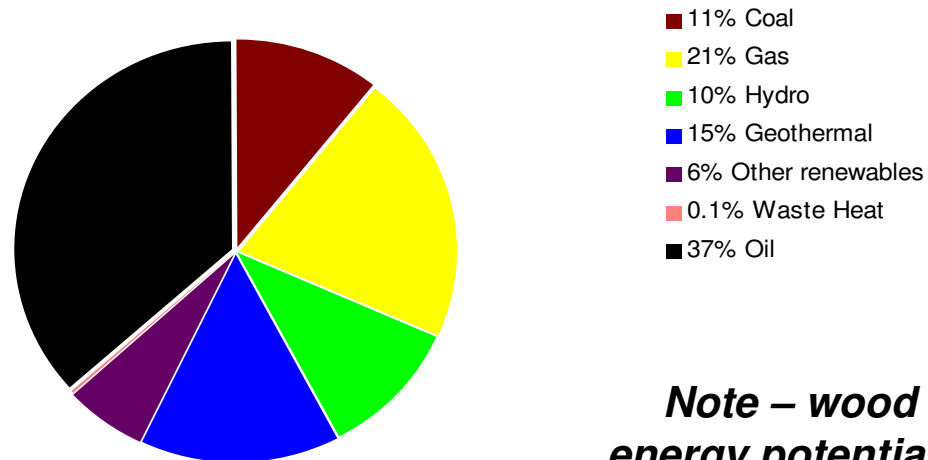
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TOTAL CONSUMER ENERGY BY SECTOR IN 2008



NZ Energy Data File (MED, 2009)

TOTAL PRIMARY ENERGY SUPPLY 2008



NZ Energy Data File (MED, 2009)

***Note – wood
energy potential a
further 46PJ a year***

The international scene

- Demand is strong and growing for wood pellets internationally:
 - demand in Germany and Austria expected to grow 25% during 2009
 - Proj. annual growth in Sweden for wood pellets 8% – 10% p.a. over next few years.
- EU renewable energy target of 20% by 2020 - biggest increase in bioenergy – mainly wood
- Over 450 wood pellet plants in Europe currently
- Around 25% of global production is exported
- Real concern about demand outstripping supply
- ***How are you going to capitalise on this massive export opportunity ?***

The value of wood energy

- Oven-dry wood has ~19 GJ / tonne of energy
- Bio-crude also has ~19 GJ / “ “ “
 - Equivalent to **5.3 kWh / kg**
- Comparison with petrol: **13.1 kWh / kg**
 - Recognised as a highly concentrated energy source
- Cost-effective alternative to other fuels – stable supply, less subject to price volatility
- **Therefore conversion into high value solid and liquid fuels represents a great opportunity.**

The value of wood energy

- Wood energy customers currently pay between \$5 - 12 / GJ for wood chip
- At \$10 / GJ, value of a tonne of 30% M.C. wood chip is \$125
- Add \$3.50 / GJ cost to take to market – excellent margins
- Compare to \$55 / GJ of electricity
- Compare to \$40 / GJ of petrol
- F.O.B. value of export pulp logs less than \$70 / tonne at Dec 2009
- **So - why is more New Zealand pine processed in China than in New Zealand?**
- **Why not invest in fuel upgrading and wood energy demand?**



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The purpose of today

- We all know the potential – so how do we get there ?
- Need to collectively develop a clear direction for the bioenergy industry
- Develop a clear ‘value proposition’ that takes into account all the benefits of bioenergy
- Identify the key stakeholders and their roles
- Decide on an action plan to move the industry forward

Start by knowing what you want to achieve...

Develop clear goals - for example.....

- *25% of consumer energy from biomass by 2040*
- *Forestry owners and wood processors enjoy stable, consistent returns year-on-year due to diversified energy and fibre markets*
- *NZ meets its international obligations for net GHG emissions, with afforestation substantially offsetting agricultural methane emissions*
- *NZ is a net exporter of energy and high-value bioenergy solutions*
- *National water and air quality and soil conservation goals are met easily*
- *Primary production in NZ has a global reputation for its sustainability credentials due to the high uptake of bioenergy for production*

Develop a value proposition

- Highlight the value that bioenergy can provide
- What are all the co-benefits for bioenergy and are they covered ?
 - Emissions reduction, job creation
- Think about the industry's critical stakeholders – how does your value proposition relate to their business or policy drivers ?
 - Wood processors – is there a market ?
- Clearly articulate how bioenergy can help achieve the Government's energy sector goals
 - Security of supply, economic growth, environmental responsibility

Understand the opportunities ?

