

A STRATEGIC ANALYSIS OF A KRAFT LINERBOARD AND SACKKRAFT MILL

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Michael Martins
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APPROVAL

Name: **Michael John Jude Lourdes Martins**

Degree: **Master of Business Administration**

Title of Project: **A STRATEGIC ANALYSIS OF A KRAFT
LINERBOARD AND SACKKRAFT MILL**

Supervisory Committee:

Dr. Mark Moore
Senior Supervisor
Lecturer,
Faculty of Business Administration

Dr. Mark Selman
Second Reader
Executive Director
Learning Strategies Group
Faculty of Business Administration

Date Approved:

August 9, 2005

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ABSTRACT

This project presents a strategic analysis of a linerboard and sackkraft mill.

The industry analysis of the two different industries shows that both industries are facing substitution pressures and some growth that is largely occurring in non-traditional regions. Competitors are closing high cost facilities and new capacity being built represents low cost production. The cumulative effect of changes is a reduction in unit costs throughout each industry.

The internal analysis of the company identifies the fundamental issues the company faces are low productivity and higher manning and energy costs. While the company has good reputation for quality, it has not been able to achieve cost parity with its competitors and remains unprofitable.

The broad strategic direction recommended is to lower costs to achieve cost parity with key rivals, while maintaining a reputation for slightly better quality.

DEDICATION

À minha família que me apoiou durante este esforço. Vossa ajuda e encorajamento sustenta-me.

To my family who supported me throughout this endeavour. Your help and encouragement sustained me.

To the memory of my son Dominic. Gone but not forgotten.

To my beloved Lucas and Olivia. Promises made are promises kept!

To my dearest wife Jeannie: For making so many things possible, I love you.

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GLOSSARY

Basis Weight	A measurement of mass per unit of area that is expressed in grams per square meter or pounds per thousand square feet. Basis weight is used to describe linerboard, corrugating medium, and boxes.
Containerboard	Solid fibre or corrugated and combined board used in the manufacture of shipping containers and related products. Also the component materials used in fabrication of corrugated board and solid fibre combined board. The raw materials used to make containerboard may be virgin cellulose fibre, recycled fibre, or a combination of both.
Corrugated Container	A box, its most common form, is manufactured from containerboard - layers of linerboard and one layer of medium. The layers are combined on a corrugator, a machine that presses corrugations into the medium and laminates a layer of linerboard to each side. The sheets are folded, printed, and glued or stapled to make a finished box. There are four common types of corrugated containerboard: single face, single-wall, double-wall, and triple-wall.
Creep Capacity	Refers to the increased in total production due to efficiency improvements, and efficiency gains. This increased capacity is not due to large capital upgrades.
Digester	Pressure vessel for chemical treatment of chips and other cellulosic fibrous materials such as straw, bagasse, rags, etc., under elevated temperature and pressure in order to separate fibers and produce pulp.
Extensible Paper	Engineered paper that has the ability to stretch to a certain degree.

With greater extensibility paper is able to absorb forces resulting from transportation and handling.

Furnish	Various pulps, dyes, additives, and other chemicals blended together in stock preparation area of paper mill and fed to wet end of paper machine to make paper or paperboard.
Kraft Paper	Paper made from kraft pulp, bleached or unbleached. It is a strong paper used principally for wrapping or packaging. The primary grade of unbleached kraft paper is linerboard, used as the facing material for corrugated boxes.
Kraft pulp	Fibrous material prepared from wood, cotton, grasses, etc., by chemical or mechanical processes for use in making paper or cellulose products. The Kraft process is the world's predominant chemical pulping process. The name is derived from the German word for "strong". The method involves cooking (digesting) wood chips in an alkaline solution for several hours during which time the chemicals attack the lignin in the wood. The dissolved lignin is later removed leaving behind the cellulose fibres. Unbleached kraft pulp is dark brown in colour, so before it can be used in many papermaking applications it must undergo a series of bleaching processes.
Linerboard	Paperboard used for the flat outer facings of combined corrugated board
Mill Net	Refers to the sales price minus cost of transportation, insurance, rebates and bonuses
Old Corrugated Containers (OCC)	A fiber source comprised of old corrugated containers or old boxes that are collected/recovered from the waste stream. The boxes are converted into pulp, which is then used to make corrugating medium and other types of paperboard.

Softwood	Cone bearing trees. Since they usually keep their needles or leaves the entire year, they are popularly called evergreens.
Porosity	A structural property of paper reflected by the size distribution of pores and the ability of air to pass through the sheet
Recycled pulp	Paperboard manufactured using 100 percent recovered paper, such as old newspapers, old corrugated containers, and mixed papers.

1 INTRODUCTION

Over the past 15 years, Eurocan has lost its cost advantage relative to other key producers of linerboard and sackkraft. The objectives of this project are to assess the magnitude of this loss of cost advantage and to present strategic alternatives that will allow Eurocan to re-establish a more competitive cost position.

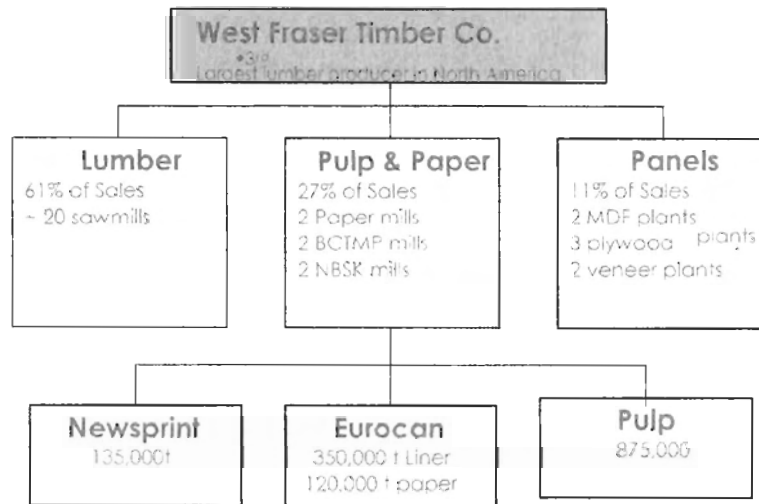
This chapter will begin by describing Eurocan, its businesses, products, suppliers, buyers, rivals and substitutes.

1.1 Company Overview

Eurocan Pulp and Paper (Eurocan) is an integrated linerboard and sackkraft producer that produces a wide range of packaging grade board and paper sold to a global customer-base.¹ Eurocan is a wholly owned division of West Fraser Timber Ltd. (WFT), a Canadian forest products company that was founded in 1955. Over the past 50 years West Fraser has become fully integrated into forest products through its sawmills, panelboard plants (i.e. medium density fibreboard (MDF), pulp mills and paper mills. WFT has operations throughout British Columbia, Alberta and the Southern U.S. The Company structure of WFT, and Eurocan's position within it, is illustrated in Figure 1.

¹ The term integrated used to describe Eurocan refers to the production of pulp and paper in the same facility. These activities are common at papermills that produce linerboard and sackkraft. However, many mills are also known to buy pulp from market pulp producers. Mills that produce paper from recycled materials are only papermills and are not considered integrated.

Figure 1: 2003 company structure of West Fraser Timber (WFT).²



Source: West Fraser Timber 2004 Annual Report.

Eurocan was built in 1969 by a group of Finnish companies under the management direction of Enso-Gutzeit Oy (Enso). Enso’s rationale for building a linerboard and sackkraft mill in Canada was to avoid escalating fibre costs in Finland and for Enso to ensure long term supply for their existing linerboard customers in Europe. In addition to being a source of cheap fibre, British Columbia also offered cheap power and fibre that provided high strength characteristics, which would allow Enso to enhance its sackkraft business.

Eurocan began its operations in 1970 under the management direction of Enso and operated under this management structure until 1981, at which point WFT acquired a 40 percent interest in the company. WFT subsequently increased its interests in Eurocan to 50 percent in 1984 and wholly acquired the operation in 1993.

² NBSK: Northern bleached softwood kraft pulp; BCTMP: Bleached chemi-thermo-mechanical pulp; MDF: Medium density fibreboard; t: tonnes per year.

WFT mandates that all its operations strive to be low cost producers in their respective businesses in order to maximize shareholder value.

1.2 Businesses

Eurocan competes in the global linerboard industry and in high strength segment of the global sackkraft industry. The linerboard business generates up to 70 percent of the company's revenue, while sackkraft makes up the remaining 30 percent of the revenue.

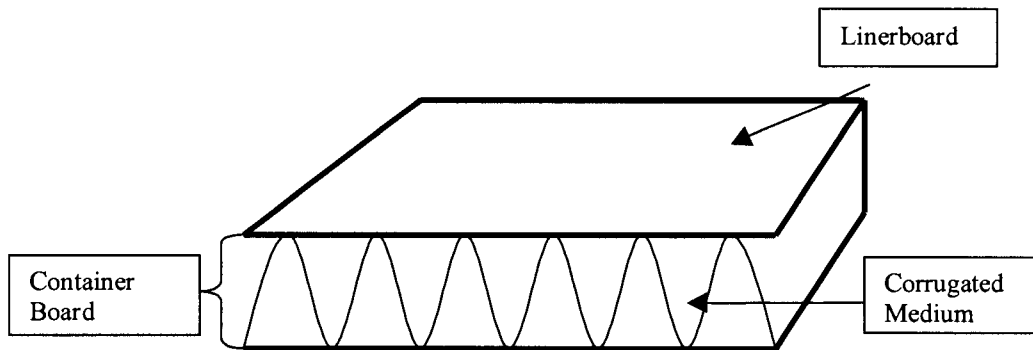
1.3 Linerboard and Sackkraft Products

1.3.1 Linerboard Products

Linerboard is a general term for describing heavyweight grades of paper used primarily in the construction of corrugated containers. Linerboard is used as flat facing material on the inner and outer portions of a corrugated medium (fluting) which are combined to form a rigid board commonly called containerboard.³ Figure 2 illustrates the placement of linerboard in containerboard construction.

³ Containerboard is the collective term used for linerboard and corrugated medium used to produce sheet for boxes. Linerboard and corrugated medium are found in a 2 to 1 proportion to each other.

Figure 2: Common form of corrugated board construction using linerboard



The linerboard industry is largely a commodity-based industry, with very little differentiation among the majority of linerboard producers. Within the broader industry however, there are different segments that serve different end-uses. These segments are generally composed of the recycled linerboard segment and the kraft linerboard segment, which is composed of linerboard of higher quality.

Figure 3 divides the overall linerboard market into its two key segments, the recycled segment and the kraft segment. Kraft linerboard is classified as being made with no less than 80 percent virgin pulp. Linerboard that exceeds 20 percent recycled fibre composition is considered recycled linerboard or testliner.

Within these two major segments are five categories. The recycled segment includes producers that use 100 percent recycled pulp, producers who use 20 to 40 percent recycled pulp, and producers who produce kraft-top liner. Kraft-top liner is composed of a sheet of recycled linerboard with a thin layer of kraft pulp applied as a top layer on the sheet. The recycled segment of the linerboard industry accounts for up to 60 percent of the overall global market.

The kraft linerboard segment is broken down into producers who use less than 20 percent recycled pulp, and producers who use 100 percent virgin pulp. This segment of the market accounts for approximately 40 percent of the global market.⁴ Approximately 20 to 25 percent of the producers within this segment would fall into the 100 percent virgin pulp category, while the remainder utilize up to 20 percent recycled pulp. Producers utilizing 100 percent virgin pulp are typically producers of high quality linerboard.

Figure 3 further classifies the outputs of these segments based on the uses of the product. Kraft linerboard production is heavily concentrated in North America and Nordic countries while recycled linerboard producers are dominant in other parts of the world. As indicated in Figure 3 Eurocan linerboard production is composed exclusively of 100 percent virgin fibre.

⁴ Source: "World Containerboard Outlook up to 2010, 1999, Jaakko Pöyry

Figure 3: Products in the linerboard industry

		Quality Segment	General Liner Requirements	Linerboard Producers	Box Buyers	Regions of Consumption
		Recycled Segment	100% Recycled	Low quality domestic consumption	Chinese & Mexican Europe	Textiles, local manufacturers
20%-40% Recycled	Low strength, moderate appearance		Chinese & Mexican, Eastern European	Regional Manufacturers	Asia, South America, Eastern Europe	
Kraft-top	Good appearance for export consumption		Chinese	Global Manufacturers	U.S., Europe,	
Kraft Linerboard Segment	100% Kraft Linerboard	Global high performance use.	Nordic, Western European, Canada Eurocan	Brand name durable good producers. (I.e. Maytag, Honda, BMW). Fruit Producers (i.e. Del Monte)	Global	
		Global appearance requirements	Nordic, W. European, Canada, U.S. Brazil, Eurocan	Brand name producers (i.e. Toys R Us, Unilever, Macdonald's)	Global	
	< 20% Recycled Pulp	Moderate overall strength and appearance	Nordic, Western European, Canada, U.S. Brazil, Eastern European	Regional Retail and commercial applications	Europe and U.S.	

Source: *Global price and Fact Book 2003, 2004, Paperloop.*

Linerboard is produced in a wide range of basis weights from 125 grams per square meter (g/m²) to 440 g/m² that are shipped to converting plants.⁵

Within the linerboard industry there is a minor amount of product differentiation, which stems from the demand for higher quality. This need is a result of end-users, such as Sony, Chiquita, and Honda, who require high quality packaging in order to protect their brand names. Typically, these companies must ensure that the boxes used for their

⁵ Basis weight is a common industry term used to describe the weight of paper being produced. The basis weight refers to the weight of the paper, in grams, in one square meter.

products have high strength properties to protect the box contents. They must also have superior appearance properties, to preserve the perception of quality of their products. High quality linerboard required to produce these types of boxes demands a slight premium over the average market price. Producers of high quality linerboard can demand slightly higher mill nets than lower quality linerboard producers.⁶

The containers ultimately produced from linerboard are used for durable and non-durable consumer products such as appliances, bulk produce, chemicals, and heavy engineering components such as automobile parts. The evolution of technology over the past decades has allowed for the substitution for wooden boxes by corrugated shipping containers. This has resulted in corrugated containers becoming the dominant shipping medium for most goods.

The linerboard industry in North America is more heavily weighted towards virgin pulp or kraft production, while production outside the U.S. and Canada is more weighted towards recycled-based linerboard. These latter producers typically operate smaller machines, which are cheaper to build and are primarily active in their indigenous containerboard industries. Most kraft linerboard is produced on large papermachines, with up to 85 percent of the kraft output being produced on machines that have a capacity to produce 250,000 to 500,000 tonnes per year. Kraft linerboard mills are generally located close to their fibre supply, while recycled liner mills are located in densely populated areas in the Northeast United States (U.S.), Mexico, Europe and Asia.

⁶ “Mill Net” refers to the sales price minus cost of transportation, insurance, rebates and bonuses.

1.3.2 Sackkraft Products

Sackkraft is paper made of basis weights ranging from 50 g/m² to 130 g/m² which is converted into products like grocery and retail bags, multi-wall shipping sacks and speciality papers. Sackkraft is made predominantly of softwood kraft pulp, which imparts a high degree of strength to the paper due to the long fibres, but it can include up to 20 percent of recovered secondary fibre.

Sackkraft used in bags and sacks is made of various basis weights depending on the bag strength required. Bags designed to hold less than 10 pounds (lbs.) are made of lightweight paper with basis weights of 60 g/m² or less, while those required for grocery bags are made of basis weights which range from 65 g/m² to 130 g/m². Grades used in these applications are called flat-sack.

Multi-wall shipping sacks typically use several plies of 70 to 90 g/m² of high strength extensible sackkraft.⁷ This paper is engineered to provide higher tensile strength. It is used in the construction of heavy duty shipping sacks, designed to carry up to 50 kg of products such as cement, chemicals, agricultural and food products (i.e. sugar and flour). Approximately 80 percent of paper produced for multi-wall applications is unbleached, with the remainder being bleached.

The significant quality difference between flat-sack and extensible paper is the extensibility of the paper and the porosity. Extensibility refers to the tensile strength of the paper and the ability of the paper to absorb energy under stress, commonly measured as tensile energy absorption (TEA). Porosity, which refers to the air permeability of the

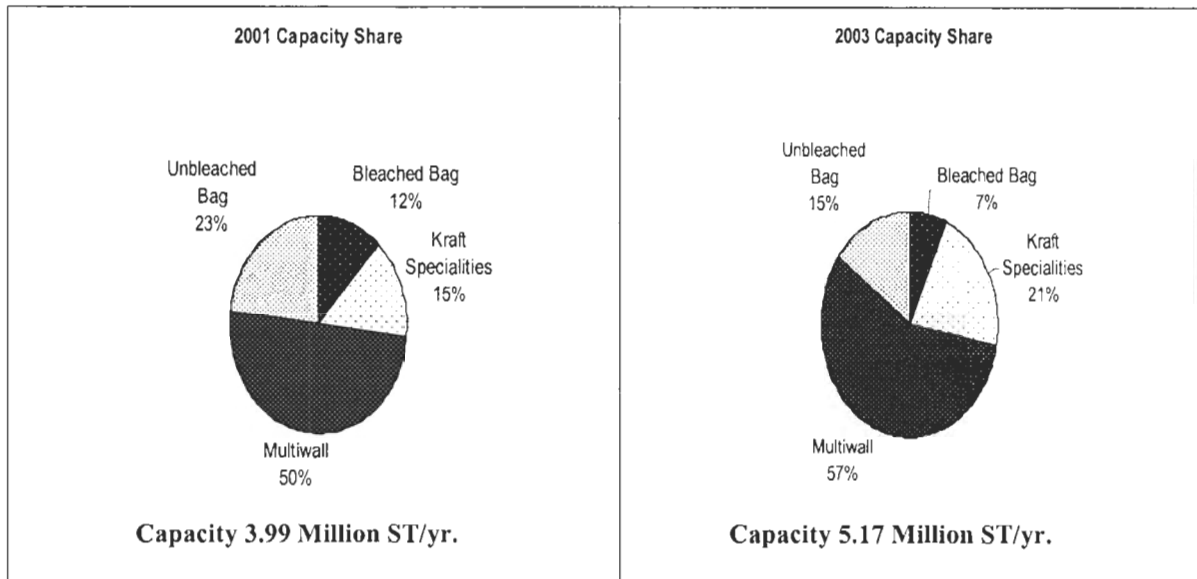
⁷ Extensible refers to the ability of the paper to stretch to a certain degree. With greater extensibility paper is able to absorb forces resulting from transportation and handling.

paper, is important in applications such as cement packaging, where high-speed air filling machines are used. Good porosity allows for adequate airflow through a bag, which facilitates bags being filled at a higher rate than would otherwise be possible. Due to these higher performance requirements extensible paper sells at a premium over flat-sack grades used in simple bag construction.

