

**EKONO Inc.  
STRATEGIC STUDY**

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**Study Abstract**

**ENVIRONMENTAL PERFORMANCE,  
REGULATIONS AND TECHNOLOGIES  
IN THE PULP AND PAPER INDUSTRY**

**2007**

**September 2008**

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# ENVIRONMENTAL PERFORMANCE, REGULATIONS AND TECHNOLOGIES IN THE PULP AND PAPER INDUSTRY

## 2007 Report

### Study Abstract

#### 1. GENERAL

For the past fourteen years, EKONO Inc. has issued an annual publication entitled "*Environmental Performance, Regulations and Technologies in the Pulp and Paper Industry.*" The objective of the report is to provide information on current environmental performance data and issues as well as technologies available to meet current and expected future requirements. The highlights of the 2007 issue are:

- Environmental performance in the pulp and paper industry – including about 100 Western European mills in addition to the North American, Swedish and Finnish mills.
- Presentation of the permit limits in different environmental regulatory regions, states and provinces for different types of pulp and paper mills. Mill specific permits are illustrated with bar charts.
- Status of environmental certification and environmental labeling in the pulp and paper industry
- Fuel and power supply and consumption in the pulp and paper industry. This is a new section containing a presentation of fuel and power supply for about 270 pulp and paper mills in Europe and North America.
- CO<sub>2</sub> emission data for the year 2006 from about 370 pulp and paper mills in Western Europe, Finland, Sweden, North America and South America.

The focus of our study is with the North American and European pulp and paper industries. Data from 24 South American mills has also been included.

#### 2. ENVIRONMENTAL PERFORMANCE

Actual air emission and effluent discharge data from 2006 are analyzed and presented in the report for nine different mill categories. The analyses include graphical and numerical presentations of emission data from more than 600 pulp and paper mills in North America and Europe. The data presented in the report are taken from EKONO's database, which is updated annually based on publicly available data sources and on a review of environmental reports to the authorities and corporate annual environmental reports.

Samples of the performance data are given in Figure 1. The report includes some 200 different benchmarking charts.

### **3. PERMIT LIMITS IN SAMPLE PULP AND PAPER MILLS**

Regulatory regions (countries, states, provinces) have general permit limits, which are presented in the document. However, in many cases the local authorities can apply mill specific limits that differ from the country/state/province general levels as long as these are not exceeded. Examples of mill specific limits are shown on benchmarking charts for different type of pulp and paper mills in North America, South America, and Europe.

Figure 2 illustrates the presentation of the mill specific permit limits.

### **4. ENVIRONMENTAL ISSUES AND MARKET TRENDS**

The European Union EMAS environmental management system is updated and the mills with EMAS certification are listed. Many pulp and paper companies are revisiting the environmental labeling concept. The relationship of various labeling schemes with different environmental management systems is discussed in the report. The environmental labeling systems, including the Nordic Swan and the Canadian EcoLogo are described. The status of ecolabel registration of pulp and paper companies is reviewed in the study.

### **5. ENERGY CONSUMPTION IN THE PULP AND PAPER INDUSTRY**

EKONO has updated the environmental data base by adding the fuel and power supply and consumption data for individual mills. Presently EKONO's data base includes energy information from about 270 mills in Europe and North America. The total annual production among those 270 mills was about 110 million tons.

Figure 3 illustrates the fossil fuel consumption in bleached market kraft pulp mills in Europe and North America.

### **6. CO<sub>2</sub> EMISSIONS**

Benchmarking charts are provided for comparison of CO<sub>2</sub> emissions for different types of mills in different areas on the same basis. The direct CO<sub>2</sub> emissions from burning fossil fuels in boilers, lime kiln and dryers are included. The EKONO database includes CO<sub>2</sub> emission data for about 370 pulp and paper mills. The total annual production for these 370 mills is about 136 million tons of pulp and paper.

Figure 4 shows the CO<sub>2</sub> emissions from sample mechanical pulp and paper mills.