For example...

- More developed international markets provide New Zealand's bioenergy industry with an opportunity for export led growth
- There could potentially be as much as a NZ\$200/tonne margin between the cost of producing pellets in New Zealand (from pulpwood) and the market price in some overseas markets.
- What other opportunities exist in industries other than wood processing ?
- What are the new sources of bioenergy ?

New markets: Wood energy for industrial heat

- Radford Yarn Technologies
 - New Zealand's first wood pellet-fired industrial boiler
 - Benefits
 - Reduced electricity by 50,000 kWh / yr
 - Reduced CO2 emissions by 350 tonnes / yr
 - Markets product as environmentally friendly
 - Supreme winner at EECA Awards 2009
- New Zealand Foam Latex
 - Installed a wood chip fired boiler for industrial heat
 - Using demolition wood.

New markets: Wood energy for space heating

- 31 schools in Auckland, Rotorua, Canterbury, Otago have switched to wood energy through our Renewable Heating in Schools Project.
 - Switched to either chips or wood pellets
 - Reduced emissions / maintenance time
 - Environmental leadership within local communities
- Accommodation provider, Titoki Healing Centre, using wood pellet boiler

New markets: Wood pellets

- Solid Energy sees a future in pellets – has three plants
- Supply in NZ will soon be in excess of 250,000 tonnes/year (mostly Solid Energy). Potential supply exceeds current demand.
- Solid Energy are looking to stimulate demand by marketing high-efficiency Austrian biomass boilers (HDG) and competitive supply contracts.
- Some success - Rangipo Prison
 - 200kW HDG Austrian made wood pellet boiler
 - will supply hot water and space heating to part of the prison
 - pellets supplied from the new wood pellet plant in Taupo

Understand the challenges ?

For example...

- Could the development of a bioenergy industry threaten wood processors raw material costs?
- How could this risk be best mitigated?
- Are there sufficient incentives in place to encourage the longer term development of the bioenergy sector including investment in energy crops, energy forests and emerging bioenergy technologies?
- How can we address the lack of information about bioenergy technology, its benefits and security of supply of bioenergy fuels ?



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Who needs to be involved ?

- To develop a successful bioenergy strategy, identify the critical stakeholders and their needs and roles e.g.
 - industrial heat users
 - farmers
 - central and local government
 - forestry owners
 - wood processors
 - rural communities
 - export markets
 - who else ?

Agree next steps with timelines

- Identify the key actions and milestones required to achieve the strategy's vision that:
 - Will grow supply and demand for existing bioenergy products given the current economic environment – e.g. wood pellet exports to Europe or North Asia; and,
 - Will nurture the development of new bioenergy products and associated markets- e.g. gasifier technology producing bio-syn gas and bio-char
 - Are sufficiently flexible to accommodate unexpected technological innovation and a changeable environment

What EECA is doing ?

- Scion estimate forest residue potential will peak at 5 m tonnes/year between 2026 and 2030
- EECA is helping to create demand for this large resource
- Information - The Bioenergy Knowledge Centre, case studies and EECA advisory activity meeting knowledge gap
- Since 2007 - \$5.3 million invested into industrial & commercial heat projects, worth \$30 million. Reduced carbon emissions by 835,000 tonnes
- Estimated average cost to government is \$7/tonne CO₂ avoided, compared to \$12.5/tonne Government subsidy to offset CO₂ emissions under the ETS.
- The cost of carbon abatement through the wood energy programme starts as low as \$2/tonne

What EECA is doing ?

- 29 feasibility studies have already demonstrated potential for up to 1 million additional tonnes/year of wood to enter our energy supply
- Feasibility studies showing wood is more economic for direct heat than LPG in most cases.
- The forest residue recovery work stream demonstrating the economic recovery of forest residue for wood fuel for as low as \$3/GJ
- Pilot project has demonstrated the benefits of wood energy in 31 schools



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To conclude...

- Need to develop and execute a plan to realise the bioenergy potential we know exists
- Know clearly what you want to achieve
- Develop a clear 'value proposition' that takes into account all the benefits of bioenergy
- Identify the key stakeholders and their roles – make the value proposition relevant for these stakeholders
- Decide on an action plan to move the industry forward