Speciality papers, which form a small component of the overall market, are made from various basis weights depending on the final application of the product. Speciality paper end-uses include food wraps where paper is laminated or glued to plastics, tape or label release base paper, or as insulation.

The production of the various grades in 2003 is illustrated in Figure 4, which shows an overall global production capacity of approximately 2.95 million short tonnes for multi-wall and 1.09 million short tonnes of speciality paper.

Figure 4: Global grade distribution of kraft papers



Source: Pulp and Paper Benchmarking Services, Kraft Papers Competitive Cost Study

Sackkraft industry product categories are outlined in Figure 5. The industry is made up of the bleached and unbleached bag segment, the specialty paper segment and the multi-wall segment. The multi-wall segment is further broken down into 3 categories, which include moderate performance extensible paper, high performance paper used primarily in the construction of 3-ply sacks and high performance paper used in the construction of 2-ply sacks. The multi-wall segment accounts for approximately 80 percent of Eurocan's sackkraft industry revenues, while the remainder of the revenue (20 percent) is obtained from the specialty paper segment.

Figure 5: Products in the sackkraft industry

Sackkraft Industry		Quality Segment	General Sackkraft Requirements	Sackkraft Producers	Application
	Unbleached Bag	Grocery bag	Low to moderate strength	U.S., South American, Eastern Europe	Produce, Retail
	Bleached Bag	Retail Bags Segment Kraft top	Good appearance, low to moderate strength	U.S, South American, Eastern Europe	Retail
	Speciality Paper	Commercial/Industrial Application	User-defined specifications	Nordic, Western European, Canada, U.S.	Wire insulation, release paper, saturating paper, laminating
	Multi-wall	Moderate performance	Moderate strength	Nordic, Western European, Canada, U.S. Brazil, Eastern European Eurocan	Dunnage bag, mortar packaging, flour & sugar
		High performance 3-ply-sacks	Good strength	Nordic, Western European, Canada, U.S. Brazil, Eurocan	Flour, cement packaging
High-performance 2-ply-sacks		High strength	Nordic, Canada, Eurocan	Cement packaging	

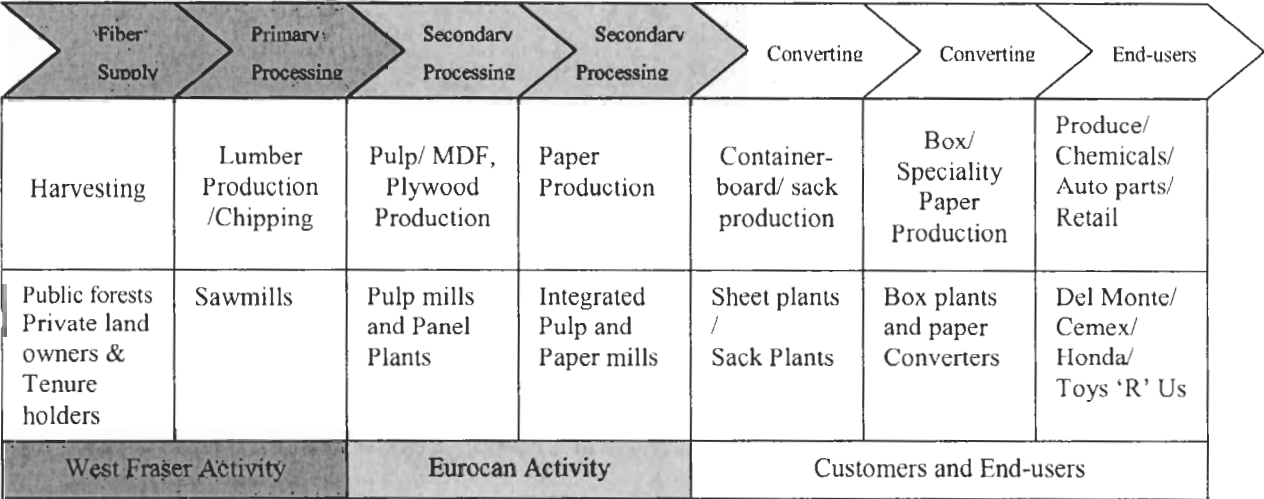
Source: *Global price and Fact Book 2003, 2004, Paperloop.*

1.4 Industry Supply Chains for Linerboard and Sackkraft

The industry supply chains for linerboard and sackkraft are similar to each other in most respects. They share the same inputs such as fibre and energy, and utilize similar manufacturing processes. The two products differ significantly with respect to end-uses and have different buyers. Figure 6 illustrates the supply chain, showing the commonalties between the two products during the production phase.

Eurocan, which produces its own pulp, is an integrated linerboard and sackkraft producer. The company is also partially backwards integrated, in that 90% of its fibre supply is obtained from sawmills and forestry operations that are owned by WFT. Within the linerboard and sackkraft industries many of the larger producers have pulp mills that are integrated with the paper mills. These producers are further integrated downstream – owning converting plants such as box plants or sack plants. Eurocan’s position within the industry supply chain is illustrated in Figure 6.

Figure 6. Generic industry supply chain in the industrial packaging industry



1.4.1 Suppliers

For both the kraft linerboard and sackkraft industries, fibre can be procured globally from a number of sources, including publicly-owned tenures (i.e. government tenures), privately-owned timberlands, or company-owned tree farms. Approximately half of the fibre destined for pulping originates as a by-product of lumber manufacture. The other half is sourced exclusively for pulp production. Ninety percent of Eurocan’s fibre supply is from residual chips. In cases of recycled fibre all the fibre is supplied

through large recycling depots in areas with high population densities. Recycled fibre is sold to papermaking facilities on the open market.

Power and energy suppliers for both industries are typically private or government power utilities or gas producers. Less than 10 percent of linerboard or sackkraft producers are completely self sufficient with respect to electrical power, while up to 70 percent are at least partially self-sufficient. Eurocan is fully dependent on purchased electrical power.

Both industries rely on the use of chemicals to facilitate the board and papermaking processes. Chemical suppliers to the paper industry include companies such as Betz-Dearborn, Nalco, Hercules, Ako-Nobel, and Dow.

Significant suppliers of labour for both industries are organized labour unions, which are prominent in some regions of the world. Strong unions are commonly present in Nordic producing countries, Canada, Western Europe and in some regions of the U.S. Labour unions in these regions are key components of the supply chain for both industries. Labour unions in Asia, South America, and Eastern Europe are less significant.

1.5 Buyers of Linerboard and Sackkraft

1.5.1 Buyers of Linerboard

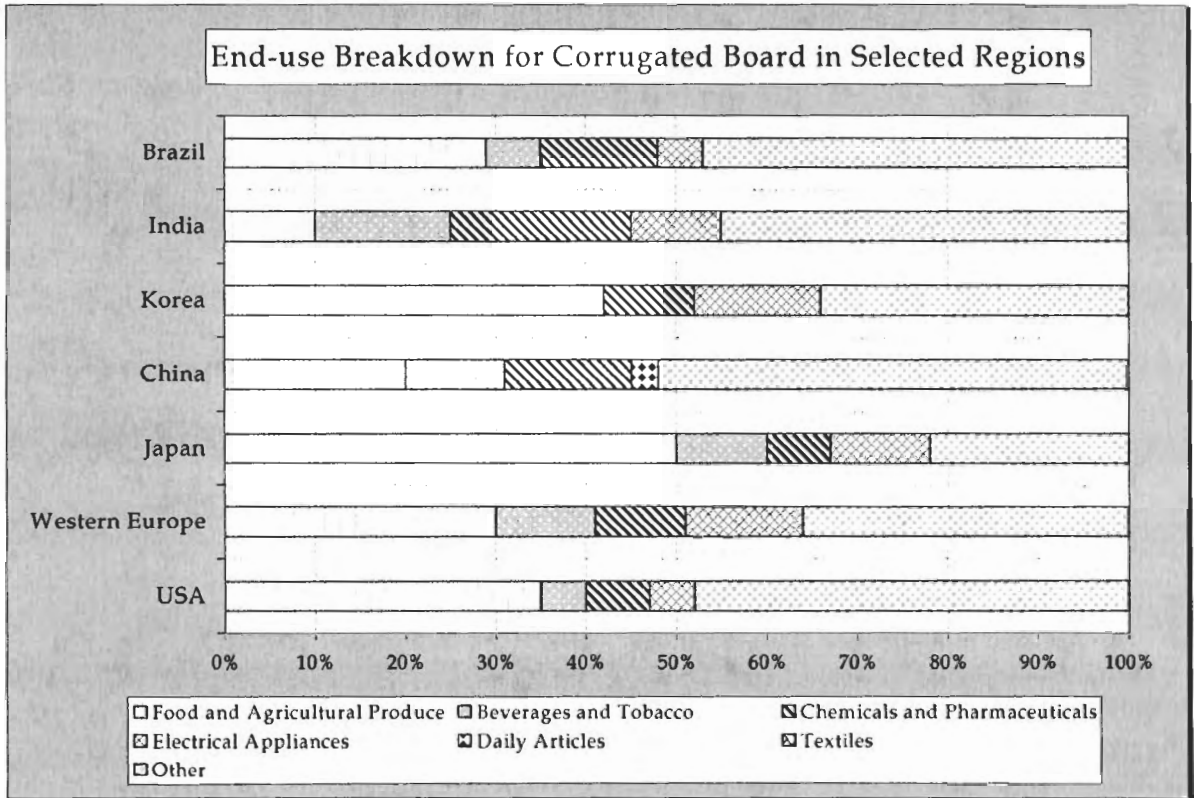
Linerboard buyers include box plants, which produce boxes for end-users such as durable good manufacturers, fruit producers, food outlets or producers of household

items. In some cases end-users are backwards integrated into box making. This is particularly true of fruit producers, who manage and operate their own box plants.

Other buyers include linerboard producers who also own box plants. These companies are required to purchase linerboard from other suppliers in order to supplement the volumes that they require, but more commonly because they cannot produce the quality of linerboard required by the end-users. Customers of boxes, to a large extent, determine the quality of linerboard that is required for their needs.

The main end use for corrugated board in western economies is for food packaging, while in some Asian countries electronic products consume a significant share of corrugated packaging. In Asia a large proportion of the product is destined for the export market. A representative breakdown of worldwide uses for corrugated board is illustrated in Figure 7.

Figure 7: End-use breakdown for corrugated board in select regions /countries

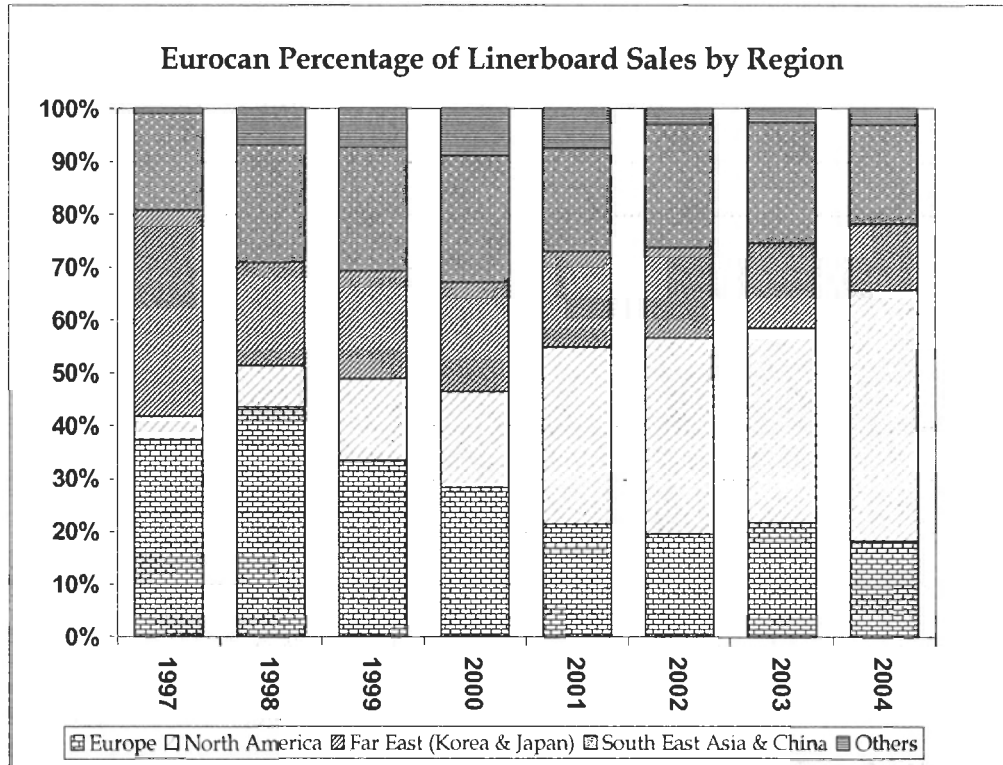


Source: "World Containerboard Outlook up to 2010, 1999, Jaakko Pöyry

Eurocan sells to customers in all regions of the world and exports 80 percent of its production outside North America. Eurocan has a well-established position as an independent supplier of high-quality linerboard to world markets, and is one of a few remaining producers using 100 percent virgin fibre.

Since 1995 Eurocan has seen a shift in its linerboard sales distribution to various regions due to changes in demand and logistical access to markets. Since 1995-1996 the proportion of the linerboard business conducted in Europe and Asia has decreased, while the business being directed towards markets in the Americas and Asia-Pacific has increased. The market distribution of Eurocan's linerboard products is illustrated in Figure 8.

Figure 8: Eurocan linerboard sales by region 1997 to 2004



Source: Eurocan database

A large component of Eurocan linerboard is used for the production of boxes for the retail industry, food packaging (e.g. pizza boxes), manufactured products (e.g. appliances and car parts) and for agricultural products (e.g. bananas). Specialty uses make up a small fraction of end use for Eurocan linerboard.

1.5.2 Buyers of Sackkraft

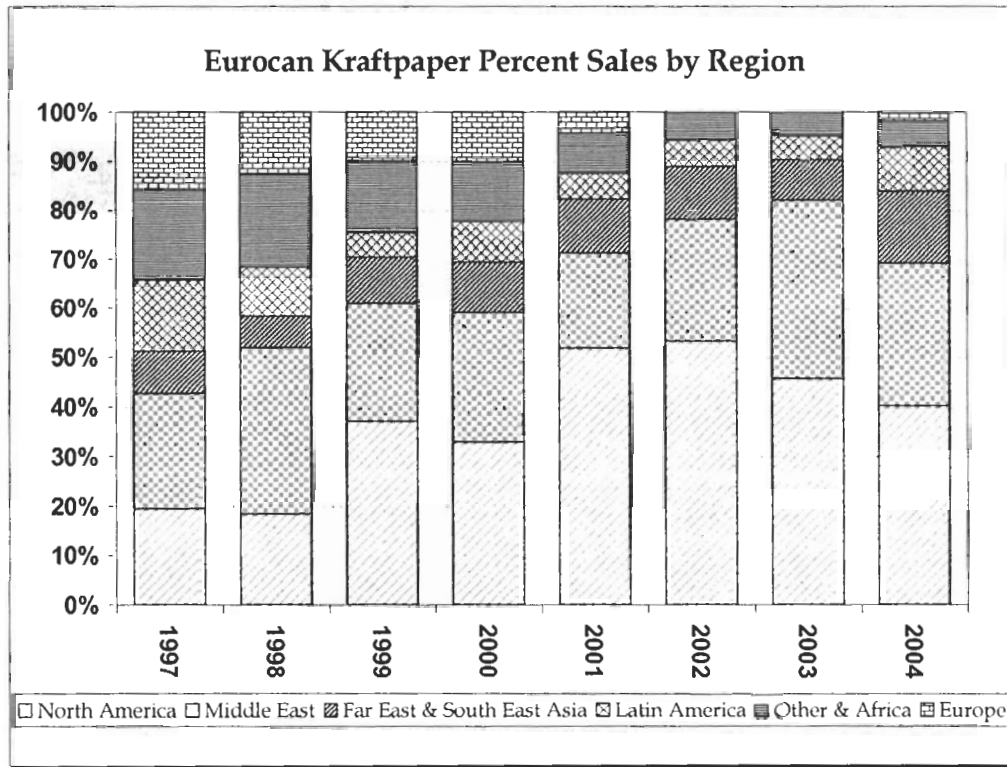
Major buyers of high strength sackkraft include packagers of building material such as cement, mortar, and plaster. Other major uses include sacks produced for food products such as sugar and flour, and for pet food. Miscellaneous other uses include

production of dunnage bags used in the transportation industry, and speciality paper such as release paper for tape and saturating paper for laminate production.

Cement packaging producers are the largest buyers of high strength sackkraft. They typically own their own converting facilities. These buyers represent large companies, such as Holcim, Lefarge, Siam Cement and Cemex, who along with other major regional cement producers buy 30 to 50 percent of the global output of multi-wall.

Eurocan's sackkraft business continues to remain global but is predominately focused in North America, the Middle East and South East Asia. The market distribution of Eurocan's sackkraft products is illustrated in Figure 9.

Figure 9: Eurocan sackkraft sales by region 1997 to 2004



Source: Eurocan database

Fifty to sixty percent of the sackkraft produced by Eurocan is used for cement packaging, with other common uses being food packaging (e.g. sugar, flour), dunnage bags, chemicals, animal feed (e.g. dog food) and a small volume for specialty applications (e.g. release liners, wire insulation)

1.6 Competitors

1.6.1 Linerboard Competitors

The global linerboard industry is highly fragmented, due to the high level of recycled capacity that exists globally.

North American producers represent approximately 65 percent of the global output of kraft linerboard. Table 1 provides an overview of the largest North American based producers, by tonnage, and their relative level of downstream integration, which for the top 5 producers is significant.

Table 1: Estimated annual capacity of North American (N.A.) linerboard producers and market share of linerboard and box production (2003)

Company	Unbleached Kraft ('000 tons)	Recycled ('000 tons)	Total Capacity ('000 tons)	N. A. Market Share (%): Linerboard	N. A. Market Share (%): Box Production
Smurfit-Stone Container	4808	394	5202	17.3	22.2
Weyerhaeuser	4302	1396	5698	15.5	15.9
International Paper	3875	95	3970	13.9	6.8
Inland Paper	2958	340	3298	10.6	10.1
Georgia-Pacific	2752	0	2752	9.9	8.1
Packaging Corp of America	1455	0	1455	5.2	5.5
Norampac	700	260	960	2.3	2.1
Green Bay Packaging	635	225	860	2.3	1.8
Longview Fibre	600	0	600	2.1	0
Boise Cascade	540	0	540	1.9	0
Solvay Paperboard	0	365	365	1.3	0
Eurocan	350	0	350	1.2	0

Source: "January 2004 Grade Profile", www.paperloop.com/ and Global price and Fact Book 2003, 2004, Paperloop.

