

Proceedings of the EECA Wood Energy Summit, held 12 June 2009 Timberlands, Rotorua

Attendees – see Appendix.

Moderator – Murray Bell, Manager Business, Energy Efficiency & Conservation Authority

Don Roberts

Don Roberts said there is a fundamental change in forestry policy, the biggest since the end of the colonial era. In bioenergy there are many 'snake oil salesmen' out there, so it is important to get the facts straight before investing.

Don gave his overview of the current status of bioenergy technology. He said that there are 18 different cellulosic ethanol technologies. Range Fuels of Georgia <http://www.rangefuels.com/> is the first fully commercial cellulosic ethanol company. But it is not dealing directly with forest owners or forest product companies – these are being cut out. So disintermediation is taking place.

Don Roberts said that the analytical capacity of traditional paper companies is at an historic low. However there is no shortage of investment capital globally. So the biggest issue for investors in wood energy is the information asymmetry, particularly regarding the delivered cost of biomass.

Don Petersen

Don Petersen works with landowners. The big issue for them is how to get the biomass out of the woods. For landowners this is a break-even, so the value proposition is local economic development and local jobs.

Don Petersen said very few people know how to invest in a pellet plant. While globally we can't meet the current demand for pellets, the problem is to produce enough of them at the right quality. Pellets are often part of an added value chain, with pellets being the first step, then niches like animal bedding, then lumber, then cogeneration and liquid biofuels.

In the United States government funding for biomass energy is largely directed to electricity and ethanol production. In Wisconsin, the governor has decided to put woody biomass into 30-40% efficient cogeneration plants – a move that Don does not see as sensible. However, Don sees a lot of potential in district heating, process heat and residential heating. Annual residential pellet consumption per household using pellets in his part of the world is about three tonnes/year.

When producing chips, the most economic production would be a mix of residential and industrial/commercial wood chips. The drier the better. The first step is to produce dry chips, before manufacturing pellets or briquettes.

When evaluating fuel choice, chips and pellets should be compared to fossil fuel alternatives.

Don sees potential in wood briquettes, as these are the best process fuel for large boilers. In terms of costs, they are 20-30% better than pellets.

Don talked about non-forest residue as a fuel source. This includes:

- Manufacturing residues
- Demolition wood
- Packaging e.g. pallets
- Paper
- Urban trees/landscaping waste

He also identified three types of forest residue:

- Stumps
- Tops/branches
- Sub merchantable trees

Forest fuel types include fuel rods (stems down to 1 cm) and bundles. Bundler systems add US \$13/tonne to fuel costs.

Fred Staples, Pan Pac

Fred stated that pellets have only become economic with government intervention. Pan Pac's interest is in fibre, specifically newsprint grades to Japan. He spends most of his time dealing with a 'dysfunctional' electricity market. To make electricity from biomass at Pan Pac pay, biomass needs to go into the boiler at NZ\$20/green tonne. For Pan Pac electricity contributes 40% of the cost of Pulp.

Pan Pac currently have a heat demand of 2PJ and an electrical demand of 0.5PJ. They have reduced CO₂ emissions to 80% of 1990 levels while increasing pulp production by 12% and sawmill production by 230%.

Fred stated that wood pellets could be an option for Pan Pac going forward.

Don Roberts (in response): Europeans get an 8 x GDP multiplier on pulp and paper, so the resource issue was a major public policy issue. Additionally though, bioenergy is estimated to employ 13 times more people per unit of raw resource than pulp and paper.

Fred (continued): Most increase in NZ wood output is being exported as logs rather than processed. Electricity from pellets is only economic with government interference as in the UK. Half the energy in the pellets is in the drying – a 2:1 ratio. Burning coal and paying a Carbon Tax to generate electricity costs about half as much as burning wood pellets to make electricity.

Murray Cowan, Ernslaw

Ernslaw manages a distributed forest estate, most lots only 5,000-10,000 ha. Aim is to increase the value and quality of wood that could be used for energy. Produce 15,000 tonnes a year at 3.5 cents/kWh wholesale and at 7-8 cents/kWh retail.

Ernslaw sees wood chip as a growing market and as a result of the Renewable Heating for Schools project purchased a Heizohack chipper. Naseby, where the chipper was originally located, is a dry climate, where residue and energy logs can achieve moisture content as low as 15%. The Naseby and Tapanui forests produce a lot of small diameter logs which are ideal for chipping and use for energy.

Ernslaw Bioenergy supply Alexandra Hospital. There are logistics issues supplying small boilers. Chips are at a density of 250 kg/m³, therefore low energy density. Dunstan High School and the hospital use 250-300 tonnes/year, which is only two days' work for the chipper.

