



MADISON'S TIMBER PREVIEW

PO Box 2486, Vancouver, BC V6B 3W7 ✦ Tel: 604-984-6838 ✦ Email: madrep@shawcable.com ✦ Web: www.madisonsreport.com

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When *Madison's* first started seriously reporting on the future of biomass fuels early in 2008, the response from readers was akin to the faint chirping of crickets at twilight. A year later, in mid-2009, the scope of information and statistics out of Europe and the US for future consumption of green energy began to attract peoples' attention. With 2010 underway, there is data now available on biomass fuel production and consumption in various regions globally to the end of 2009. As previously explained by *Madison's*, this is a growth industry on a scale not seen for a long time. Compare its impact to the invention of the internal combustion engine.

The value of residuals, whether on the forest floor or at the sawmill, to the timber processing supply chain is clear. For years sawmills have relied on the credits from selling wood chips to pulp mills. In years prior to capitalizing on chips, those wood chips were a liability, taking time and effort for companies to burn as a method of disposal. In the same way, forest residue, currently an annoying problem in the woods, too expensive to bring roadside at most logging sites, will be soon an emerging bonanza and continuing cash cow for timber harvesting and processing companies. Its a bit like finding gold in your garbage.

On Thursday, February 25, 2009 a team of University of Wisconsin-Madison engineers announced they have developed a highly efficient, environmentally friendly process that converts a biomass derivative into the chemical equivalent of jet fuel. The simple process has focussed on converting abundant plant-based sugars into transportation fuels, while preserving about 95 per cent of the energy from the original biomass.

"It really is very simple," says postdoctoral researcher Jesse Bond, of the two-step catalytic process. "We can pull off these two catalytic stages, as well as the requisite separation steps, in series, with basic equipment. With very minimal processing, we can produce a pure stream of jet-fuel-range alkenes and a fairly pure stream of carbon dioxide."

When this new development is added to related discoveries in recent months, including a different process for efficiently converting wood cellulose into sugar which is then turned into green energy, it becomes obvious that the raw material -- forest residue -- is about to become valuable. The upward pressure on demand for wood chips from sawmills by renewable energy companies, mostly in Europe, as well as pulp mills, has already been noted by *Madison's* throughout 2009. With chip prices continuing to rise, the next place for these companies to turn is the forest floor.

A new report by Fisher International, Inc. details the increase in biomass fuel consumption in various regions from 2006 to 2009. Sandy Perkins, Solution Utilization Specialist, explained to *Madison's*, "The biomass referred to here is the sawdust, shavings, bark, wood chips, etc. that are burned, it does not include pulping liquor. The purchased biomass is material brought in from outside the mill, so the difference -- the internal biomass -- is the material generated in woodyards located at the mill facilities. What is included here is total biomass (internal and purchased) consumption by region and the major wood consuming countries, along with the percentage of that biomass that is purchased, and also the percentage of total fuel consumption that is made up of biomass."

Fisher International found that global consumption of biomass increased by 51 per cent between 2006 and 2009. The leading biomass-consuming countries by volume are regions with large areas of forests, including Canada, the US, Brazil and Sweden. Norway and Sweden took the lead in biomass usage in