Approximately 10 percent or 2.07 million tonnes of unbleached kraft linerboard produced by North American producers is exported. The top ten North American producers account for 81.5 percent of North American production. This represents roughly 54 percent of the world output.

The European linerboard producers, which account for approximately 18 percent of the global output, are made up of 255 producers from Western Europe and 95 producers from Eastern Europe. Only 18 western European plants manufacture virgin

containerboard. Three main producers, SCA, Jefferson Smurfit, and Kappa Packaging, represent 35 percent of the kraft linerboard production in Europe, with other important players being Nordic producers such as Stora-Enso, M-Real, and Billerud. Independent firms such as Korsnas, Petersen, and Portucel Viana combine for approximately 15 percent of the western European production. In Eastern Europe, the major producer is Mondi producing 860,000 tonnes per year of virgin and recycled linerboard.

Kablin Papel e Celulose of Brazil represents the single largest linerboard producer from South America. The company produces primarily for the European and Chinese markets. The largest producer in Japan, which produces approximately 7 percent of the world output of linerboard, is Oji Paper. The company produces approximately 589,000 tonnes per year.

1.6.2 Sackkraft Competitors

Sackkraft is produced globally, but primarily in northern climates due to the requirement for strong fibre that is found in these regions. The major sack producers are outlined in Table 2 below.

Table 2: Major sackkraft producers

Company	Location	FST/Y ⁸	Grade Market Share ⁹	Total Market Share
Kraft Specialities				
Adirondack Paper Co.	Norfolk, NY	17850	1.6 %	0.4 %
Australian Paper	Morwell, Australia	18921	1.7 %	0.5 %
Bäckhammars Bruk	Kristinehamn, Sweden	30345	2.7 %	0.7 %
Billerud	Grums, Karlsborg & Skärblacka, Sweden	217770	19.7 %	5.4 %
Cascades	East Angus, QC	57120	5.2 %	1.4 %
CMPC	Laja, Chile	1785	0.2 %	0.0 %
Eurocan	Kitimat, BC	24990	2.3 %	0.6 %
Frantschach AG	Vaja, Sweden/ Swiecie, Poland/ Steti, Czech Republic	86037	7.8 %	2.1 %
Gascogne	Mimizan, France	117810	10.6 %	2.9 %
Georgia-Pacific	Palatka, FL	35700	3.2 %	0.9 %
International Paper	Savannah, GA/ Roanoke Rapids, NC	135660	12.3 %	3.3 %
Kotlas Pulp & Paper	Koryazhma, Russia	28560	2.6 %	0.7 %
Longview Fibre Co.	Longview, WA	178500	16.1 %	4.4 %
Port Townsend Paper	Port Townsend, WA	46410	4.2 %	1.1 %
Segezha Pulp & Paper	Segezha, Russia	17850	1.6 %	0.4 %
Simpson Tacoma Kraft	Tacoma, WA	3570	0.3 %	0.1 %
Smurfit Nervion SA	Iurreta, Spain	10710	1.0 %	0.3 %
Tolko Industries	The Pas, MB	5355	0.5 %	0.1 %
UPM-Kymmene	Valkeakoski & Pietarsaari, Finland	71400	6.5 %	1.8 %
	Total Specialities Production	1106343	100.0 %	27.3 %
Multiwall Bag				
Australian Paper	Morwell, Australia	77112	2.6 %	1.9 %
Bäckhammars Bruk	Kristinehamn, Sweden	66045	2.2 %	1.6 %
Billerud	Grums, Karlsborg & Skärblacka, Sweden	260610	8.8 %	6.4 %
Canfor	Prince George, BC	98175	3.3 %	2.4 %
Cascades	East Angus, QC	21420	0.7 %	0.5 %
CMPC	Laja, Chile	35700	1.2 %	0.9 %
Delta Natural Kraft	Pine Bluff, AR	53550	1.8 %	1.3 %
Eurocan	Kitimat, BC	101745	3.5 %	2.5 %
Frantschach AG	Vaja, Sweden/ Swiecie, Poland/ Steti, Czech Republic/ St. Gertraud, Austria	648669	22.0 %	16.0 %
Gascogne	Mimizan, France	53550	1.8 %	1.3 %
Georgia-Pacific	Palatka, FL	189210	6.4 %	4.7 %

⁸ FST/Y – Finished Short tonnes per year

⁹ Grade market share refers to the percent of speciality kraft or sackkraft the specific company produces relative to the entire market for that product. Total market share combines both grades and expresses the company's output relative to the combined market.

International Paper	Savannah, GA/ Roanoke Rapids, NC	128520	4.4 %	3.2 %
Klabin	Monte Alegre, Brazil	42840	1.5 %	1.1 %
Korsnäs	Gävle, Sweden	92820	3.2 %	2.3 %
Kotlas Pulp & Paper	Koryazhma, Russia	114240	3.9 %	2.8 %
Longview Fibre Co.	Longview, WA	146370	5.0 %	3.6 %
SAPPI	Mandini, South Africa	82824	2.8 %	2.0 %
Segezha Pulp & Paper	Segezha, Russia	149940	5.1 %	3.7 %
Simpson Tacoma Kraft	Tacoma, WA	3570	0.1 %	0.1 %
Smurfit Nervion SA	Iurreta, Spain	85680	2.9 %	2.1 %
Smurfit-Stone	Hodge, LA	123165	4.2 %	3.0 %
Tolko Industries	The Pas, MB	171360	5.8 %	4.2 %
UPM-Kymmene	Valkeakoski & Pietarsaari, Finland	198135	6.7 %	4.9 %
Total Multiwall Production		2945250	100.0 %	72.7 %
Total Multiwall and Specialities Production		4051593		100.0 %

Source: *Pulp and Paper Benchmarking Services, Kraft Papers Competitive Cost Study*

The top 5 producers account for slightly over 50 percent of the combined speciality kraft and multi-wall market, with Frantschach having the largest share at 18 percent, followed by Billerud and Longview at 11.8 percent and 8 percent of the market, respectively.

1.7 Substitutes for Linerboard and Sackkraft

Products groups that are close substitutes for kraft linerboard include returnable plastic containers (RPC), recycled linerboard made for the export market, shrink wrapping of bulk shipments, and other hybrids of linerboard such as kraft-top liner.

As with linerboard, plastic is also a substitute for paper sacks. Plastic offers a number of advantages over paper such as lower cost, durability, moisture resistance and better printability. Waste disposal is an issue for plastic bags. However, global environmental requirements for proper disposal of plastic packaging is not harmonised enough to curb the increasing use of plastic.

1.8 Project Outline

The project will follow the strategic analysis framework proposed by Boardman, Shapiro and Vining.¹⁰

Chapter 2 presents analyses of the two external environments in which Eurocan competes, the kraft linerboard segment of the linerboard industry, and multi-wall and specialty segments of the sackkraft industry. The analyses will provide descriptions of the market sizes and structures and will determine the major industry and macro-economic factors that impact these businesses. Each industry will be assessed using Michael Porter's Five Forces. The level of differentiation within each sector will be determined in order to assess whether differentiated products provide a justification for a higher cost structure. In addition, a discussion of macro environmental factors, such as currency impacts, purchasing patterns, growth of global industrial production and GDP will be presented to assess the overall attractiveness of the industries.

The situational analysis will continue with an internal analysis of Eurocan's operations in Chapter 3. Linerboard and sackkraft operations will be discussed separately. This chapter will include a broad evaluation of Eurocan's activities and resources in order to identify its key strategic competencies or disadvantages. Eurocan's corporate strategy of being an independent producer within the industry will be assessed, as will its positioning and competitive strategies in each of the two businesses. The internal analysis will include a review of past financial performance and will compare each operation's costs relative to the industry average and to key competitors.

¹⁰ A. Boardman, D. Shapiro, A. Vining. 2004. "A Framework for Comprehensive Strategic Analysis," *Journal of Strategic Management Education*, 1(2).

In Chapter 4, the comprehensive situational analysis will be summarized to justify the need for the strategic options that are presented in subsequent sections of the project. The intent of the strategic options will be to allow the operation to develop a sustainable competitive advantage within each industry.

Chapter 5 will include a detailed evaluation of the strategic options available to the mill. This chapter will assess the capital requirements, the impacts on operational costs, and the change in Eurocan's competitive position brought about by each of the various options.

Chapter 6 will conclude by recommending a specific course of action for Eurocan, based on the evaluation in Chapter 5.

2 INDUSTRY ANALYSES

This chapter will determine the attractiveness of the kraft linerboard and sackkraft industries. The industry analyses will focus separately on the kraft linerboard segment, which includes the 100 percent virgin pulp segment and the segment that utilizes less than 20 percent recycled pulp. These products are highly substitutable by all users and as such Eurocan competes with all firms that produce these products. The analysis of the sackkraft segment will focus on the multi-wall segment, specifically focusing on the high performance 2-ply and 3-ply categories.

Eurocan's output of kraft linerboard represents 1 percent of the kraft linerboard industry's output of approximately 40 million tonnes per year. Eurocan's sackkraft output represents a larger market share within the sack kraft industry at 3.5 percent of the multiwall market, which is estimated at 3 million tonnes per year.

2.1 Kraft Linerboard Industry

Globally linerboard is one of the most highly fragmented markets in the paper industry. The top 10 suppliers control less than 60 percent of the global market. In 2002 the total linerboard production totalled 38.4 million tonnes,¹¹ which represented a decrease of 2.3 million tonnes or 5.7 percent from the previous year. The top 5 global producers, which are all U.S.-based producers – Smurfit-Stone Container, Weyerhaeuser, International Paper, Georgia Pacific, and Inland Paper – account for 35 to 40 percent of

¹¹ 2003-2004 Pulp & Paper Global Fact and Price Book, 2004, Paperloop.

the total linerboard market. The three largest non-U.S linerboard producers include SCA, Kappa Packaging and Jefferson Smurfit. Combined they produce approximately 2.0 million tonnes. This represents 35 percent of the European output or approximately 5 percent of the global output. Table 3 illustrates the global production and the relative outputs of producers in different regions of the world.

Table 3: World linerboard production by region 1999-2002 (million tonnes)

Region	2002 Market Share	2002	2001	2000	1999
Total European Union	8%	3.23	3.02	3.55	4.91
Total Eastern Europe	6%	2.35	2.14	1.33	1.16
Europe	15%	5.58	5.16	4.88	6.08
Asia	15%	5.60	9.40	11.83	11.33
North America	60%	22.96	22.17	23.40	21.85
Latin America	9%	3.36	3.12	2.92	2.85
Africa	2%	0.93	0.91	0.87	0.80
Total	100 %	38.43	40.76	43.9	42.91

Source: 2003-2004 Pulp and Paper Global Fact and Price Book

The level of downstream integration globally varies from region to region. In North America, the top ten producers operate one-third of the 1600 corrugating plants in North America, selling 75 to 80 percent of their production internally.¹² The remaining 15 to 20 percent of the output is sold to external buyers both domestically and globally. Companies such as Stone-Container and Weyerhaeuser are fully self-sufficient and maintain surplus capacity. These companies are the biggest suppliers to independent converters domestically and to the export kraft linerboard market.

¹² 2003-2004 Pulp & Paper Global Fact and Price Book, 2004, Paperloop

In Europe the level of downstream integration is roughly estimated to be 60 percent in 1999.¹³ Similar to producers in the U.S., the larger linerboard producers have surplus production which is supplied other independent converters in the region.

Other regions of the world have very low levels of downstream integration between linerboard producers and converters.

Linerboard is highly globalized and is seeing a growing trend for linerboard flow out of North America, South America and Europe into China, Japan, South East Asia and Mexico.

2.1.1 Demand Analysis

Overall linerboard industry demand is expected to grow at an average annual rate of 2.1 percent through to 2010.¹⁴ This growth rate is dependent on corrugated box demand, which is driven by overall economic growth but is more elastic with respect to industrial production.

The growth rates in the U.S. from 1990-1997 and the current industrial growth rates seen in Asia-Pacific reflect this relationship, where high containerboard demand matches the economic growth of the areas. Conversely, areas that had lower economic growth rates during this period had correspondingly low containerboard consumption rates. More dramatic surges are seen in countries where economic growth is driven by industrial production, as countries that have high industrial outputs tend to have a greater per capita consumption of containerboard than those that have more agricultural outputs or that are less export oriented.

¹³ World Containerboard Demand to 2010, 1999, Jaakko Pöyry

Linerboard demand in regions such as China, Eastern Europe, and the Middle East is expected to grow at an average rate of 5 percent per year through to 2010. The projected increase is attributed to increased industrial outputs in these regions. Growth in North America and Europe will remain modest at 1.1 percent and 1.8 percent per annum respectively over this same period.

In terms of volume growth, North America, China, and Latin America will represent the largest growth regions. North America will continue to maintain the major share of linerboard demand at over 45 percent, with Europe maintaining approximately 12 percent of the demand through to 2010. Latin America and China will each have 9 and 8 percent of the world volume demand respectively by 2010. Table 4 provides an estimation of demand through to 2010, which indicates continued demand from developing regions of the world, largely as a result of strong economic performance and increasing global population.

Some other factors that influence demand, including environmental issues, a drive to reduce secondary packaging, substitution by alternative packaging, and changes in box construction standards.

The development of better printing technology and an increase in marketing initiatives resulting in the utilization of corrugated products for store displays and design for point-of-purchase purposes are also serving to increase demand. This fact is reflected in the rise in the annual growth rate of corrugated box shipments to 5.4 percent between 1992 and 1994, when the industrial growth rate in the U.S. averaged 3.9 percent per year.

¹⁴ World Containerboard Demand to 2010, 1999, Jaakko Pöyry

Table 4: Net trade in linerboard by region 1996-2010

	1997	1998	2005	2010	Average Growth 1997-2010 %/ year
	- 1000 tons -				
North America	16,452	16919	17957	18966	1.1%
Western Europe	4108	4086	4738	5180	1.8%
Eastern Europe	639	624	895	1105	4.3%
Middle East	727	808	1050	1321	4.7%
Japan	3753	3601	4064	4271	1.0%
China	1333	1153	2290	3212	7.0%
Rest of Asia	1554	1424	2110	2555	3.9%
Latin America	2220	2288	3015	3651	3.9%
Africa	479	543	616	721	3.2%
Oceania	337	334	427	495	3.0%
World Total	31574	31780	37163	41478	2.2%

Source: "World Containerboard Outlook up to 2010", Jaakko Pöyry, 1999

2.2 Trends in Technology and Cost in the Linerboard Industry

2.2.1 Technology

Currently the industry, especially in North America, is evolving towards fewer competitors, fewer production facilities, and larger papermachines that are strategically located either close to a cheap fibre source or close to their markets.

Overall the long-term price trend is declining for both sackkraft and linerboard, partially due to the effect of economies of scale. Both products are being produced with bigger machines with lower unit production costs. No significant breakthrough in production technologies has taken place in recent years. However, machine speeds have increased appreciably. The main driver for increased speed is a need to compensate for

the decrease in production resulting from a move to lighter weights of paper.¹⁵ Kraft linerboard machines that are considered competitive typically operate at speeds of 600 to 900 meters per minute. However, newer machines are able to operate at speeds in excess of 1000 meters per minute.

2.2.2 Fibre

Fibre represents the most vital input for linerboard. It can be the biggest source of uncertainty and can create the most risk to long-term firm survival. Due to the tremendous forest resources in developing countries such as Brazil, Russia and those of Eastern Europe, producers from these regions are exposed to little risk of loss of fibre supply. In fact, the low cost of fibre from these areas provides a significant competitive advantage.

Areas that are likely exposed to the highest risk with respect to fibre supply are ironically those areas that are experiencing a high growth rate as a result of recycled fibre utilization. These producers also enjoy a cost advantage over kraft linerboard producers. According to an assessment conducted by CIBC World Markets, U.S. exports of old corrugated containers (OCC) to China will increase two to three fold from levels seen in 2002 by 2005.¹⁶ The rapid increase in Chinese demand will result in the normalized price of OCC increasing to \$US80- \$US100/t from the long-term price trend of \$US60. The impact of having prices rise to these levels could result in recycled mill producers shifting from the low end of the international cost curve to the high end. Figure 13 illustrates the cost impact on recycled producers when OCC prices increase to \$US125/ton.

¹⁵ When producing lighter weight paper machines must be run a higher speed to produce the equivalent weight in a fixed period of time (i.e. per day)

Table 5: Impact of the change of OCC price on the cost of production for OCC users

	Cost of production(\$US) when OCC price @ \$35/t	Cost of production(\$US) when OCC price @ \$125/t
U.S. Recycled	\$170	\$290
Chinese Recycled	\$195	\$295
German Recycled	\$200	\$260
U.S. Kraftliner	\$205	\$230
Swedish Kraftliner	\$245	\$255

Source: "Global Performance in the Pulp and Paper Industry: An Overview", Presented at Current Status of Maine's Pulp and Paper Industry- Challenges, Strengths & Opportunities, April 4, 2003, Don Roberts, Managing Director CIBC World Markets

In addition to an increase in cost of raw material, producers who incorporate OCC into their linerboard will be faced with declining quality of recycled material.