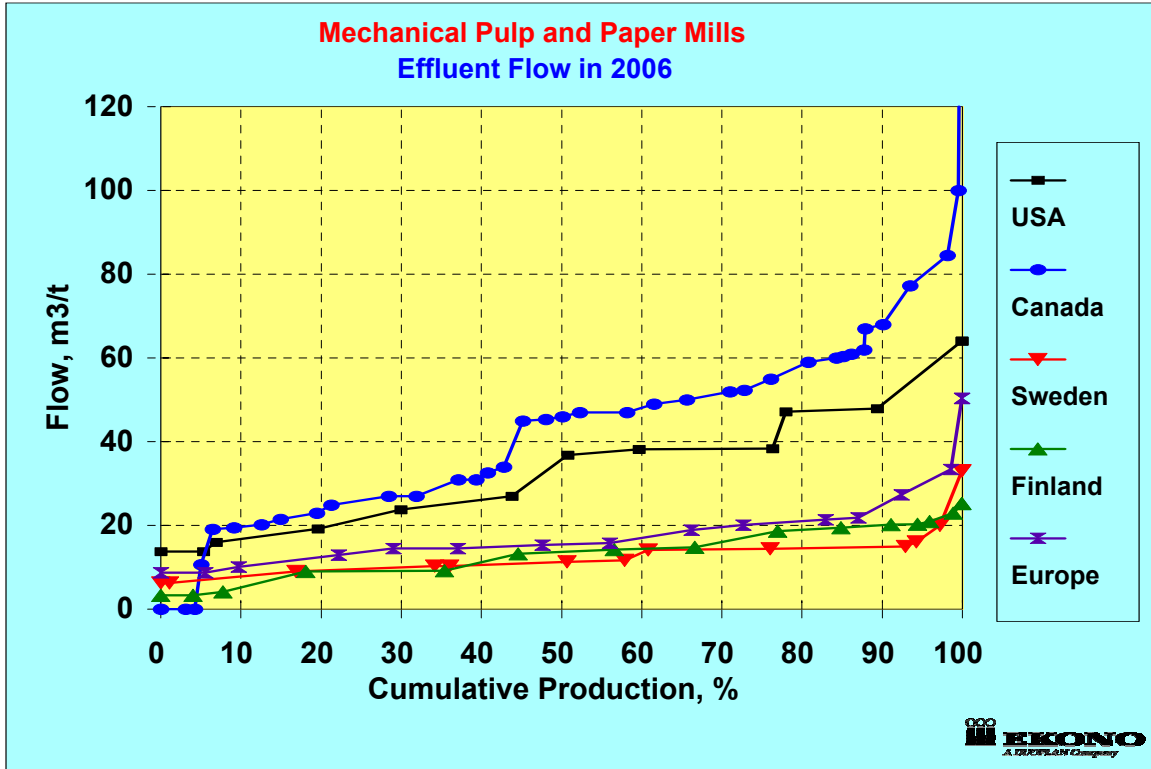


Figure 1 Effluent Flow from Mechanical Pulp and Paper Mills

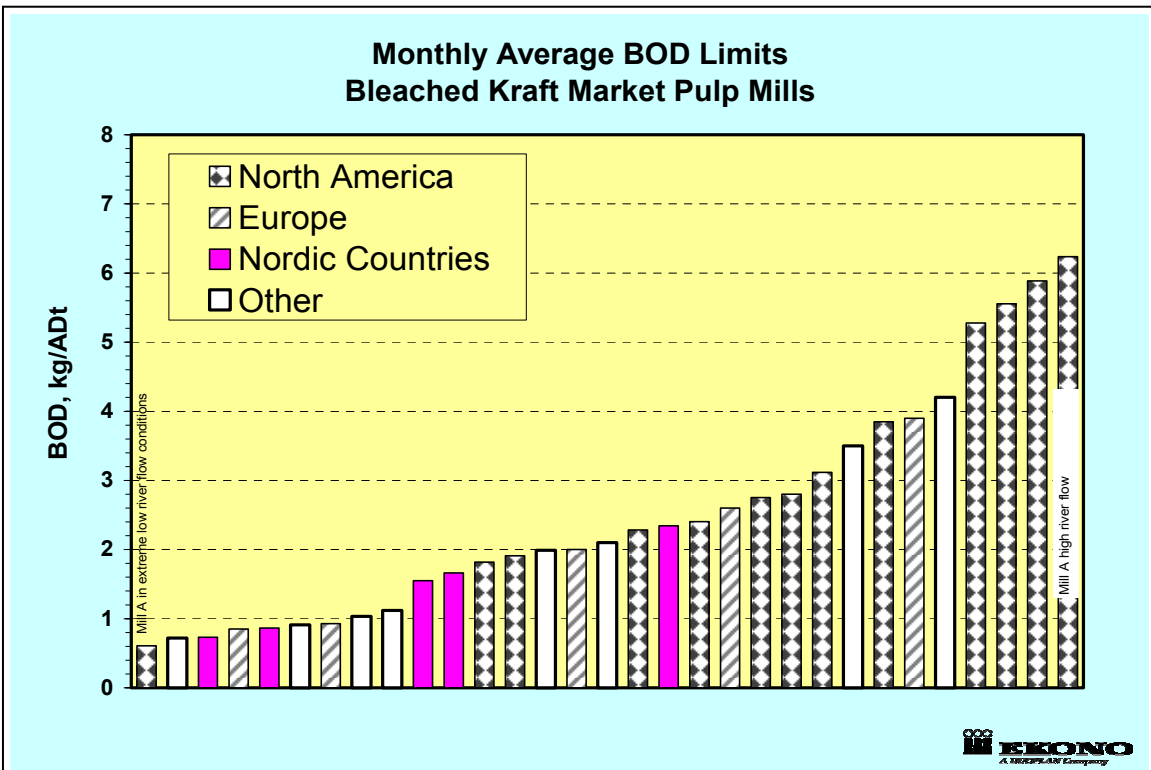


