

Wood Pellets

Becoming a Primary Product

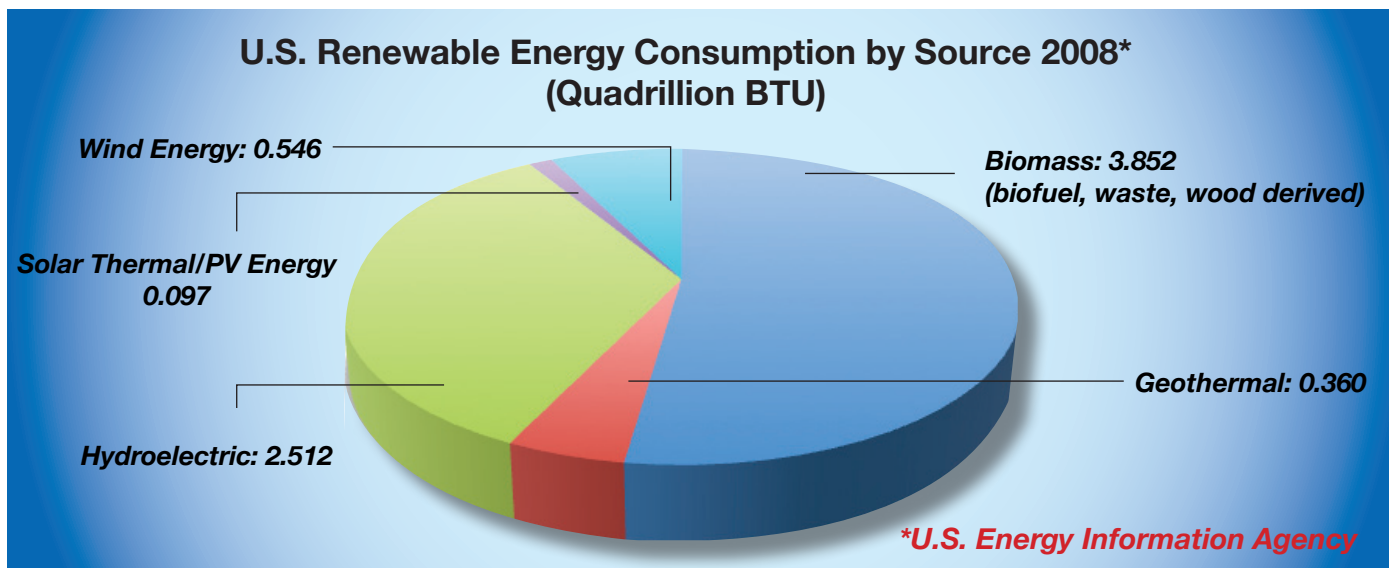
The U.S. Endowment for Forestry and Communities and the National Association of State Foresters have a shared interest in advancing sustainable forestry in the U.S. This brief is intended to inform public dialogue on sustainable markets and forests.

The debate over the sustainability, cost-effectiveness and carbon footprint of woody biomass has not prevented wood pellets from trending upward along-side **large offshore wind power** and **small-scale solar** as an energy source for industrial and electrical use across Europe.

Growth is spurred in part by mandated policy and public support schemes. Bagged pellets for residential thermal use have been mildly popular in North America for decades. New plants to source both residential and commercial

pellets made up a miniscule portion of the home heating market. Then following Hurricane Katrina in 2005, oil and gas prices surged prompting a boost in pellet stove purchases as well as a brief pellet shortage. Prices and demand have returned to pre-Katrina levels or even lower in some regions.

The industry in the U.S. has grappled with growing pangs such as periodic shortages, hoarding, price volatility and quality problems. Yet, there are competitive advantages over Canadian manufacturers found primarily in



thermal use are coming on-line, but the boom is in 500,000 ton plus plants in the South for commercial export.

The international market increased more than 200 percent between 2002 and 2006, shooting global production from 8 million tons in 2007 to more than 13 million tons in 2009. The **North American Wood Fiber Review reports** that U.S. and Canadian production grew from 1.1 million tons in 2003 to 6.2 million tons in 2009. Europe that year produced about 10 million tons.

USDA Forest Products Lab estimates place the number of North American pellet plants at 110, while Europe claims around 670 pellet plants, according to **Biofpr Journal**.

South America, Africa and Asia are not in the pellet race to any extent yet, but expect Brazil and other countries with raw material plus established wood and paper industries to jump-in should the growth trend continue.

AMERICAN AND CANADIAN MARKETS AND TRENDS

The first North American surge in wood pellet production and use occurred following the **OPEC oil embargo** in 1973. For thirty years

freight distance and lower costs to Europe from the southeast. Long-term advantages go to the supplier with access to sawmill residues, extended supply agreements and the best delivered price.

Residential stove and boiler markets are expected to continue growing along with advances in clean technology, awareness and consumer desire for alternatives and cost savings. Current natural gas prices place pellets at best competing domestically against fuel oil, propane or electricity, thus making the Northeast the most promising regional market. According to **Eric Kingsley** of Innovative Natural Resource Solutions, as an equivalent to heating oil, a home that burns 1,000 gallons of heating oil (\$4,000) in a season will use slightly less than 8 tons of wood pellets (\$2,000).

Pellet-fueled furnaces and boilers are commonly used as central heating units throughout Europe, partially as a result of bulk pellet delivery using specialized trucks, similar to the delivery of heating oil. This niche could grow in North America where dependencies on propane and oil remain high.