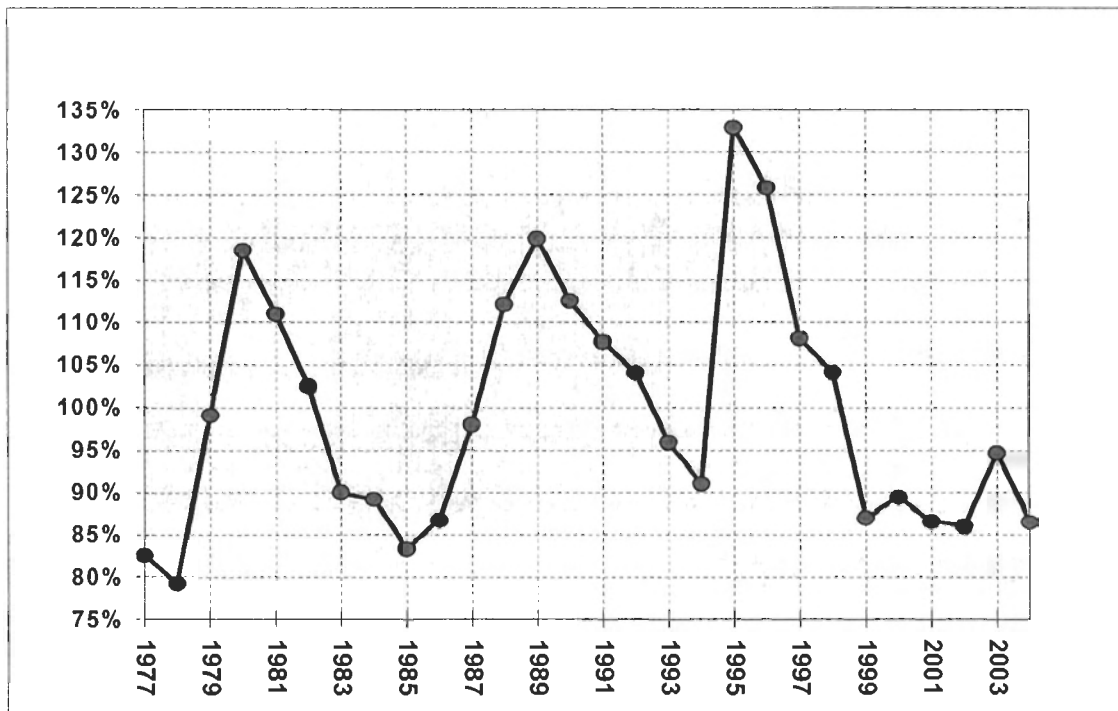
2.2.3 Other Factors Affecting Linerboard and Sackkraft Prices

Linerboard and sackkraft prices are subject to short-term fluctuations based on a number of different factors. The primary factor that influences the price of linerboard or sackkraft is world economic growth, which drives demand for corrugated material due to increased consumer consumption. Other factors that impact price include the price of fibre, exchange rates and transport costs. European prices for linerboard largely follow the North American price of linerboard with a long term differential that is attributed to transportation costs.

¹⁶ OCC refers to Old Corrugated Containers, which is a source of fibre for linerboard. OCC includes trimmings from box plants as well as used corrugated containers.

The price of linerboard tends to fluctuate between 80 percent and 120 percent of its long-term average price.¹⁷ The price cycle pattern of linerboard, illustrated in Figure 10, shows the dramatic swings in price experienced in up to 2000 are no longer evident. Since 1998, prices have stabilized at approximately 90 percent of the long-term average price.

Figure 10: Price fluctuations of linerboard



Source: Eurocan Pulp and Paper Database, Internal Presentation Eurocan Pulp and Paper Co.

2.2.4 Exit Costs

A growing number of plant closures are occurring globally, as companies move to improve efficiencies. The closure of a facility typically works to reduce the supply of a product due to reduced available capacity in the market, while also serving to reduce the cost of production as the facility being closed is typically a high cost producer.

¹⁷ Long-term average price is the product price averaged over a predetermined period (i.e. 5 or 10 years)

The impact of the closure of an operation can be severe and result in tremendous costs. These costs can include the write-down of assets, property and equipment, as well as the goodwill of a brand, all of which can have a major impact on company valuations and stock prices. Other exit costs could include site remediation costs, compensation packages for staff and labour, and penalties for broken contractual obligations. Some intangible costs that would be incurred would be the loss of business reputation, which could be the most expensive and have the greatest long-term impact. Loss of business reputation could result in loss of shareholder confidence, making the ability to secure financing more expensive. In addition, the company's reputation as a reliable supplier would also be damaged, and this could also lead to difficulties in recruiting employees.

Larger companies that close facilities can insulate themselves from a large proportion of the costs related to exit. For companies that are highly capitalized, such as Weyerhaeuser and International Paper,¹⁸ the impact of a facility closure on share price would be minimal, as it would likely represent a small component of the overall company. Costs related to contract penalties could be mitigated, as contracts would likely be administrated corporately and would be based on company wide performance rather than on a single facility. Severance and compensation packages could be exchanged for employment in other facilities that would serve to retain workers' skills within the company. Finally, loss of reputation would not be significant if buyers continued to be supplied by other facilities of the same company. The actual costs these companies would be exposed to would be markedly lower than those experienced by a smaller company with a lower level of horizontal integration.

¹⁸ Market capitalization of Weyerhaeuser and International Paper are \$USD12 billion and \$USD17 billion respectively.

2.3 Competitive Analysis of the Linerboard Industry

2.3.1 Rivalry within the Kraft Linerboard Industry

The threat to rents due to rivalry within the industry is high and will continue to remain high due to the highly fragmented nature of the industry.

Rivalry within the industry is based on price, and is heavily influenced by U.S. producers who represent 60 percent of the kraft linerboard market. Changes within the U.S. market impact global linerboard price more than any other single market, with global price trends closely matching those seen in North America.¹⁹

The price trend in the linerboard industry also shows a slight decline,²⁰ which is resulting in a push to decrease production costs. As a result, kraft linerboard is being produced by bigger and more efficient machines with lower production costs. For example, 2.4 million tonnes of poor performing linerboard capacity were removed in the U.S between 2000 and 2003. Producers who have closed this capacity have compensated for the lost production by increasing production at more efficient-low cost operations. It is estimated that creep capacity,²¹ within the U.S has accounted for up to 2.0 million tonnes of increased production or approximately 5 percent of global capacity.²²

An additional factor leading to improved efficiencies is the degree of downstream integration within the U.S. that has provided larger integrated producers the opportunity to produce a narrow product spectrum at each of their mills. The ability to produce only a

¹⁹ “World Containerboard Outlook up to 2010”, Jaakko Pöyry, 1999

²⁰ “Global Performance in the Pulp and Paper Industry: An Overview”, Presented at Current Status of Maine’s Pulp and Paper Industry- Challenges, Strengths & Opportunities, April 4, 2003, Don Roberts, Managing Director CIBC World Markets

²¹ Creep capacity refers to the increased in total production due to efficiency improvements, and efficiency gains. This increased capacity is not due to large capital upgrades or retrofits.

narrow product stream allows facilities to purchase equipment that is more specialized for the product grades being produced. This further allows grades to be run at their maximum production capacities, as efficiencies are not lost for grade changes. Overall this strategy results in good operational efficiencies. This strategy has served to reduce marginal costs throughout the industry, as reflected in the statement made by Don Roberts,²³

“Due to grade specialization and leveraging of “best practices we guesstimate that IP (International Paper) has increased the effective capacity of its remaining lower cost mills by at least 250,000 tons. We think this is a common phenomena – Weyco closed 750,000t of containerboard with rationalization and found 6 percent more capacity than expected”

Source: “Global Performance in the Pulp and Paper Industry: An Overview”, Presented at Current Status of Maine’s Pulp and Paper Industry- Challenges, Strengths & Opportunities, April 4, 2003, Don Roberts, Managing Director CIBC World Markets

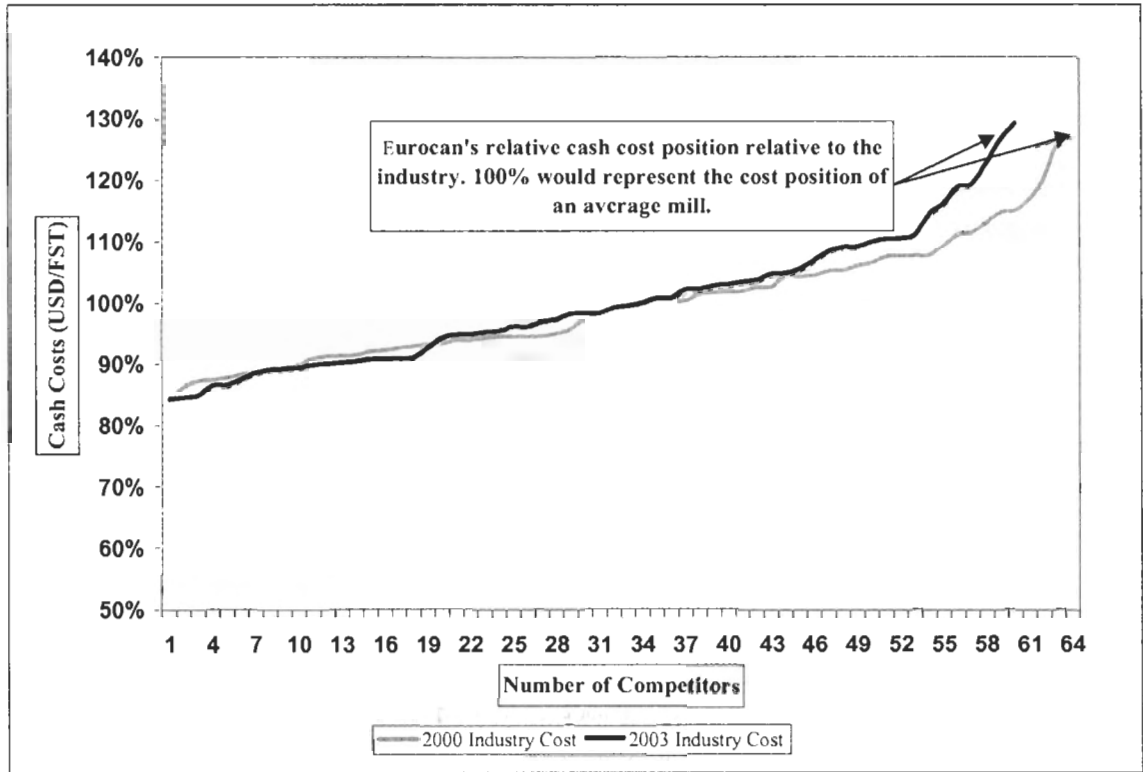
The declining cost of production and the closure of high cost mills in North America is shown in Figure 11, which illustrates the trends of decreasing unit costs of operating and fewer number of producers between 2000 and 2003 in North America. The ultimate result of these changes is a flatter long-run cost curve.²⁴

²² 2003-2004 Pulp & Paper Global Fact and Price Book, 2004, Paperloop.

²³ “Global Performance in the Pulp and Paper Industry: An Overview”, Presented at Current Status of Maine’s Pulp and Paper Industry- Challenges, Strengths & Opportunities, April 4, 2003, Don Roberts, Managing Director CIBC World Markets

²⁴ The term cost curve refers to the unit cash cost of production for all competitors in the industry as illustrated in Figure 14.

Figure 11: Manufacturing cost of North American linerboard producers in 2000 and 2003.



Source: 2003 North American Linerboard Cost Competitive Study", Pulp and Paper Benchmarking Services, Paperloop, Atlanta GA

Technological advances, such as improvements to papermachines that reduce operating costs and enhance quality, as well as development of chemicals that allow the production of higher strength paper, continue to push the global industry towards a lower cost structure. In addition, the ability to secure low labour and energy costs, especially in developing areas such as China and Eastern Europe, is also enhancing the ability of competitors to reduce their costs.

As the industry continues to evolve to a flatter cost curve, the impacts of currency will serve to play an increasingly crucial role in markets as changes in relative currency valuations can change the competitiveness of individual producers.

Though pricing remains the single most critical factor in purchasing, factors such as quality, service, performance and supply efficiency are also important in purchasing decisions. These factors play an increasingly important role as converters strive to ensure that higher production efficiencies are realized as they increase their capital exposure with faster and larger equipment.

Due to high level of fragmentation in the industry a lower level of rivalry is not likely to result in the foreseeable future.

2.3.2 Threat of New Entrants to the Linerboard Industry

The threat of new entrants into the linerboard industry is extremely high, as demonstrated by the significant new capacity coming on line in Europe and Asia. The threat in the foreseeable future will remain high, as no significant barriers are present to deter entry.

Currently, China alone is expected to bring on significant capacity in the form of recycled linerboard and kraft-top linerboard, while European producers are also increasing capacity of kraft linerboard.²⁵ Access to fibre, capital, and industry knowledge may serve as slight barriers; however each one can be overcome if the industry becomes economically attractive.

Currently the new capacity being developed in Eastern Europe and China is a result of the expectation that adequate profits can be extracted from these markets due to low wages, short distance to markets and, in the case of the European capacity, good access to fibre. The anticipated level of profitability in these regions is providing access

to capital in the form of subsidised loans from the Chinese government, and from Russian investors in Eastern Europe. Neither of these sources is subjected to the constraints of the equity markets, which are currently limiting investment in North America and Europe.

Access to fibre continues to be a significant issue in China, as the increased capacity will result in a high degree of competition for a limited supply of recycled pulp. Furthermore, the continual reuse of fibre resulting from the high level of recycling in these regions is expected degrade the quality of the furnish,²⁶ despite advancements in technology that are allowing for better paper quality from recycled fibre. New Eastern European capacity has good access to high quality fibre. However, political, financial and institutional uncertainty, along with logistical constraints, has served to limit the potential from this region.

Unlike the broader linerboard producers, the segment of the industry that produces a higher quality product is likely exposed to a lesser degree of threat from new entrants. The threat to these producers, including Eurocan, is moderate, as the new capacity in developing regions of the world is constrained by the limited availability of good fibre. Access to this fibre can provide producers from North America and Europe with a competitive advantage, by allowing them to produce a product that is more differentiated (higher quality) than that produced by the broader linerboard industry.

²⁵ “2003 North American Linerboard Cost Competitive Study”, Pulp and Paper Benchmarking Services, Paperloop, Atlanta GA.

²⁶ Furnish is a generic industry term used to describe the fibre which makes-up pulp.

2.3.3 Substitution of Kraft Linerboard

The threat of substitutes to corrugated packaging and ultimately linerboard is moderate to high, but is expected to decline to a more moderate level in the future, as the industry responds to pressures exerted by other types of packaging.

2.3.3.1 Returnable Plastic Containers (RPC)

RPC have provided significant substitution pressures for the corrugated industry as plastic containers are interlocking, foldable, stackable, reusable, standard sized and display ready. In addition, they provide an opportunity for improved logistics for large retailers who can have containers returned to depots or collected by container suppliers. This method of managing retail products is more environmentally friendly, as it generates less waste at stores through secondary packaging. It also serves to reduce costs, as fewer resources are required to unpack and dispose of waste.

This form of supply chain management is being effectively utilized in Europe, due to government pressure for the retail industry to reduce waste to landfills,²⁷ and to the high relative share of private retail labels. In the U.K, where private labels account for up to 45 percent of retail sales, the use of RPC is more advanced relative to France, where private labels only constitute up to 20 percent of sales. The acceptance of RPC systems requires technological improvements to logistics systems. This has provided some resistance to adopting these systems globally. In the U.S., RPCs have captured 5 percent of the corrugated industry share, largely due to the pressure exerted by Wal-Mart.

²⁷ Containerboard Industry Review 1970-2000

Though the use of corrugated containers has dropped significantly with large retailers as a consequence of RPCs, the overall use of corrugated products continues to be high. Corrugated containers continue to be used for shipping into regional centres where products are transferred to RPCs for delivery to retail outlets.

It is not expected that the use of RPC will be adopted widely in less densely populated or developing countries. The cost for setting up the logistics systems required to ensure proper recovery of plastic containers is a barrier to the effective utilization of RPCs in these markets.

The use of “Life Cycle Assessments” by a growing number of organizations, which evaluate the “cradle to grave” environmental burdens associated with a product, has also served to restrict the adoption of RPCs. In these assessments corrugated material is considered more favourable than plastic containers, as they are based on a renewable raw material source and have environmentally acceptable disposal options.

2.3.3.2 Recycled Paperboard

Recycled board provides a more significant threat to kraft linerboard, as it has gained significant share of the overall market, growing from 500,000 tonnes in 1990 to about 5 million tonnes in 2004 (approximately 12 percent of the global linerboard market). Substitution for kraft linerboard by board that is of comparable composition, but which is substantially cheaper to produce, is a growing trend in the industry. Changes to papermaking technology have allowed for 100 percent recycled pulp linerboard to have comparable performance characteristics to that of kraft linerboard, which allows it to be substituted for kraft linerboard in some instances.

The adoption of recycled linerboard products has largely been a result of changes to box standards by international freight classification committees. The most notable change in classification standards was the replacement of the burst strength requirement with compression strength standards by international freight classification committees. This has allowed box makers to more readily substitute recycled material for kraft pulp. The burst standard, which is designed to ensure contents did not spill if a box is dropped, is more difficult to achieve with higher levels of recycled fibre content. The substitution of this standard with a compression strength standard, which measures the stacking strength of a box, allows recycled containerboard producers to aggressively introduce their products into the market and meet the required transportation and insurance requirements.

The freight classification committees also acted to remove the minimum basis weight requirement for packaging, resulting in a further reduction in overall linerboard use as converters sought to achieve higher yields.

Substitution with recycled board provides producers with a significant manufacturing cost advantage when the price of their raw material, old corrugated containers (OCC), drops. The lower price of OCC allows recycled linerboard producers to exert pricing pressures on kraft linerboard producers who sell into markets such as Asia, North America and South America. The cost advantage that recycled linerboard producers sometimes enjoy is expected to decrease as OCC collection capacity reaches its limits.²⁸

²⁸ Pulp and Paper North America Factbook, 1999, Miller Freeman Inc., San Francisco, CA.

The level of substitution of kraft liner grades by recycled grades can be expected to be tempered by the tightening availability of recycled paper, as recovery rates are reaching their thresholds. Recovery rates of OCC in the US had reached 70 percent in 1998 and it is unlikely that higher recovery rates can be achieved.²⁹ This is expected to increase the price of raw material and consequently the price of recycled linerboard, which will make it less attractive than kraft linerboard.

The declining quality of OCC is also becoming an issue, as more recycled fibre is being run through the system, the impacts of which are currently undetermined. The requirement for high performance linerboard, which has characteristics that recycled material cannot provide, continues to exist in many sectors such as auto parts, food packaging, electronics packaging, as well as for products requiring high quality printing and packaging.

2.3.3.3 Kraft-Top Linerboard

Another recycled product substitute is kraft-top liner. Kraft-top liner is composed of a sheet of recycled linerboard with a thin layer of kraft pulp applied as a top layer on the sheet. This gives the sheet appearance properties that are similar to kraft linerboard. The popularity of kraft-top liner as a substitute is a result of the competitive price at which it can be produced relative to kraft linerboard, and the significantly better quality it provides relative to recycled linerboard, at a marginally higher cost. There has been a surge in the use of kraft-top liner in the past 2 years, as U.S. importers of Chinese merchandise are allowing Chinese exporters to replace kraft linerboard with kraft-top liner in box construction.

²⁹ “High Quality Virgin Linerboard in Corrugated Packaging”, Eurocan Pulp & Paper Co., Internal

2.3.3.4 Other forms of Substitution

A further level of substitution for linerboard stems from retailers such as Wal-Mart and Costco, who are promoting a reduction in secondary packaging. The motivation for this initiative is similar to that seen with RPCs, where retailers are attempting to reduce labour costs related to unpacking, displaying merchandise and handling waste at their stores. Retailers are relying increasingly on primary packaging which, by utilizing better graphics, sells the product and results in less in-store waste as packaging is carried away by the customer. This is resulting in an increasing number of products being shipped in primary packaging on pallets that are shrink-wrapped or stretched-wrapped.