Figure 2 BOD Limits in Sample Bleached Kraft Pulp Mills

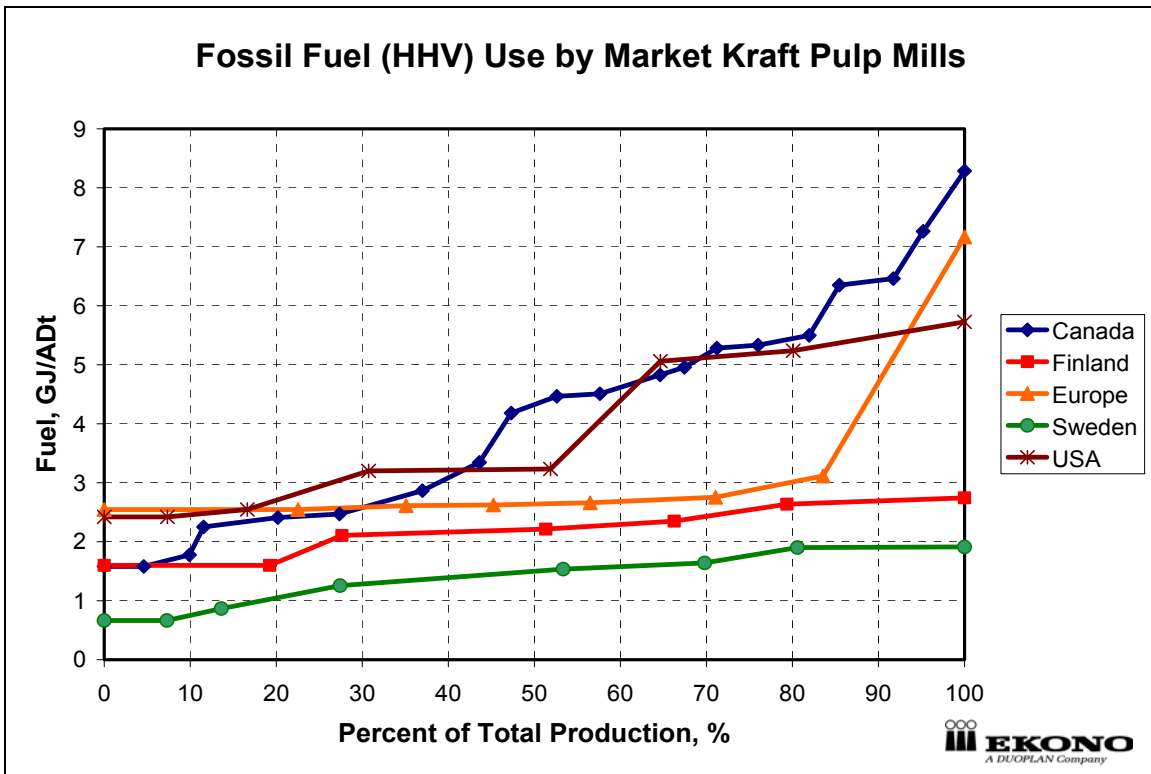


Figure 3 Fossil Fuel (HHV) Consumption in Bleached Market Kraft Pulp Mills