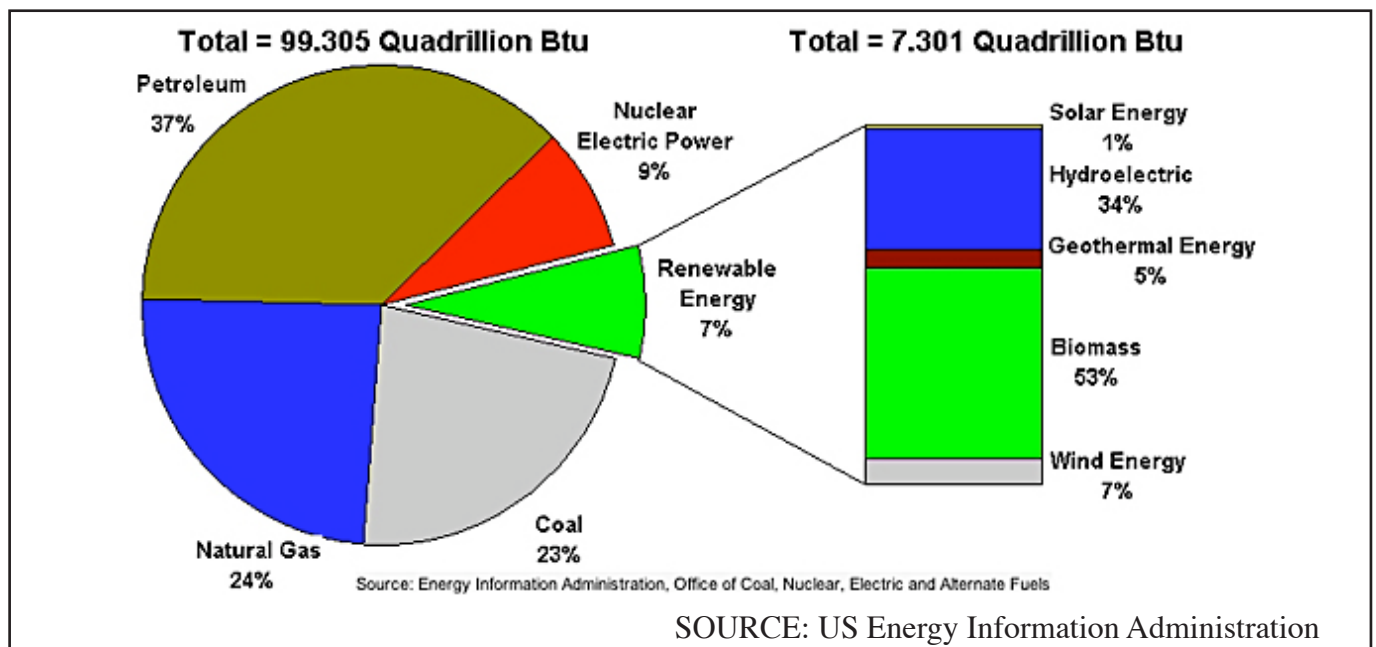
2009 at 42 per cent and 38 per cent, respectively, followed by Canada, Brazil and New Zealand. With the increased usage of bark and wood fibre for energy, pulp mills have expanded their external sourcing of the biomass. In 2006, 53 per cent woody biomass was purchased in the open market; in 2009, this share had increased to 69 per cent.

From its May 2009 meeting in Rome, Italy, the Food and Agricultural Organization of the UN published a report stating, "Developments present both opportunities and challenges for the forestry sector. The use of wood for energy production will increase demand for roundwood and wood residues. These new demands will affect the forestry sector."

In a separate report coming out of the Rome conference, the FAO explained, " In 2007, biofuels contributed around one to two per cent of world road-transport fuel demand; according to projections by the International Energy Agency, this percentage should increase to 2.3 per cent by 2015 and 3.2 per cent by 2030. Biofuels may also be used for heating, cooking and generating electricity."

Moving over to North America, the US Energy Information Administration (EIA) published in a July 2009 report, "Renewable energy consumption grew by 7 per cent between 2007 and 2008, despite a 2 per cent decline in total US energy consumption. Renewable energy's share of total US energy consumption was over 7 per cent in 2008, compared to 6 per cent in 2004."

Of that 7 per cent renewable energy, 53 per cent was biomass fuel.



A separate report by the US EIA found that North American production of biofuel rose from 227.3 thousand barrels per day in 2004 to 673.3 tb/day in 2008, while consumption of biofuel rose from 237.7 tb/day in 2004 to 682.7 tb/day in 2008. In Europe the production of biofuel rose from 51.7 tb/day in 2004 to 214.2 tb/day in 2008, while consumption rose from 50.9 tb/day in 2004 to 240.3 tb/day in 2008, proving that demand for fuel from biomass, specifically forest residue, is rising at progressively increasing rates.

Keta Kosman
 Publisher
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 www.madisonsreport.com
 604 984-6838