Developments in printing and corrugated technology have resulted in better display potential for box and sheet producers. These improvements have resulted in sheet and box producers seeking out new alternatives for utilizing corrugated board for advertising and in-store displays.

The current threat of substitution appears to be moderately high, as the industry has been slow to react to changing customer demands and logistics trends. The threat of substitutes in the future is expected to diminish slightly and settle to a more moderate level. The main factors leading to a decrease in the level of substitution are a higher level of utilization of corrugated products in a wider range of applications, a more positive environmental image, improved overall performance, and declining costs.

2.3.4 Bargaining Power of Buyers of Linerboard

Buyer power in the linerboard industry is currently low and is likely to remain so into the future, as there are no significantly large buyers who can dictate market price.

2.3.5 Supplier Power in the Linerboard Industry

Supplier power at present and into the future is considered to be low to moderate, as there are no large suppliers who can exert any market hold-up.

2.4 Summary of the Attractiveness of the Linerboard Industry

Overall attractiveness in the linerboard industry is average. Future global growth in the industry is projected to be modest at 2 percent annually. Growth in the linerboard industry will be relatively slow, due to an overall slowdown in growth in North America. However, regions such as China, Latin America and the Middle East are expected to see growth at a rate of 5 percent a year. In terms of volume, North America and Western Europe will continue to supply the majority of linerboard to the world through to 2010. Capacity expansions globally are estimated to be in balance with anticipated demand.

New expansions, as well as continued rationalization in the industry, are leading to lower production costs. The major factors leading to lower costs include expansion to areas where labour and transportation costs are low, the installation of bigger and more efficient machines, and the closure of high cost facilities globally.

Substitution pressure for corrugated material is expected to continue. However, technology and changing customer needs are forcing the corrugated industry to evolve.

The development of new products in the corrugated industry is increasing the demand for good quality linerboard in some sectors.

2.5 Kraft Paper

This analysis will focus primarily on the multi-wall segment of the sackkraft industry and to a lesser extent on the speciality kraft paper segment. The multi-wall segment of the industry makes up 72 percent of the total industry, while it represents 80 percent of Eurocan's sackkraft production. Eurocan's overall market share of the sackkraft market is approximately 3 percent.

2.5.1 Industry Overview

European and Canadian companies dominate the high quality sackkraft industry, however the trade of sackkraft is global. Though the larger sackkraft market is highly fragmented, the high quality (2-ply category) sackkraft segment is significantly less so. Within the high strength market there is a higher degree of concentration, as only 7 to 10 producers can supply the complete market. The high strength market accounts for approximately 50 to 60 percent of the overall multi-wall market, of which Eurocan has an approximate share of 3.5 percent.³⁰ Total production of sackkraft in 2003 included 1.4 million tonnes of European production,³¹ and approximately 1.0 million tonnes of production from North America.³² The total high strength market is approximately 1.4 to 1.7 million tonnes. Major markets for high strength kraft paper include North America, The Middle East, Africa and Asia.

³⁰ Estimates of market size have been extracted from Pulp and Paper Benchmarking Services, Kraft Papers Competitive Cost Study, and discussions with industry sales and technical people.

³¹ 2003-2004 Pulp & Paper Global Fact and Price Book, 2004, Paperloop.

³² Pulp and Paper Benchmarking Services, Kraft Papers Competitive Cost Study

Sackkraft production has remained fairly stable since 2000 due to constrained output by integrated European producers and grade production changes (i.e. switching production to linerboard or another product line). The major European producers expect slight capacity increases, while significant decreases are expected in the U.S. with the closure of some large facilities.

2.5.2 Demand Analysis of the Sackkraft Industry

Demand for sackkraft is expected to decline by a total of 2.5 percent by 2010 in Europe. However, growth in Africa (Egypt specifically) and the Middle East is expected to reach 10 percent a year through to 2006.

The global demand for sackkraft is expected to decrease marginally, as a result of improved paper strength properties, which are reducing the number of plies required in multi-wall sacks. The contraction will likely occur in the moderate performance category and to a lesser extent the 3-ply category. The paper industry in conjunction with converters can now produce two-ply sacks that have the equivalent holding capacity of the three-ply sacks that were previously produced. The result of the stronger paper is a reduced demand for paper on the part of the converter. Table 5 illustrates the significant savings that converters can achieve by adopting the use of a higher strength paper. It also illustrates the premium that high quality suppliers can claim, for a marginally higher cost of production.

Table 6: Effect of paper strength on the cost of one sack

	Paper Price <i>\$US/Tonne</i>	Sack Construction <i># plys * basis weight (g/m2)</i>	Sacks per tonne	\$US per one sack	US\$ per 10 million sacks
Lower Quality Paper	520	3 * 98	4300	0.12	1,210,000
Higher Quality Paper	670	2 * 85	7400	0.091	910,000
Savings	-150	124 g/m2	3100	0.03	300,000

Source: Internal presentation, Olli Korhonen, Director of Customer Services and Product Development

The high economic growth seen in regions such as the Middle East, North Africa, Latin America, South East Asia and Mexico is expected to increase the demand for sackkraft used in 2-ply applications, which will temper the impact of reduced utilization due to improved strength properties. The high economic growth rates in these regions are leading to more home and infrastructure construction, which consumes considerable amounts of cement that is transported in bag form. Furthermore, the demographics in countries such as Mexico and the Philippines indicate a significant proportion of their population (approximately 70 percent) is under the age of 25. It is expected that the demographic trends in these countries will exert a demand on home construction, which will increase the demand for high-quality sack paper.³³

Bulk delivery of products such as sand and cement, as well as the use of bulk-handling containers for food and chemical products represent an additional threat to the demand for paper sacks. As infrastructure development increases in emerging economies where paper sacks have traditionally served as the form of delivery, bulk delivery of cement and sand may become a more cost-effective method of supplying these products

³³ Based on discussions with kraft paper sales agents in the region

to market. Bulk delivery removes a packaging step in the delivery of product and eliminates the need to handle the waste paper.

The demand for higher quality (2-ply) sackkraft will likely grow as economies that utilize paper sacks to transport cement are expected to undergo robust economic growth. However, it is expected that demand for lower grades of sackkraft will decline, resulting in the exit of some suppliers from the market.

2.6 Trends in Technology and Cost in the Sackkraft Industry

2.6.1 Technology

Technological change in the multi-wall segment has been driven by the need to improve cross directional strength. Improved cross directional strength allows paper to have more uniform strength across the entire sheet web, making it more desirable to sack converters.

The other advances in technology specifically related to faster and larger machines are similar to those in the linerboard industry, discussed in Section 2.2.1.

2.6.2 Fibre

Similar to linerboard, access to good fibre is a critical component to the long-term survival of a firm. Due to the tremendous forest resources in developing countries, such as Brazil, Russia and those in Eastern Europe, producers from these regions are exposed to little risk of loss of fibre supply. The low cost and good quality of fibre from these areas provides these producers with a significant competitive advantage.

The influence of recycled fibre in the multi-wall segment is not significant, as high strength producers do not utilize recycled fibre.

2.6.3 Prices

The price trend seen in the sackkraft industry is similar to that in the linerboard industry. The large price fluctuations that were apparent up to the late 1990s are no longer evident. The resulting trend is a less volatile price, which is approximately 90 percent of the long term average. The sackkraft price typically follows the price changes experienced in linerboard market, lagging by 6 to 12 months.

2.6.4 Exit Costs

Producers in the sackkraft industry are faced with exit costs similar to those of linerboard producers. Refer to section 2.2.4 for details.

2.7 Competitive Analysis of the Sackkraft Industry

2.7.1 Rivalry within the Sackkraft Industry

The level of rivalry within the high quality segment of the sack industry is currently moderate. The level of rivalry in the future is likely to remain the same, as some producers are expected to exit the industry and will be replaced by different producers.

Players in this market compete largely on price; however there is a level of differentiation that exists within the industry brought on by the need for high quality in the form of high strength paper. Suppliers who can improve paper strength can offer sack converters higher yields per unit of paper, as less high strength paper is required.

Suppliers who are able to consistently supply high quality paper can achieve preferred supplier status and can charge marginally higher prices than their competitors.

Paper producers who are forward integrated and have converting facilities enjoy the advantage of being capable of undertaking product development initiatives. These can then be provided to their non-integrated customers as a value added service. This level of customer service adds a further level of differentiation, resulting in stronger supplier ties to certain buyers.

Due to the relatively high level of consolidation and downstream integration within the high quality segment (i.e. 2-ply sack) of the sackkraft industry, supply can be controlled in order to preserve price margins. Producers who have swing capacity (can change their production to other grades) manage supply further. In the broader multi-wall market, however, the level of rivalry is considered to be high.

The moderate level of rivalry being experienced in Europe is highlighted by the fact that market watchers have speculated that the EU's competition authorities would likely block any European acquisition move by Frantschach.³⁴ Frantschach, which occupies the largest market share of the high quality sackkraft market, has subsequently acquired operations in North America to continue its growth strategy.³⁵

2.7.2 Threat of New Entrants to the Sackkraft Industry

The threat of new entrants is moderate as access to fibre, access to markets and access to technology combine to serve as significant barriers to entry. Currently the new capacity increase that is underway in Europe is the result of good access to fibre in

³⁴ 2003-2004 Pulp & Paper Global Fact and Price Book, 2004, Paperloop

Eastern Europe, good access to the Middle East market, and access to technology by an established Nordic producer. The success of this expansion is uncertain. The threat of new entrants in the future is expected to remain moderate to low.

2.7.3 Threat of Substitutes to the Sackkraft Industry

The threat of substitution is moderately high, as extensible paper continues to lose market share to plastic materials that provide a cost-effective alternative in a wide range of applications. It is expected that this trend will continue in the future.

The cost of using a plastic alternative (i.e. bag or sack) is approximately half of the cost of paper, while providing other benefits such as better printability, more durability and significantly better moisture protection for products like cement, flour and sugar. The significant disadvantage that exists with plastic is that it offers no recyclable potential and creates a significant waste handling issue for end users. The second factor resisting the growth of plastic in cement packaging is that many major cement producers are vertically integrated and own or hold interests in paper sack converting facilities. A decision to move to plastic would result in high switching costs for these users. Producers who source sacks from independent sack converters are more likely to switch to plastic.

An additional form of substitution for kraft paper, and likely the most significant, is the continual development of paper with improved strength properties. The development of high strength paper is leading to a reduction in the total paper-weight used in the production of sacks. This can cause a significant contraction in overall market. Lower costs, due to improved yields, serve as a driver for converters to try to

³⁵ 2003-2004 Pulp & Paper Global Fact and Price Book, 2004, Paperloop

adopt the use of high strength paper.³⁶ This level of substitution by high strength paper could offset the pressure exerted by plastic sacks on the paper sack industry as high strength paper can improve the overall economics of using paper sacks. This form of substitution will, however, be at the expense of low quality producers. The average weight of paper sack has declined from 162 g to 157 g in 2002 according to Eurosac,³⁷ indicating a trend to lighter weight paper.

The high level of downstream integration between global cement producers and sack plants will limit the substitution by plastic in this sector. Secondly, the reluctance of some producers to adopt the use of higher strength paper has also buoyed paper demand. Sack buyers in the food and chemical industries prefer to over-package their products in order to protect the contents, which are of significantly higher value than the cost of paper.

2.7.4 Bargaining Power of Buyers to the Sackkraft Industry

Buyer power for sack paper is relatively low, as there is no single large buyer that has a high level of market power. Buyer power could increase in the future as consolidation in the cement and food packaging industries leads to a smaller number of large producers, who could dictate future packaging trends.

³⁶ "Use of High Strength Sackkraft makes Economic Sense", Eurocan Pulp & Paper Co., Internal presentation provided by Olli Korhonen, Director of Product Development and Customer Services.

³⁷ 2003-2004 Pulp & Paper Global Fact and Price Book, 2004, Paperloop

2.7.5 Supplier Power to the Sackkraft Industry

Due to the similar inputs that are required by linerboard and sackkraft producers, the supplier power for these products is similar. Present and future supplier power is low due to the limited absence of any dominant supplier.

2.8 Summary of the Attractiveness of the Sackkraft Industry

The overall attractiveness of the sackkraft industry is below average. However, the attractiveness of the multi-wall sector is moderately attractive. This is particularly true of the high strength multi-wall segment where there is less threat of entry and the sector is less exposed to rivalry. The overall industry is undergoing a high level of substitution by plastic and the adoption of high strength paper. The only area of growth is within the multi-wall segment as a result of the economic development in areas such as the Middle East, Latin America, and Mexico.

The industry is, and will continue to compete largely on price, and as such competitors continue to decrease their manufacturing costs to maintain their competitiveness.

3 INTERNAL ANALYSIS

This chapter will provide an assessment of Eurocan's activities and resources. The assessment will highlight the Company's strengths and weaknesses and identify any sources of competitive advantage or disadvantage.

3.1 Eurocan Processes

Eurocan produces linerboard and sackkraft from a virgin fibre base, which is sourced largely from Company-owned (WFT) sawmills and timber interests. The operation has 3 pulp production processes, which includes kraft batch digesting, continuous kraft digesting, and a chemi-mechanical plant (CMP).

The kraft process is the method of pulping by which wood fibre is separated from its binding material, lignin. This process utilizes caustic chemicals, generically termed white liquor, which are mixed with the chips under temperature and pressure. Wood chips are used as the feedstock for the batch process, while sawdust serves as furnish for the continuous digester at Eurocan. The pulping operation at Eurocan consists of eight batch digesters, which are capable of producing up to 930 tonnes per day (tpd) of kraft pulp and one continuous digester capable of producing up to 190 tpd of kraft sawdust pulp.

The CMP process is one where chips are pre-treated and softened with chemicals under pressure and temperature and then pulped using a grinding process called refining.

The CMP process results in a substantially higher yield than the kraft process (i.e. 80 to 85 percent of the original weight of chips input, versus 50 percent of the original weight of chips input for kraft). However, pulp from the kraft process forms paper with higher strength properties. The CMP plant can produce up to 330 tpd of pulp.

Prior to being sent to the papermill for further processing, the pulp from the CMP and the kraft processes is separated from the liquor. Pulp from the CMP process is sent through a pressing process to separate the chemical from the pulp. The pulp from the kraft process is run through a series of washers that clean the pulp. The chemical that is separated from the pulp is called weak black liquor (WBL), which is the original white liquor that now contains the dissolved organic material from the wood chips.

The WBL is an important element of the pulp making process as it contains the chemical required to carry out pulping and also contains organic material, which can be used as a source of fuel. In order to make the kraft process economically viable and environmentally acceptable, the chemical in the WBL must be recovered in an efficient manner.

The Power and Recovery (P&R) operations group carries out the recovery process. The process begins by first concentrating the WBL, which starts out resembling black coffee, in a series of evaporators. The WBL is concentrated until it resembles tar in terms of consistency and at which point it is termed strong black liquor (SBL). The SBL is then fired into a boiler,³⁸ called a recovery boiler, where the organic material in the SBL burns to create heat that generates steam for various mill processes. The process of burning liquor generates approximately half of the energy requirements of the mill. The

inorganic material remaining after the organics have been burnt off is the chemical being recovered. This material collects at the bottom of the boiler in the form of a smelt. The smelt is collected and sent to the recausticizing operation where it is reconstituted into white liquor through a series of additional steps.

The P&R area supplements the steam requirements of the mill with a hog-fuel burning power boiler.³⁹ The role of the power boiler is to provide the remainder of the steam required to satisfy average mill operations. This steam should be provided with the cheapest fuel available, and maintain high availability.

The mill does not generate electrical power, due to the historical availability of low cost power. It is totally dependent on purchased electrical power. The mill's electrical power requirements in terms of cost per tonne are equal to the cost of natural gas and oil used to produce steam.

The pulp from the pulpmill, which has been washed and screened, is then transferred to the papermill. Papermill operations involve combining the various pulp stocks received from the pulpmill into the v grades of paper that are ordered from customers. The papermill at Eurocan includes one papermachine for linerboard production and one for sackkraft production.

3.2 Activity Analysis

Figure 12 displays the value chain for Eurocan, and focuses on activities that are common to both industries. The value chain indicates the primary and secondary

³⁸ Fired is a generic industry term describing the action of spraying a fuel into a boiler for efficient combustion.

³⁹ Hog fuel describes wood waste originating from sawmills that is burned as a fuel in a boiler

activities and identifies who carries out the activities (i.e. division, corporate or external). It further denotes whether value is captured or lost, relative to other producers, by the particular activity. If the activity creates value by lowering cost or improving efficiency it is denoted by a plus sign. Conversely if value is lost relative to the industry, then the activity is assigned a negative sign. Activities that result in a significant cost disadvantage are assigned a double negative. Activities that are consistent with industry benchmarks or are not significant are given a neutral rating, which is denoted by a plus/minus sign.

Figure 12: Value chain analysis for Eurocan

Corporate Activity	Divisional Activity					External Activity
PRIMARY ACTIVITIES						
Chip Purchase ▪ Inter-company purchases & trades ▪ External purchases	Raw Materials Operations Offloading Chip pile management	Pulping Operations ▪ Chip screening ▪ Pulping ▪ Washing ▪ Screening	Power and Chemical Recovery Operations ▪ Chemical Recovery ▪ Steam ▪ Water	Papermill Operations ▪ Liner and Sack production ▪ Roll Preparation	Traffic Services ▪ Warehousing ▪ Export Shipping ▪ Domestic Rail Shipping	Transportation ▪ Break Bulk ▪ Container ▪ Rail
VALUE DERIVED FROM PRIMARY ACTIVITIES						
Ensures lowest chip price and transport cost. Long term chip supply (++)	Old labour intensive unloading system. Loss through chip degradation is high. (-)	Mix of old & new equipment Pulpmill running to equipment standards. (+/-)	Capacity constrained. No power generation capacity. Limited hog fuel burning capacity. (- -)	Linerboard machine large, and of good technical age, but speed limited. Sack machine of average size and older technical age. (+)	Loading required on ship, barge and rail. Maintains two warehouses. Includes up to 10 percent of mill manning. (-)	
SECONDARY ACTIVITIES & VALUE DERIVED FROM SECONDARY ACTIVITIES						
	Maintenance – Specialized and skilled crews, no multi-trades (+/-)					Contract Maintenance High cost (-)
	Engineering – Allows for long-term planning, and specialized skills (+)					Contract Engineering (+/-)
	Technical/ Environmental – Process optimization, minimize impacts, specialized skills (+/-)					
	Safety – Legal requirement & promotes a safe & healthy work force (+/-)					
Purchasing Some volume discounts for chemicals (+)	Purchasing, Shipping and Receiving – Optimize inventories and supply distribution (+/-)					Delivery
	Payroll and Accounting – Optimizes cash flow (+/-)					
	IT Services – Optimize communication and data sharing at all levels of organization. (+/-)					
Sales: Manage various markets (+/-)						Sales Agents: Commission based
Transportation Negotiate corporate rail contracts (+/-)	Transportation – High cost terminal facility. Additional manning with low productivity work force. (-)					

3.2.1 Primary Activities

3.2.1.1 Chip Purchasing

Chip procurement is a positive element for Eurocan. Fibre for the operation is sourced through a corporate buying program that distributes fibre from largely WFT-owned sawmills to other secondary processing operations. These operations can include pulpmills, MDF plants, and pulp and paper operations such as Eurocan. Chips are also sold or traded with other companies. Fibre is provided to all WFT operations at market prices, which are determined by a pricing formula using northern bleached softwood kraft (NBSK) pulp market prices.