GLOBAL MARKETS, TRENDS AND DRIVERS

According to Denham Capital, by 2015 the worldwide pellet market potential is 142 million tons at a value of \$2.8 billion. Projections for demand in the European Union (E.U.) alone range from 105 million to 305 million tons to a modest 50 million all by 2020.

The E.U. has mandated 20 percent of energy consumption must come from renewable resources by 2020. In his State of the Union address on Jan. 25, 2011, President Obama set a new goal that 80 percent of America's electricity be produced from "clean energy sources" by 2035.

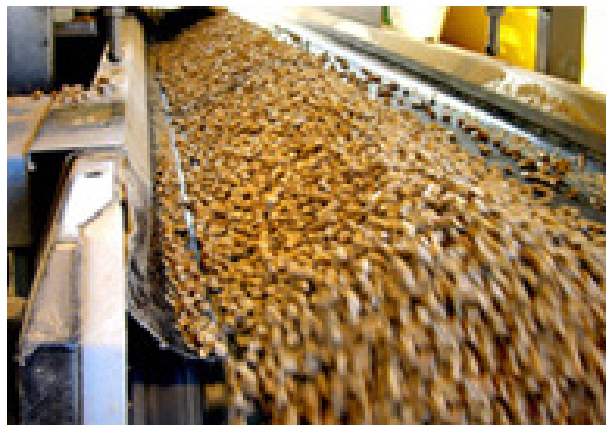
Using biomass to create electricity in the United Kingdom (U.K.) wouldn't be profitable without a government subsidy of about 31 euros (\$44) per megawatt hour. The U.K. awards "Renewable Obligation Certificates" to companies that use wood and other renewables for power generation.





CONTINUED FROM PAGE 1

The current U.S. demand for residential pellets is about 2 million tons a year, which equates to a ratio of about 60 percent of production capacity consumed domestically in 40-pound bags and the remaining 40 percent exported, according to **Rob Davis, Forest Energy Systems** and former president of the Pellet Fuels Institute. Canada exports 80 percent



of its production in bulk, mainly to European countries, and is the largest exporter of wood pellets in the world.

Traditionally, North American pellet plants were situated along side or near a sawmill to utilize fiber residues in the production of residential grade pellets. This arrangement worked well for mills as it turned a by-product into a value-added advantage. According to the Forest Product Lab's **"North America's Wood Pellet Sector"** 2009 report, the majority of pellet plants in the U.S. produced between 33,000 and 77,000 tons - small by any standard.

A factory producing 100,000 tons per year was considered large until the southeast began hosting mega-plants. Some like Green Circle Bio Energy (500K ton-year) in Cottondale, FL are shipping almost exclusively to Sweden. RWE Innogy in Georgia (planning for 1.5 million ton-year) is German owned. Franklin Pellets LLC of Franklin, VA has announced a 500K ton-year facility.

THE COST OF WOOD PELLETS

Reported prices for delivered pellets by the ton to Europe range from \$215 to \$275 and are predicted to drop this year to around \$193. North American pellets in bags add about \$27 per ton in packing, pallets and wrapping material. The average domestic residential retail price ranges from \$175 to \$250 per ton.

Turman Hardwood produces residential grade pellets in Galax, VA, and sells 25,000 tons per year on skids loaded with 50 bags weighing 40-pounds each. Turman ventured into the export business briefly but the risks and headaches associated with the export business were not worth it. Warehouse costs may add an additional \$10 per ton, while ocean freight (which can be extremely volatile) adds \$35 to \$45 per ton to the price. They see the export market as a niche for the larger companies.

With housing and other traditional markets down, sawdust is limited. The large pellet mills must therefore depend on chipped roundwood. This requires added costs for debarking, chipping, drying, and hammermilling. The emerging wood energy sector is increasingly competing against the traditional, higher value wood-using industries. This competition could increase costs to the end-users across all products, while still benefiting forest landowners with a new market.

ISSUES FACING WOOD FOR ENERGY

At present, biomass provides about 4 percent of the country's total energy use – 8,500 megawatts annually. Most of that output is produced and used by sawmills and pulp & paper facilities. The Forest Products Lab **"North America's Wood Pellet Sector"** report claims there is enough wood readily available in the U.S. to provide up to 10 percent of the nation's energy use from wood. While this could be true, there are likely many issues from local resource sustainability, to costs, to political pushback that will make the target illusive.

By Carla Harper

**The author uses "ton" in all references for clarity. Yet, variations in measurement occur globally. 1 ton (U.S) = 907 kg, 1 tonne (Europe) = 1016 kg, and a metric ton = 1000 kg.*

Thanks to **Eric Kingsley, Innovative Natural Resources, for editorial assistance.*

BLOOMBERG 2010 NEW ENERGY SURVEY HIGHLIGHTS:

In 2010 the world invested \$243 billion in clean energy, according to **Bloomberg New Energy Finance**. That's five times the \$51.7 billion invested in 2004 including biofuels, energy efficiency, **smart grid**, carbon capture, as well as storage and infrastructure for clean energy.

- ▶ **R&D by companies and governments hit record levels, with governments contributing \$21 billion of the \$35.5 billion in R&D outlays.**
- ▶ **Venture capital and private equity rebounded to post a 28% gain over 2009 by reaching \$8.8 billion in deals.**
- ▶ **Biofuels had a nearly flat year, with funding down to \$7.9 billion from \$8.1 billion in 2009**
- ▶ **Biomass and waste-to-energy funding dropped to \$11.6 billion from \$12 billion**

VC-PE CLEAN ENERGY INVESTMENTS BY SECTOR 2010