Currently the Heizohack is doing trials on forest residue for Winstone Pulp International (WPI) in the central North Island where it is producing up to 1000 tonnes per month. The chipper can do tops with branches on and slash, but the challenge is to get these residues onto the skid site in a form they can use. The established price to WPI is based on pulp chip price.

Ernslaw Bioenergy also bought a NZ \$500,000 pellet plant, they do 500 kg/hour. Works OK. The plant operated on Pine and Douglas Fir. As the feedstock mix was changing it was difficult to make a consistent end product. However plant is now sitting idle as the raw material has been lost. They could use sawdust but would then need to find an alternative energy source.

Discussion from delegates

Question - Eduard Ebbinge, Spark Biomass, for Don Roberts:

What returns need to be generated from renewable energy projects to attract investment?

Don Roberts responds: Venture capital funds have an IRR of 20% hurdle rate.

Comments –

Don Roberts: What price do you need on that output? You need a price of US\$60-70 a barrel [of oil] to make bioenergy pay. You also need a utility that is prepared to pay a high price. Ask yourself, 'Where is the smart money going?' Honeywell is not going to ethanol, they are going to aviation fuel and bio crude, drop in replacements for existing fossil fuels.

James Treadwell, Rayonier: We have to work out the best system for New Zealand. The woody biomass price will be determined by energy prices, not by pulp and lumber prices.

Fred Staples: The result of a price on carbon will be the export of biomass fuel.

Question - Simon Coughlan, Jatropha Organisation NZ: As energy prices increase, the radius from which it is economic to recover residue will decrease [?].

Murray Cowan: Diesel is only a small proportion of energy cost. We charge the chipper out at NZ\$250/hour, of which \$40 is diesel cost.

Question: What are the key factors in reducing the delivered cost of biomass fuels?

Don Petersen: Anything you can do to leave the water on the skid site, by drying on site, will improve the cost.

Don Roberts: Integral Earth Fuels of South Carolina, USA, are doing torrefaction that results in a fuel with 95% of coal's calorific value. Can we do better than pellets? Torrefaction and biochemicals for example. Existing pulp and paper companies don't know how to invest in these things. A pellet plant needs 60,000 tonnes/year to have enough scale.

Comment –

James Treadwell: but you can't put any more processing or plant on the skid site. The skid is very limited.

Fred Staples: A radiata log for sawing will deteriorate after one week.

Question: Murray Bell, Energy Efficiency & Conservation Authority: Perhaps the domestic market is more chips than pellets?

Murray Cowan: Pellets are a different niche to chips. You need more space for chip fuel handling, so pellets will be more suitable in some applications.

Comment -

Don Petersen: To me, this conversation totally escapes me. These things are either feasible or they're not. You do a business case to determine that.

John Dey, Forme Consulting Group: Either way, there is a major change to whole log processing.

Don Petersen: The supply chain may collapse though. 10% of loggers are going out of business.

Question: Peter Campbell, Pan Pac: Will district heating work in New Zealand?

Don Petersen: Only when you relocate an entire town.

Kent Chalmers, City Forests: The [resource] consents issue is driving wood energy in Dunedin. A study we have been involved with is currently looking into the possibility of a district heating scheme in Dunedin.

Closing Comments:

Shaun Bowler, Energy Efficiency and Conservation Authority: Almost everyone here wants change, or believes that change is coming whether we want it or not. Bioenergy will be part of that change.

Summit concluded with Murray Bell thanking attendees and panellists for their attendance and contributions

Appendix - Attendees

Name	Company
Richard Mandeno	Waverley Sawmills Ltd
James Treadwell	Rayonier NZ Ltd
Tim Sandall	Pan Pac Forest Products Ltd
Tim Charleson	Red Stag Timber Ltd
Murray Galt	Ernslaw Bio-Energy
Rhys Millar	Forest Environments
Kent Chalmers	City Forests Ltd
Gina Rintoul	Anzac Fueltech
Rob Brown	Timberlands
Mark Self	Timberlands
Eduard Ebbinge	Spark Biomass Energy
Gustav Bam	WPI International Ltd
Brendan Cropp	Ryco Trucking Ltd
Jon Dey	Forme Consulting Group Ltd
Peter Campbell	Pan Pac Forest Products Ltd
Brian Cox	Bioenergy Association of NZ
Simon Coughlan	Jatropha Organization NZ
Murray Bell	Energy Efficiency and Conservation Authority
Shaun Bolwer	Energy Efficiency and Conservation Authority
Kirk Archibald	Energy Efficiency and Conservation Authority
Mark Windsor	Energy Efficiency and Conservation Authority
Ting Liu	Energy Efficiency and Conservation Authority
Speakers	
Don Roberts	CIBC World Markets Inc. Canada
Don Peterson	Renewable Resource Solutions, LLC, USA
Murray Cowen	Ernslaw Bio-Energy
Fred Staples	Pan Pac Forest Products Ltd