The pricing methodology does not provide Eurocan with any distinct advantage with respect to the cost of raw material. However, any rents extracted from Eurocan are retained within WFT. As well, the continuing efficient operation of the WFT sawmills in the area provides an assured, long-term source of fibre for Eurocan.

The access to high quality fibre serves as a key success factor, necessary to compete in the high quality segments of its two industries. However, Eurocan's access to this fibre does not provide it with a source of competitive advantage relative to other producers.

3.2.1.2 Raw Materials Operations

Raw materials operations serve as a negative competitive element for Eurocan. The fibre offloading operation at Eurocan is very labour and energy intensive. The system requires a significant number of resources in the form of mobile equipment and manpower to ensure that the chips are offloaded as efficiently as possible. As fibre is

unloaded, it is blown onto storage piles by way of high capacity blowers that require considerable electrical power. The complete process represents a significant cost to the mill.

In addition to the high costs of the operation, a significant amount of fibre degradation results from the chips being driven over by heavy equipment (i.e. loaders, & bulldozers) and from the mechanical action of being blown on to storage piles. The level of degradation is estimated to be approximately 3 percent of the total chip supply.

Overall this system represents a cost disadvantage for the operation.

3.2.1.3 Pulping Operations

The pulpmill is roughly rated as neutral in terms of value contribution to the operation. The pulpmill operation has been determined to be running to equipment standards. In some cases, however, key pieces of equipment are approaching their operational limits and are not as efficient as newer technology.

Since 2003 the pulpmill operation has run at a steady rate and has supported the production rates of both papermachines. The Capacity Utilization Efficiencies (CUE) of the major equipment is summarized in Table 6. This shows that all the pulping processes are running well below their CUE targets (i.e. Batch Digesters 850 tpd versus 938 tpd or an 85 percent CUE). Table 6 also shows the equipment is meeting industry benchmarks for availability;⁴⁰ indicating equipment is being maintained appropriately.

⁴⁰ “Eurocan Pulp and Paper Debottlenecking Study”, Fluor Daniel, 2000,

Table 7: Capacity utilization efficiency of major pulpmill equipment.

Equipment	Industry Availability Bench marks (percent)	Maximum Sustainable Rate (MSR) (tpd)	CUE @ 90 percent MSR (tpd)	2005 YTD CUE (percent)	2005 YTD Availability (percent)
Batch Digesters	95	935	850	85	94
Sawdust Continuous Digester	90	195	175	67	92
CMP	90	281	250	82	94

The good availability of the equipment and the relatively low utilization suggests that operations outside of this area are serving as bottlenecks to full utilization of this system. These bottlenecks will be discussed below.

The pulpmill operations were given a relatively neutral rating as it operates some new equipment that is comparable to the top competitors in the industry. In other cases the equipment is of older technology that is being operated to industry benchmarks but is inferior to the new technology available.

3.2.1.4 Power and Chemical Recovery Operations (P&R)

The P&R operation represents a significant bottleneck for the mill, as the key equipment is being operated at its maximum capacity. The recovery boiler is at its maximum steaming rate, and is in the upper range for the industry for boilers of this vintage. Should additional steam generation be required, a complete engineering assessment of the boiler by the original equipment manufacturer would be required. Due to this fact, the boiler cannot process any more fuel than it currently burns. This limits the amount of black liquor solids (BLS) that can be fired in to the boiler.

Limiting BLS fired imposes a bottleneck in the pulping process, where black liquor solids are generated. This limitation is doubly significant. It limits overall pulp production and ultimately paper production, but it also limits the ability of the mill to generate steam from a neutral fuel source. Currently, about half of the mill's steam requirements are generated through black liquor firing. Industry benchmarks indicate BLS should generate at a minimum 60 percent of the steam load.

The factor limiting the amount of BLS that can be burned in the recovery boiler is the requirement to burn soap, which is also a by-product of the pulping process. Soap extractives are present at high levels in pine. Pine is the primary fibre species being processed at the mill, due to the current pine beetle infestation in the interior forests of British Columbia. Soap has a very high heating value that is nearly equivalent to a fuel such as kerosene. The introduction of soap at levels approaching 6 percent of the total liquor-firing rate curtails BLS firing by approximately 10 percent.

Currently the power boiler is operated at a CUE that is lower than industry benchmarks. The main reason for the low utilization of this system is the inability to meet environmental standards at higher hog fuel burning rates. As a result of this limitation, natural gas must supplement the fuel needs of the boiler when additional steaming capacity is required. Natural gas does not impact the environmental limitations of the boiler, but it does represent a very expensive fuel source, being approximately four times the cost of hog fuel.

The inability of Eurocan to generate steam from low cost fuel sources represents a significant cost disadvantage relative to the industry at large. The continual escalation in

price of natural gas will lead to a further cost disadvantage, as the company generates close to 20 percent of its energy from natural gas.

As discussed earlier Eurocan does not have any electrical power generation capacity. This represents another competitive disadvantage for the mill. Electrical power costs, which make up approximately 12 percent of the mill's costs, are approximately double the industry average, and are 5 to 10 times higher than those of many of the low cost linerboard and sackkraft producers.

Eurocan has a project underway which will allow it to generate up to 25 percent of its electric power requirements. The project, slated for commissioning by the summer of 2006, is a positive step in addressing this significant deficiency. However, energy and power generation will continue to represent fundamental sources of competitive disadvantage for the mill.

3.2.1.5 Papermill Operations

The linerboard machine is rated as having a maximum sustainable rate (MSR) of 1153 tpd, which translates to approximately 378,000 tonnes per year of annual capacity. Annual capacity is typically 92 percent of MSR for the best producers in the industry,⁴¹ resulting in a daily average production rate of 1061 tpd. The linerboard machine averaged 932 tpd in 2004 and is currently averaging 986 tpd, which indicates that up to 6.5 percent additional capacity is available.

⁴¹ MSR refers to the maximum output a piece of equipment can achieve over a designated period of time (i.e. day, month or year) based on manufactured standards. The annual capacity factors in things such as downtime for maintenance and expected reliability to give capacity rating that is lower than the MSR. In this instance the papermachines are rated to run at 92 percent of the MSR.

The linerboard machine is an average sized machine when compared to North American producers. At a technical age of 14 years it is a newer machine in North America.

The sackkraft machine has a MSR of 412 tpd, which translates to a capacity rating of 135,000 tonnes per year or 379 tpd. More recent daily production averages had the machine operating to 325 tpd in 2004 and 345 tpd in 2005 year-to-date. The more recent average indicates that the machine is capable of producing up to 9 percent more than has been achieved to date. The inefficiency seen prior to 2003 is a result of operational difficulties, some equipment limitations, and the wide grade structure produced on the machine.

The sackkraft machine is considered old in comparison to the rest of the industry. In direct comparison to the high strength sack producers, it has a technical age that is significantly greater.

3.2.1.6 Traffic Services

Eurocan's product handling facilities are unique in the industry, in that the mill owns and operates a deep-water ship loading facility. This operation allows the mill to have good access and shipping rates to Asia, and better rates to Europe than would otherwise be possible.

The negative impact of the terminal facility is the high cost of maintaining the extra manning to undertake ship-loading duties. The labour force in the area is highly specialized to ship loading, and beyond these activities contributes very little to the

overall productivity of the mill. The ship loading crew adds an additional 10 percent to the manning cost of the mill.

The company also maintains a warehouse crew at the mill to load rail cars for domestic customers. This function is similar to other facilities and is not considered a loss of value.

The overall contribution of operating the terminal facility is a negative, as a result of the high operating costs and the minimal additional contribution to core activities such as operations or maintenance.

3.3 Resource Analysis

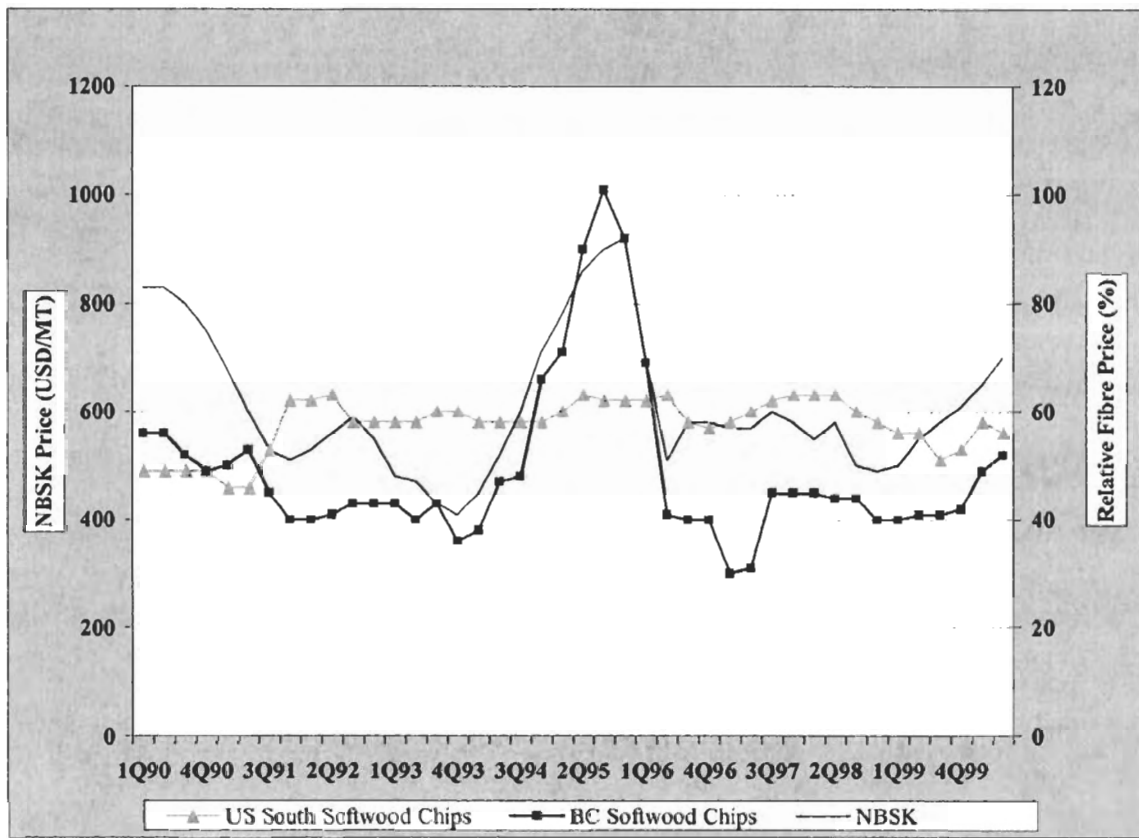
3.3.1 Fibre

Eurocan processes approximately 650,000 oven-dry tonnes (ODt) of chips annually.⁴² Approximately half of the wood furnish received at Eurocan originates from WFT-operated sawmills, while the remaining half is obtained through outside trades and purchases that are arranged corporately through WFT. Chip trading with other companies' enables WFT to optimize freight costs, and serves to ensure chips are provided at the lowest possible cost to the division. Up to 90 percent of the chips supplied to the mill are sawmill residual chips, meaning they are a by-product of lumber manufacturing. These chips are 20 to 25 percent cheaper than chips derived from chipping whole logs, which make up the balance of Eurocan's supply.

⁴² Oven-dried tonnes (ODt) are an industry standard for determining the weight of chips. The measure eliminates the weight of moisture in the chips, which can vary for various reasons.

Fibre availability for the mill has not been a large concern for the division and is likely not to be in the future, based on the relatively remote location of the mill and the mill's contribution to the local economy. Fibre costs in B.C. indicate a long-term trend that is generally lower than that seen in the Southern U.S., as is illustrated in Figure 13.

Figure 13: Comparison of NBSK, B.C. softwood chip & U.S. South softwood chip price movements (1990-2000)



Source: Eurocan Pulp and Paper Viability Assessment - Jaakko Pöyry, 2000

Eurocan's fibre furnish consists of Pine (approximately 36 percent), Balsam/Fir (approximately 37 percent), Spruce (18 percent) and Hemlock.

In the sackkraft industry, the softwood furnish at Eurocan allows the mill to produce paper with higher strength properties, which result in stronger sacks than those that are produced with paper from warmer climates. Wood fibres from warmer climates

tend to have coarse and stiff cell walls that do not allow for good pliability or bonding, resulting in paper that is inferior to paper from northern climates. Though paper strength can be developed further during the paper making process using various technologies or through the use of chemicals, Eurocan has a distinct advantage in that fibre from the region is considered the longest and can inherently produce the strongest paper in the world. Currently other competitors who would have access to a similar type of fibre are those in Canada, Russia, and to a lesser extent the Nordic countries. Producers from these regions comprise approximately 50 percent of the global sackkraft industry.

The use of northern softwood virgin fibre in producing linerboard provides significantly better compression strength (stacking strength test of boxes) under varying humidity conditions when compared to boxes that are made of recycled materials. In the case of boxes made of recycled material, the boxes were seen to fail at 35 percent of original box crush strength after two humidity cycles, which fluctuate between 40 percent and 85 percent relative humidity, while boxes made of virgin fibre maintained their original integrity.

Another advantage of linerboard made of virgin northern softwood fibre relative to recycled linerboard is its higher burst strength, which permits the use of lower basis weights. This advantage allows converters to realize better box yields per tonne of paper. The fibre also allows boxes to achieve better scoreline and creaseline strength that the box folds.⁴³

⁴³ In box making, the corrugated sheet is scored at the locations where the sheet is bent such as at the corners of boxes and at locations where the top and bottom flaps of the boxes appear. Paper that is of poor quality tends to split at these locations, which results in these boxes being rejected.

A developing preference for virgin fibre packaging is seen in the food industry due to the presence of fewer contaminants. Linerboard produced from recycled fibre presents a risk of contamination from heavy metals, chemicals and bacteria.

As fibre represents a significant input to the process, Eurocan's ability to access fibre at a cheaper rate than most of its rivals provides a cost advantage. Access to good softwood fibre at a cheaper rate therefore is a source of slight competitive advantage for the operation.

3.3.2 Energy

Electrical power represents a significant source of cost disadvantage for Eurocan, as all its power needs are purchased. An assessment of this disadvantage will be covered in the financial analysis portion of the report.

3.3.3 Labour Force

Eurocan's has a highly skilled labour force composed of a salaried, non-unionized management group and a unionized labour component. The unionized presence at the mill reflects the strong organized labour presence throughout the pulp and paper industry in British Columbia. The presence of organized labour results in an increased cost to the operation relative to non-unionized operations globally.

The most significant opportunity to reduce labour costs at Eurocan is to continue to implement flexible work practices that make business sense and that are consistent with the current labour agreement. Opportunities to reduce contract maintenance and

service costs via the increased usage of flexibility presents the greatest potential to improve overall productivity.

The relative impact of manning on cost of the mill will be discussed in greater detail in Section 3.5.1.2.

3.4 Corporate Strategy

3.4.1 Vertical Integration

Eurocan, through its affiliation with WFT, is largely backwards integrated. This level of integration serves to provide a stable source of fibre, which is predominantly sourced from WFT sawmills. This arrangements allows WFT to extract the maximum amount of rents from its solid wood operation by having a location where it can “dispose” of its sawmill residuals. WFT derives further benefit from its timber allocation by chipping whole logs to provide chips for Eurocan. If Eurocan were to cease its operations, WFT have to sell a larger volume of chips on the open market, which would drive the price of chips down. This could conceivably result in lost value to West Fraser through lower chip prices, or through a production bottleneck in its sawmills.

Eurocan is not forward integrated into any type of converting activity. The primary reason for this is the lack of any experience in converting activities. Eurocan has developed longer term supply arrangements with some independent converters representing a minority of total business. This strategy allows the company to assume a lower level of risk and financial commitment, while deriving similar benefits to owning a small converting facility.

Within the sackkraft industry Eurocan is seen as a reliable alternate supplier for many independent converters. The relatively high level of downstream integration within the high strength sackkraft industry can result in integrated sackkraft producers diverting production to their own converters, leaving other independent sack producers with little or no volume. Eurocan's independent status serves to protect other independent converters from forced vertical integration.

Producing the two different products ensures Eurocan is not fully exposed to a single market. This has allowed the mill to avoid any market-related downtime throughout its history. The combined output of both machines allows Eurocan to achieve the efficient scale in its upstream pulping operations. However, this simply makes it possible for Eurocan to achieve cost parity with its rivals.

3.5 Business Strategy

3.5.1 Stance

Eurocan competes largely on cost, despite having some elements of differentiation within both its businesses. Currently the company has a number of significant disadvantages that prevent the company from achieving cost parity with its competitors in either industry. These include very high energy costs, low levels of productivity and high labour costs.

3.5.1.1 Energy

Eurocan's need to purchase all its electrical power represents a significant disadvantage for the mill. This disadvantage stems from the fact that Eurocan does not

generate any electrical power, while other major producers generate some or all of their energy requirements. In some cases Eurocan's competitors produce excess electrical power that becomes an added revenue stream. Eurocan purchases three times more power than the average linerboard producer in North America, and two times more power than the average European sackkraft producer.

Eurocan has initiated a number of projects that are expected to reduce its energy costs by up to 20 percent by the summer of 2006. The projects involved include one to reuse heat from waste process streams, which is anticipated to reduce costs by 6 to 8 percent; and an electricity generation project which will reduce costs a further 13 percent. Successful completion of these projects will bring power costs closer to the industry average (excluding recycled producers) of \$US12/FST.⁴⁴ However, expenditures for electric power and energy will continue to be approximately 60 percent higher than those of the low cost producers in this sector. This clearly acts as competitive disadvantage for the operation.