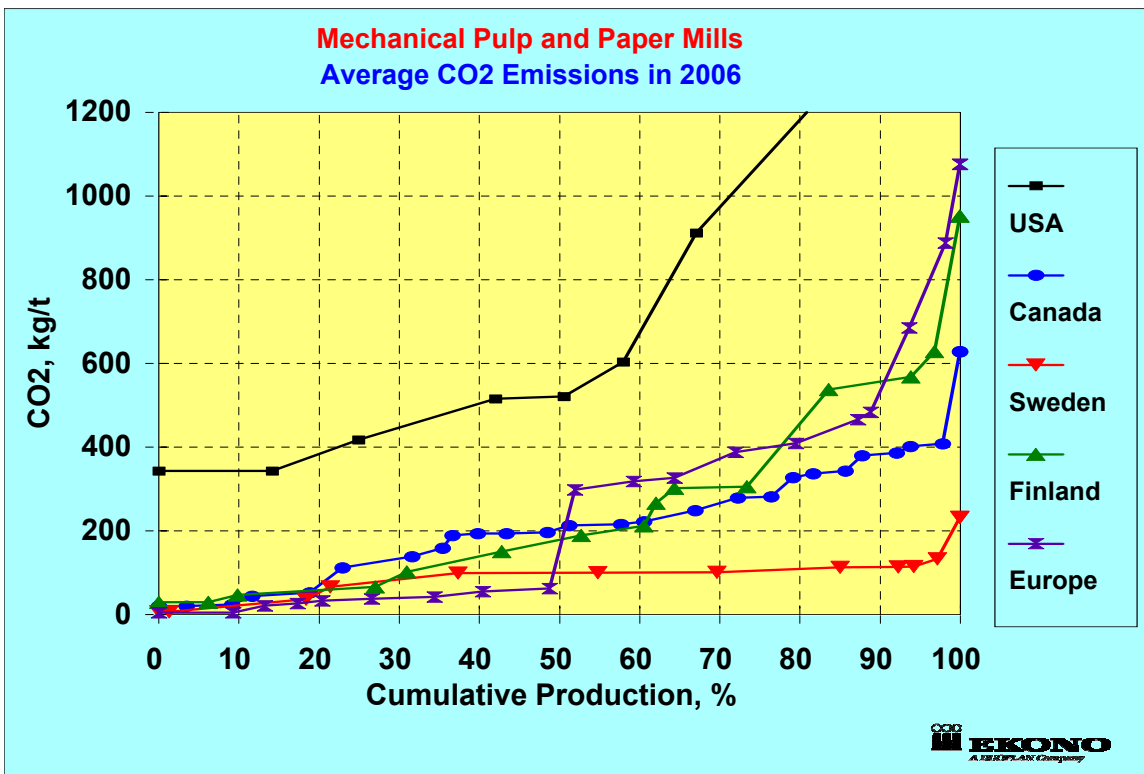


Figure 4 CO<sub>2</sub> Emission from Fossil Fuels in Mechanical Pulp and Paper Mills