

ENVIRONMENTAL FOOTPRINT COMPARISON TOOL

A tool for understanding environmental decisions related to the pulp and paper industry



EFFECTS OF NON-WOOD FIBER USE ON ENERGY USE

Role of Wood-Derived Fuels

Unlike agrifiber, wood is capable of providing not only fiber for the manufacture of wood pulps, but also the bulk of the energy required to sustain the process (Figure N2). During pulping, about 50% of the wood weight in the form of lignin and other wood components dissolves in the spent pulping liquor to yield nearly undegraded cellulose fibers. The ability to effectively recover high levels of energy and chemicals from the black liquor has contributed heavily toward the dominance of the kraft pulping of wood fiber in North America, and it may yet offer other opportunities for new products and biomass-based fuels (van Heiningen 2007).

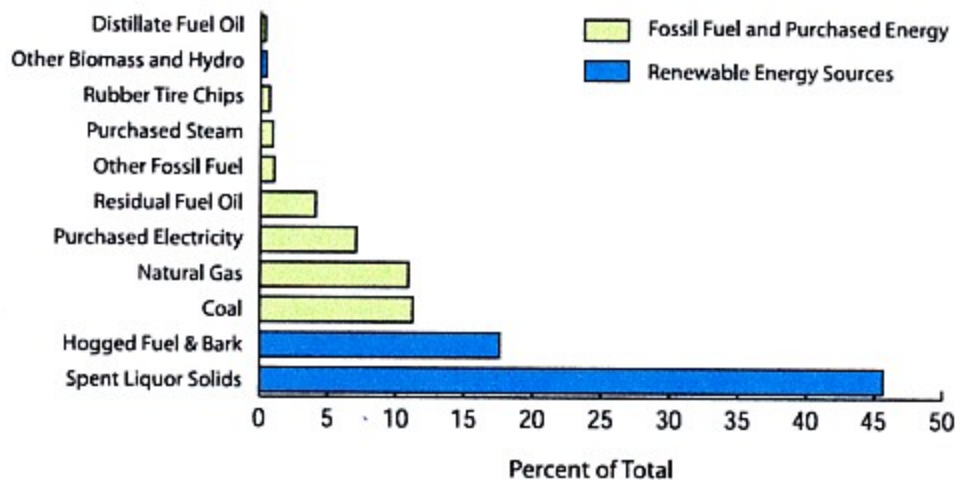


Figure N2. 2006 Pulp and Paper Mill Energy Sources (Source: van Heiningen 2007)

The energy derived from the liquor recovery process produces enough steam (and in some cases electricity) to supply about 50% of the typical North American pulp and paper mill's energy needs. In fact, self-generated and residual fuels accounted for more than half of the pulp and paper industry's total energy requirements in the U.S. (USEPA 2002). Of that, spent pulping liquors provide the single largest self-generated energy source. The industry is also among the nation's leaders in cogeneration performance, with spent pulping liquors supplying the single largest fuel source (35%) to these cogeneration facilities (Clay 1987). In addition, wood waste, hogged fuel and wood bark represent as much as 15% of an individual kraft mill's energy supply needs. This wood residue would otherwise constitute a waste.

References

- Clay, D.T. 1987. *Kraft black liquor combustion: Advancement in fundamental understanding*. Report No. DOE/CE/40637-T3;IPC-3473-6. Appleton, WI: Institute of Paper Chemistry.
http://www.osti.gov/energycitations/product.biblio.jsp?osti_id=7129043

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United States Environmental Protection Agency (USEPA). 2002. *Profile of the pulp and paper industry 2nd ed.* EPA Office of Compliance Sector Notebook Project, EPA/310-R-02-002. Washington, DC: United States Environmental Protection Agency Office of Enforcement and Compliance Assurance. <http://www.epa.gov/oecaerth/resources/publications/assistance/sectors/notebooks/pulppasn.pdf>

University of Tennessee Institute of Agriculture. 2009. *Field crop budgets for 2009.* E12-4115. AE 09-11. <http://economics.ag.utk.edu/budgets/2009/CropBudgets2009.pdf>

van Heiningen, A. 2007. Converting a kraft pulp mill into an integrated forest products biorefinery. *Technical Association of the Pulp and Paper Industry of Southern Africa (TAPPSA) Journal.* http://www.tappsa.co.za/archive3/Journal_papers/journal_papers.html