3.5.1.2 Mill Productivity

Increased productivity through improved overall reliability represents an additional opportunity to reduce unit costs. An evaluation of the mill conducted in 2000 indicated that a significant number of areas of the mill were operating at or below efficiency standards normally accepted in the pulp and paper industry.⁴⁵ The major contributors to the poor efficiency results were unplanned downtime at various stages of the operation, and longer planned outages relative to the rest of the industry. As the

⁴⁴ Pulp and Paper Benchmarking Services, 2003 Kraft Papers Competitive Cost Study & 2003 North American Linerboard Competitive Study.

⁴⁵ "Eurocan Pulp and Paper Debottlenecking Study", Fluor Daniel, 2000

pulping, chemical recovery and papermaking processes are an interdependent closed loop, an unplanned interruption in any one location affects the capacity utilization efficiency (CUE) in another area.

A more formalized preventative maintenance program has been implemented to reduce the occurrences of unplanned maintenance. The key elements of this program include an essential care and conditioning monitoring program for all equipment, investigations of premature equipment failure, post-mortems on line and area shutdowns, and a capital allocation program for equipment that fails repeatedly.

The specific impact of these maintenance measures are difficult to quantify. However, the increased production rates that the mill has been able to sustain over the past two years serve as an indication of improved reliability and equipment availability.

Labour productivity represents another significant determinant of the long-term viability of the mill. The mill has productivity rate of 1.61 man-hours/finished short tonne (FST) for linerboard and 2.99 man-hours/FST for sackkraft. An average productivity for the North American linerboard mill is 1.5 man-hours/FST for linerboard and approximately 3.7 man-hours/FST for international sackkraft producers.⁴⁶ Eurocan's slightly below average linerboard productivity is a function of lower paper machine output relative to competitors, as manning numbers are only slightly above comparable U.S. operations.⁴⁷

Eurocan's sackkraft productivity rate appears to compare well to the overall industry. But when compared to its direct competitors, the Nordic sackkraft producers, a

⁴⁶ Pulp and Paper Benchmarking Services, 2003 Kraft Papers Competitive Cost Study & 2003 North American Linerboard Competitive Study.

significant difference in productivity exists. Key Nordic competitors show an average productivity of 1.23 man-hours/FST.⁴⁸ The higher productivity ratios shown for the overall industry are the result of the high manning numbers of Eastern European and South American producers, which average productivity rates of 6.2 man-hours/FST. However, these countries do maintain manning costs that are approximately 50 percent of industry averages.

Labour costs, which make up 20 percent of the total cash cost of the mill, reflect a further disadvantage for Eurocan relative to its competitors. On average, North American linerboard producers have hourly and salaried labour costs that are approximately 21 percent and 62 percent lower than those of Eurocan, respectively. Eurocan's labour costs, relative to the sackkraft industry averages, are 3.3 percent higher for hourly labour, but 25 percent lower for salaried labour. When labour costs are compared directly to key low cost producers from Europe and the Nordic regions, Eurocan's labour costs are 33 percent and 24 percent higher. The labour costs of producers from South America, Africa and Australia are 65 percent lower than the hourly labour costs at Eurocan.

One factor that is contributing to the higher cost of labour is the lack of progress implementing practices within the mill, despite a contract that allows full flexibility. U.S. mills have steadily increased the level of job flexibility within their mills and data indicates that up to 91 percent of mills have operators doing up to 22 percent of maintenance activities.⁴⁹ In addition, almost all U.S. South mills have multi-craft work forces in place. These factors represent a significant opportunity for Eurocan.

⁴⁷ "Eurocan Pulp & Paper Viability Assessment", November 2000, Jaakko Pöyry Consulting

⁴⁸ Pulp and Paper Benchmarking Services, 2003 Kraft Papers Competitive Cost Study & 2003 North American Linerboard Competitive Study.

⁴⁹ "Eurocan Pulp & Paper Viability Assessment", November 2000, Jaakko Pöyry Consulting

Eurocan also has higher costs than the benchmark standard for contract maintenance.⁵⁰ As discussed earlier, one element of the high contract maintenance is an inflexible work force, which is unable to absorb tasks like routine maintenance functions within the operations group. Another factor is the age of key operating areas of the mill, specifically its power and recovery area.

Eurocan is currently undertaking a productivity initiative aimed at reducing manning. The expected outcome is to reduce staff and hourly manning by approximately 10 percent. However, based on the major cost and productivity disadvantages that Eurocan has relative to competitors in North and South America, labour costs will continue to serve as a major source of disadvantage for the operation.

3.6 Business Strategy - Linerboard

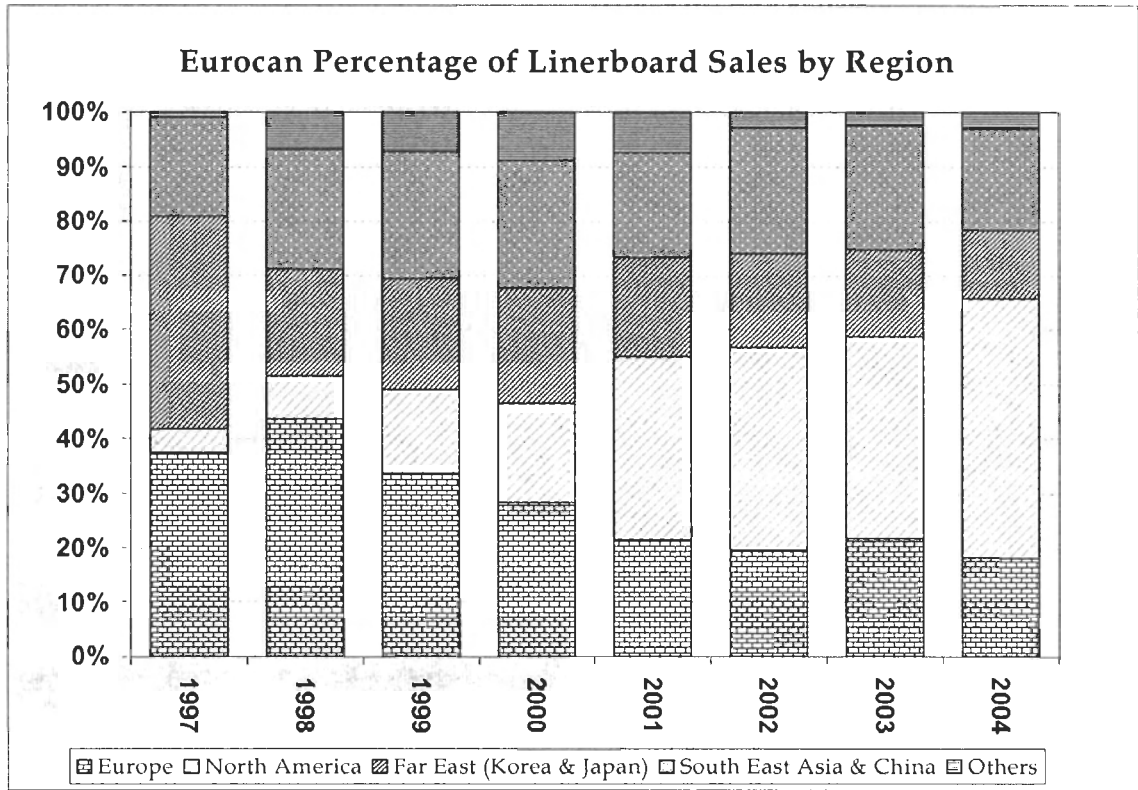
3.6.1 Linerboard Positioning – Markets

Due to the location of the mill, the cost of transportation plays a critical role in how attractive one market is relative to another. Transportation costs to the European market represent a significant disadvantage for Eurocan, as its shipping costs are significantly higher than those of competitors selling to the same market. Due to this fact Eurocan has begun reducing its linerboard sales volume to Europe and has retained only those customers who purchase Eurocan linerboard for a premium. As a result of this shift in customer mix, the prices that Eurocan obtains in Europe are the highest of any region. Eurocan's European linerboard sales volumes have shrunk from 34 percent in 1999 down to 18 percent of total tonnage produced in 2004, while sales volume to North America

⁵⁰ "Eurocan Pulp and Paper Debottlenecking Study", Fluor Daniel, 2000

has increased from 15 percent to 47 percent of total tonnage produced within the same period.

Figure 14: Change in Eurocan linerboard market distribution – 1993-2004



Source: Eurocan Database

The European market has a freight rate that is 80 percent higher than the rate to North America, with the total freight cost to Europe representing 25 percent of the sales price to the region. Freight rates to Asia and the Far East markets are also more attractive than rates to Europe, and only slightly higher than rates to North America. In general, the overall volumes to markets outside North America have contracted slightly. Figure 14 illustrates the recent shift in sales to various regions due to changes in transportation and logistics.

3.6.2 Linerboard Competitive Strategy

Certain quality elements, such as the higher strength factors and superior appearance due to a lighter and cleaner sheet, are added selling features for Eurocan kraft linerboard. These elements have provided a level of branding that makes Eurocan a preferred supplier when a high level of quality is desired. The high quality is attractive to high-end converters, who produce boxes for brand name end-users, which themselves invest heavily in marketing and branding (e.g. Macdonald's, Volkswagen, Honda, Maytag etc.). Eurocan's strategy is to continue to promote its products to converters in regions where manufacturing is growing, such as Mexico and China. The company also continues to appeal to established clientele in Europe and the U.S. who require the higher quality.

These unique quality factors have allowed Eurocan to establish a level of differentiation within the marketplace amongst sophisticated customers that demand a higher level of quality. The higher level of quality has allowed Eurocan to extract a small premium over other producers from North America, Europe and South America. It is expected that if Eurocan were to achieve cost parity with these producers the company would likely out compete rivals on the basis of differentiation.

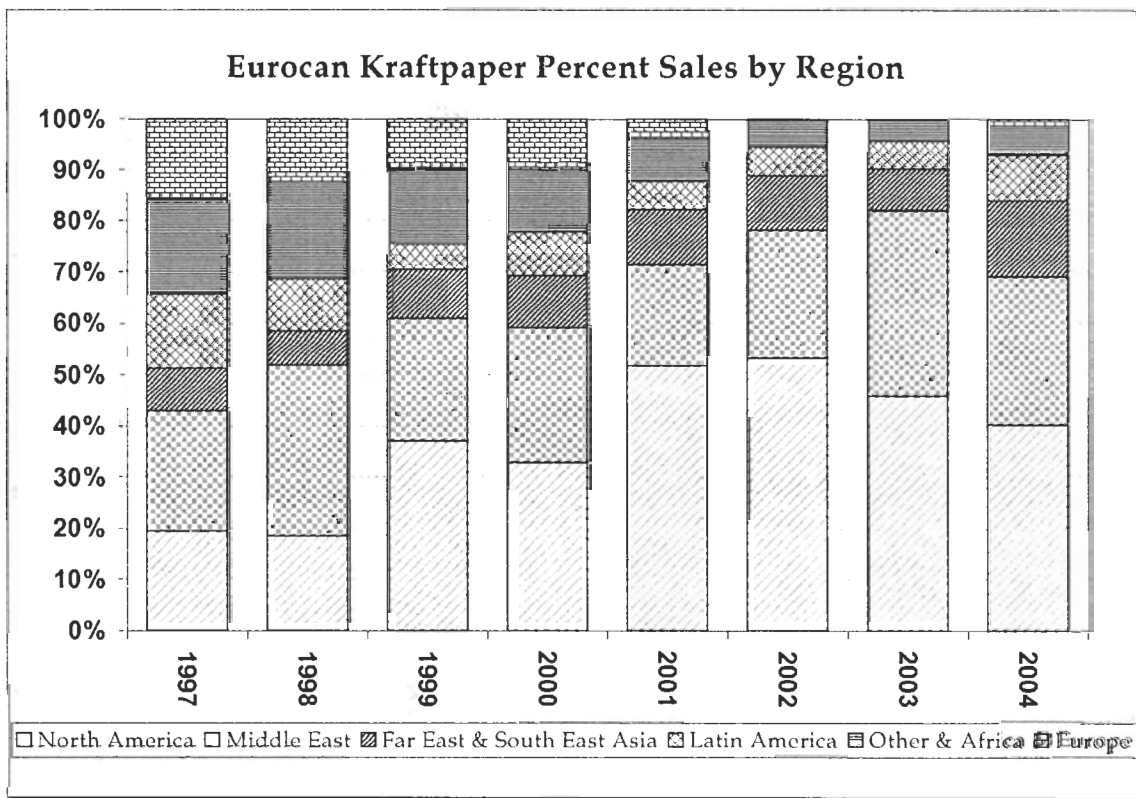
Eurocan is forced to compete on cost within its markets, as the level of differentiation of its products is considered minor. As linerboard is considered a commodity in the broader market and most of the competitors within the industry compete on price, the price premium Eurocan extracts is not enough to allow it to adopt a full differentiation strategy.

3.7 Business Strategy – Sackkraft

3.7.1 Sackkraft Positioning

Eurocan’s sales of sackkraft to Europe are undergoing the same shift of sales to North America that is seen with linerboard. The sackkraft sales distribution to regions other than North America and Europe has remained relatively consistent over the past number of years, as shown in Figure 15.

Figure 15: Change in Eurocan sackkraft market distribution - 1993 to 2004



Source: Eurocan database

Due to the more attractive freight rates within North America, Eurocan is focusing its efforts on maximizing its sales volume to North American in order to stem the loss of rents to shipping companies.

3.7.2 Sackkraft Competitive Strategy

The high quality sackkraft market represents a more differentiated market relative to linerboard. Quality is typically the primary factor for selecting suppliers. In cases where paper producers achieve similar quality, price becomes the next determining factor in selecting suppliers.

Eurocan has attempted to leverage its position as an independent producer, especially in the high quality sackkraft market, by promoting long-term term relationships with other non-integrated producers. Eurocan promotes sales based on longer-term price trends rather than selling on a spot-market basis. This strategy serves to provide stability to customers, who generally sell based on annual contracts, while allowing Eurocan to establish a more consistent demand with narrower price fluctuations throughout the industry price cycle.⁵¹

3.8 Mill Costs and Financial Performance

Eurocan's competitiveness is linked closely with fluctuations in the U.S dollar-Canadian dollar exchange rate. It is only able to remain marginally competitive when the Canadian dollar is below \$US 0.66. The renewed strength of the Canadian dollar has resulted in Eurocan finding itself at the very top of the cost curve relative to the linerboard industry. As competitors continue to decrease costs through consolidation, efficiency gains, reductions in cost of raw material, and reduced energy costs, the industry cost curve has become flatter. This is illustrated in Figure 11. Eurocan's cost disadvantage is further exacerbated by its uncompetitive delivery rates to its markets.

⁵¹ Illustrated in Figure 10

The combination of its poor cost structure and the poor operating performance of the mill have led to substantial accounting losses over recent years. The mill however continues to remain cash positive, with the majority of losses being due to the depreciation of sunk costs.

In summary, Eurocan's cost position within both the industries it competes in is weak, due to fundamental disadvantages in key cost elements such as manning and energy. These factors will continue to remain disadvantages for the operation if no changes occur, as competitors continue to reduce their costs.

4 FULCRUM ANALYSIS

The attractiveness of the kraft linerboard industry appears to be average based on the high degree of rivalry, the limited barriers to entry, the moderate level of substitution expected in the future and modest growth in demand that exists.

Current and future capacity forecasts for the linerboard industry predict that capacity will continue to be in balance with demand at 2.1 percent growth.⁵² The modest growth occurring in the industry is being filled by low cost production, originating either from low cost regions of the world, from the replacement of high cost capacity by horizontally integrated firms, or as a result of technological changes that improve the cost structures of existing facilities. The overall impact of the growing capacity is a lower and flatter cost curve.

The multi-wall segment of the sackkraft industry has a better level of attractiveness, as there is less rivalry, more barriers to entry, and a higher level of differentiation.

Demand in the high-strength sackkraft segment is also predicted to grow, based on past trends such as economic growth. This growth will be most significant in developing regions of the world. The negative trend that exists in the industry is that lower strength multi-wall grades will see a continuing decline in demand due to

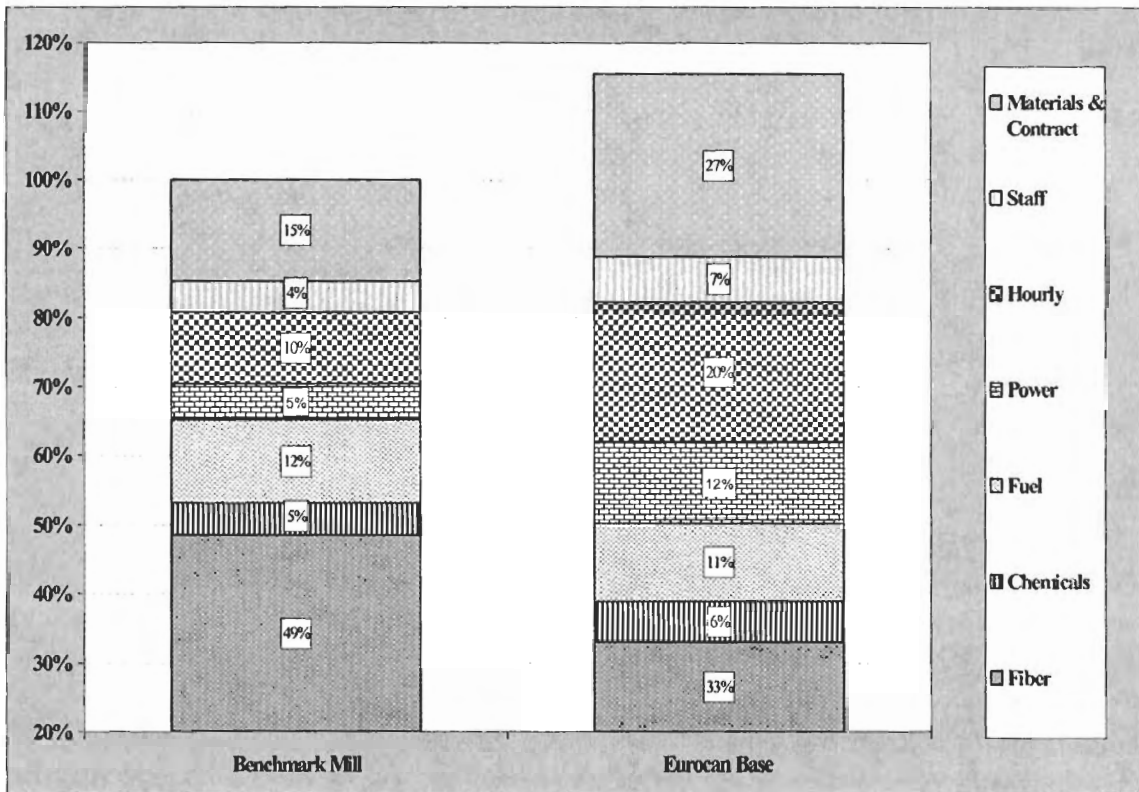
substitution from plastic. Similar to linerboard, the cost curve of the multi-wall industry will tend to flatten out, due to increases in production efficiencies.

In order for Eurocan to continue to compete in this environment, it needs to make major changes to its cost structure. In all key cost areas Eurocan is the worst or close to the worst in the industry. In addition, the artificial competitive advantage the mill enjoyed as a result of a strong U.S. currency has also diminished in recent years. Though the initiatives the mill is currently undertaking will serve to improve the cost and productivity levels relative to its current position, the mill will likely continue to reside in the upper end of the cost curve and be unprofitable.

Figure 16 represents Eurocan's cash cost position (excluding transportation) relative to a representative benchmarked mill. The comparison indicates Eurocan has a significant advantage in fibre cost, but has significant disadvantages in major categories such as hourly and staff labor, power, and materials and contract.

⁵² *"World Containerboard Outlook up to 2010", Jaakko Pöyry, 1999*

Figure 16: Key cost elements for Eurocan compared to a representative benchmarked mill.



Source: Eurocan database

Although the operation has not been able to generate an acceptable rate of return for shareholders or has it been able to generate an accounting profit, the company has maintained a positive cash flow from operations. The accounting loss experienced by the company is attributable to depreciation of capital, which represents largely unrecoverable or sunk costs.

The mill continues to maintain a good reputation throughout both industries as a good and reliable supplier with an established customer base. Furthermore the company has been able to establish a level of differentiation in the kraft linerboard segment that has allowed it to receive a premium over its competitors for the linerboard it sells.

However, for the mill to continue to operate it must achieve more cost parity with its competitors or exit one or both industries.

One broad strategic option for the company is to exit one industry. Based on overall industry attractiveness, the multi-wall segment of the sackkraft industry presents the best opportunity for the mill. However, due to the low machine capacity of the sackkraft machine at Eurocan, the option to exit the linerboard industry is unlikely. To upgrade the sackkraft machine to a size that would allow the mill to fully utilize its pulping operations at the efficient scale would require a capital investment on the order of magnitude of \$150 million. This magnitude of investment is not likely without having customers secured for the incremental volume.

Exit from both industries would address the accounting loss experienced by Eurocan, but would impact shareholders in other ways. The immediate result of ceasing operations at Eurocan would be the loss of the local chip market to WFT. The loss of the local market would result in higher chip transportation costs, as chips would need to be transported greater distances to market. This would reduce rents currently captured by WFT. In addition, the loss of market would result in an increased supply of chips on the open market, resulting in lower chip prices. The surplus of chips might further result in production curtailments in the sawmill sector of the company, as chip disposal becomes more difficult. The solid wood sector of the company is highly profitable and a slowdown would impact the level of profitability of WFT.

Exit would also result in costs in the magnitude of \$100 to \$500 million, which would include write-downs of property and equipment, severance packages for employees,⁵³ and site remediation costs.⁵⁴

As exit appears to provide very little benefit to shareholders, Eurocan and WFT must consider how to reduce production costs, in order to achieve something closer to cost parity with its competitors in both industries. The operation has a small competitive advantage with respect to cost of fibre, and shares a slight quality advantage with a few rivals in linerboard. If the mill can adopt industry best practices with respect to energy and manning costs it could out compete many of its rivals.

The options available to the mill will be discussed in the following section, and will be evaluated based on their impacts on shareholder value.

⁵³ Information obtained from Eurocan balance sheet, Eurocan-CEP298/1127 contract, and discussions with mill managers responsible for these aspects.

⁵⁴ Magnitude of costs projections for remediation activities were estimated based on history of use of the site, the age of the site, the type of construction and the current legislation, by PGL Environmental Consultants, Vancouver, B.C.

5 OPTIONS ANALYSIS

This chapter will focus the options available to reduce Eurocan's operating costs, specifically in the areas of manning and energy. The significant accounting losses and inability to generate an acceptable level of return for shareholders has left the company in a position where strategic decisions must be made to improve the situation. The options available to the company include:

1. Installation of a 100 tpd old corrugated container⁵⁵ / new double lined kraft facility(NDLK)⁵⁶
2. Installation of a 200 tpd OCC/ NDLK facility
3. Increase pulping capacity of the existing facility by installing a tall oil plant to facilitate more black liquor solids (BLS) burning in the recovery boiler
4. Increase pulping capacity of the existing facility by installing a tall oil plant to facilitate more BLS burning in the recovery boiler and install a smaller 50 tpd NDLK facility

The details of each option will be outlined in greater detail below.

The options will be evaluated based on net present value (NPV) of future cash flows, using a 15 percent rate of return. Each option will be assessed using the up front cost of the investment and the future changes due to cash flows due to:

- i. Increased physical outputs, which will produce increased gross revenues based on price forecasts available from Jaakko Pöyry
- ii. Increased costs based on linear relations between energy, fibre and increased physical output.⁵⁷
- iii. The increase in gross revenues minus the increase in costs generates the increase in future cash flows

The NPV of the options are only being calculated for the first five years of the project. However, the actual NPV's are expected to be substantially higher as the projects would have an operating life span of 20 years.

5.1 Option 1: 100 tpd old corrugated container/ new double lined kraft (OCC/NDLK) facility

This option would involve installing a moderately sized OCC reprocessing facility to allow the mill to supplement its current pulping capacity, which is bottlenecked. The estimated cost to construct the facility would be in the magnitude of \$10 to \$15 million. This would include the cost to install the equipment required to process the recycled material. This option would also require storage and handling facilities to be constructed, to handle the volume of paper required to sustain an additional 100 tpd. Storage facilities would require proper fire protection and a proper enclosure to minimize the amount of debris generated from the baled OCC. A significant characteristic of baled OCC is the considerable amount of loose paper debris that gets mobilized around a site as a result of the baling methods that are commonly used.

⁵⁵ Old corrugated containers (OCC) includes container plant cuttings as well as used corrugated containers.

⁵⁶ New double lined kraft (NDLK) includes container plant cuttings only.

Other elements that would need to be added would include handling equipment, which could feed processing equipment in a safe manner. In addition, specialized cleaning and screening equipment would be required to process the OCC so that the quality level of the paper is maintained.

The overall impact of such a facility would be an increase in linerboard production, resulting in an 8 percent increase in overall mill capacity. This increase would be achieved requiring any additional pulping or recovery boiler capacity. The increased capacity would serve to decrease fixed cost per unit of production for major expense elements such as manning, fibre, and energy.

Utilization of OCC can result in a loss of the premium currently obtained by the mill for its linerboard, as it uses virgin fibre exclusively. If quality continued to be maintained at its current level, substantially above that of competitors,, it is likely that some level of premium can be maintained. If not however, the gains made by utilizing OCC would be tempered by about 3 percent.

This option would not allow production increases on the sackkraft machine, as the OCC would severely impact the quality of the paper.

One of the biggest disadvantages of utilizing OCC would be the increased complexity of the papermaking process. OCC would require papermill operators to blend an additional stock to an already complicated stock mixture, in order to achieve the same product quality. This process could result in hidden costs such as mill downtime or reduced machine speeds, which could impact the cash flow projections of this option.

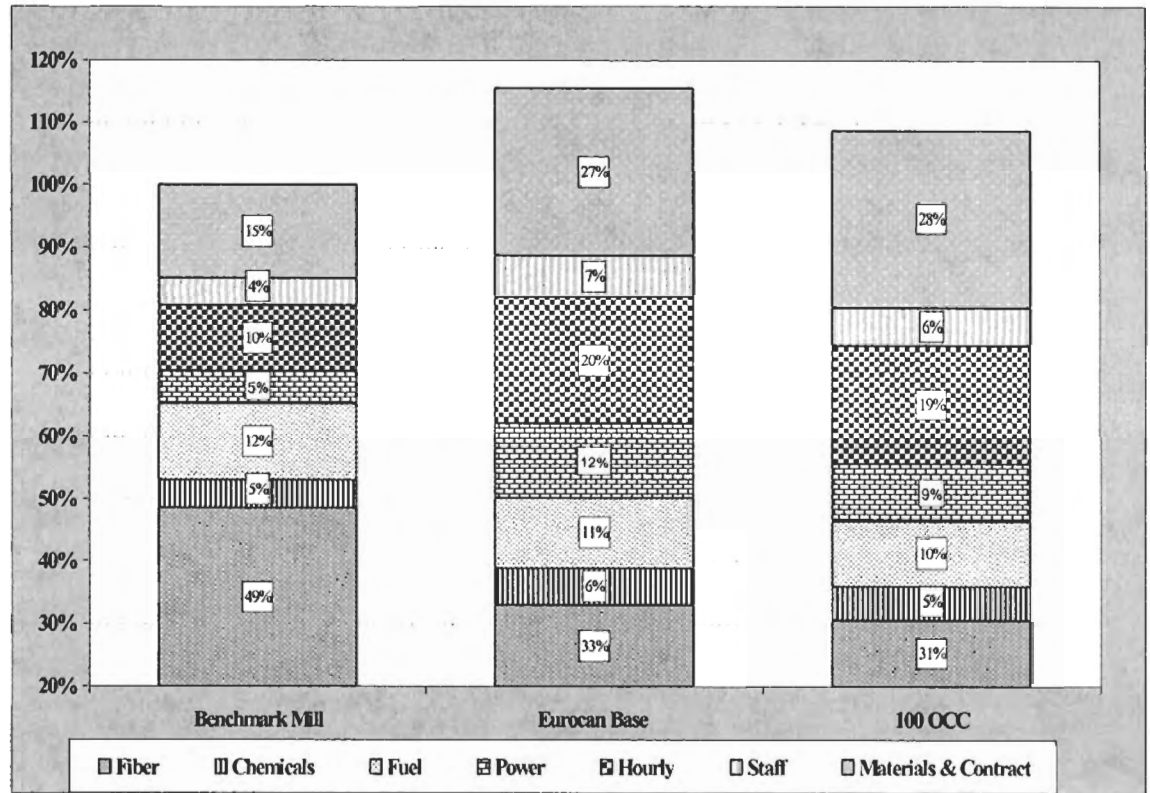
⁵⁷ Energy and fibre prices were maintained at 2004 levels.

It is likely there may be slightly higher operational, maintenance and manning costs related to the additional facility; however these costs are not expected to be significant.

5.1.1 Financial Analysis of Option 1

The project would result in a 6 percent decrease in unit cost per tonne. The most significant decrease would be a reduction of in power and energy costs of 3 percent of total unit cost. The category of materials and contract would see a one percent increase in unit costs, due to the allocation of OCC cost to this category. However, fibre cost would decrease by 2 percent of the total cost per unit tonne. Other categories would experience reductions of one percent of unit costs. Figure 22 illustrates the change in cost structure the mill would experience.

Figure 17: Change in key cost elements as a result of implementing option 1



Source: Eurocan database

Though the overall cost is reduced by 6 percent relative to the baseline, costs continue to remain appreciably higher (i.e. 9 percent) than those of a representative mill in the industry.

The total cost of option 1 is estimated at \$15 million. The value of the future net cash flows of option 1 is after the fifth year by \$6.7 million net of the cost of the project (see Appendix 1).⁵⁸

⁵⁸ The NPV of the gross cash flows of the project is \$21.7 million

5.2 Option 2: 200 tpd OCC/NDLK Facility

Option 2 would follow a similar principle to option 1, that being to supplement the pulp capacity of the mill. However, the scope of the installation would be larger requiring up to 200 tpd of OCC to be processed by the operation. The larger installation would capitalize on the economies of scale afforded by a larger facility. The installation costs of the option would approach \$20 million, representing a 33 to 50 percent increase over option 1. The overall production gain would be approximately 15 percent higher than the baseline production projected for 2005 and would maximize the production throughput of the linerboard machine.

The disadvantages of this option would once again be very similar to option 2; however the issues related to quality would be more pronounced. The higher usage of recycled fibre would likely result in lower quality levels that would impact the premium previously gained by supplying a purely virgin paper sheet.

This option would further complicate the papermaking process, as it would include a relatively significant proportion of another type of pulp that would need to be blended into the stock system. The additional complexity could potentially make the anticipated increase in production more difficult to realize, which could impact anticipated cash flows from the project. Lost production could result from more off specification paper being produced, resulting in a higher level of reject paper.

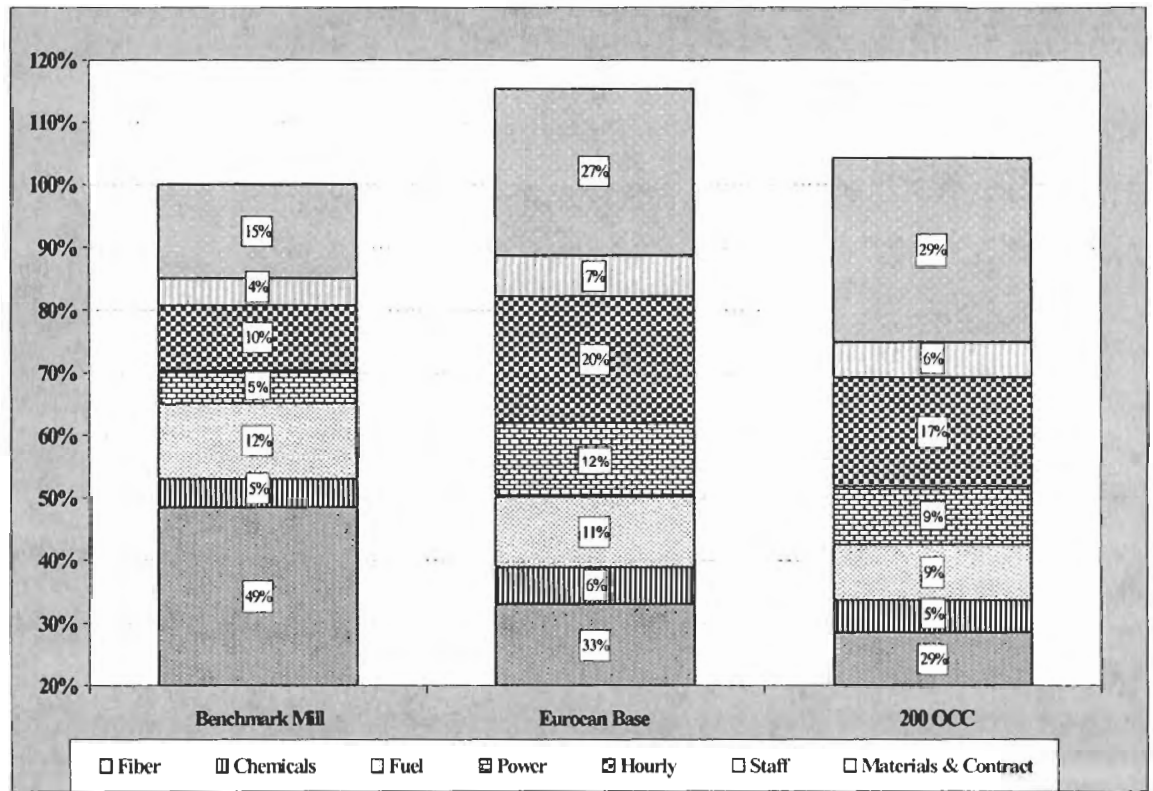
As with option 1 this option would only see production being increased on the linerboard machine, limiting any capacity increases on the sackkraft machine.

The larger facility and the higher rate of utilization of OCC would likely result in a minor increase to manning levels, as some level of operational support would be required in the area. The major requirement for additional manning would be a result of the additional storage and handling demands in the area. In addition, the maintenance costs would likely increase in the area. These costs would not be significant.

5.2.1 Financial Analysis of Option 2

The advantages of option 3 are similar to those of the previous option; however the savings are distinctly higher. The overall reduction in the unit cost per tonne relative to the baseline is 11 percent. All categories result in significant savings with power and energy, manning and fibre being the most affected. The savings experienced in these categories are 5 percent, 4 percent and 4 percent respectively. Materials and contract would result in an increase of 2 percent as the cost of OCC was allocated to this category. Figure 18 illustrates the relative change in the overall cost structure from Eurocan's baseline, and the comparison relative to a benchmarked mill in the industry.

Figure 18: Change in key cost elements as a result of implementing option 2



Source: Eurocan database

The project will reduce the mill's operating cost by 11 percent, resulting in a cost structure that is more in line with the overall industry, albeit 3 percent above the average benchmark.

The cost of option 2 is approximately \$20 million. The net present value of the future cash flows after a five-year period would be approximately \$40.5 million.⁵⁹ The detailed cash flow projections are provided in Appendix 1.

⁵⁹ The NPV of the gross cash flows would be \$60.5 million.

5.3 Option 3: Tall Oil Processing Plant and CMP Side Feeder.

Option 4 would involve installing a tall oil plant and a side feeder on the CMP plant screw press. The tall oil plant would allow the mill to convert the soap that is currently burned in the recovery boiler into a fuel, and to burn it in the mill's lime kiln. The main benefit of this conversion is that it would remove soap, which has a high heating value, from the recovery boiler. It is estimated the soap entrained in liquor contributes 8 to 10 percent of the total heating value entering the boiler.⁶⁰ Removing the soap would allow the mill to increase the amount of black liquor (with soap removed) fired into the boiler thereby allow an increase in pulping capacity of approximately 8 percent from current rates.

The converted tall oil plant would further serve as a fuel source, which could be burned in the lime kiln. The displacement of natural gas resulting from the utilization of tall oil would be approximately \$500,000 to \$700,000 per year. The overall change to the cost structure from this portion of the project would be minimal at approximately \$1 per tonne.

The function of the CMP reactor side feeder is to allow the CMP plant to increase its production to its rated capacity. Currently, due to changes in the type of fibre processed in the plant, it cannot achieve the design efficiency. The installation of a side feeder would allow more chips to be fed through the digesting reactor, which is expected to contribute approximately 6 percent more total pulp.

⁶⁰ Burning black liquor solids (BLS) in the recovery boiler is more desirable than tall oil, if an operation has the capacity to produce more BLS). In Eurocan's case there is the potential to generate more BLS via additional pulping. Additional BLS cannot be processed as the boiler is at its maximum capacity with respect to all fuel (BLS, and tall oil) entering the unit. Removing tall oil prior to firing in to the boiler would allow for more BLS firing. Hence facilitate the increase in pulping.

The overall contribution to pulp production of this option is anticipated to be approximately 13 percent. The increased pulp capacity is achieved with the existing equipment and would not be expected to complicate the papermaking process any further. The additional pulp would allow for production increases on both machines, as quality could be better controlled than with the OCC options.

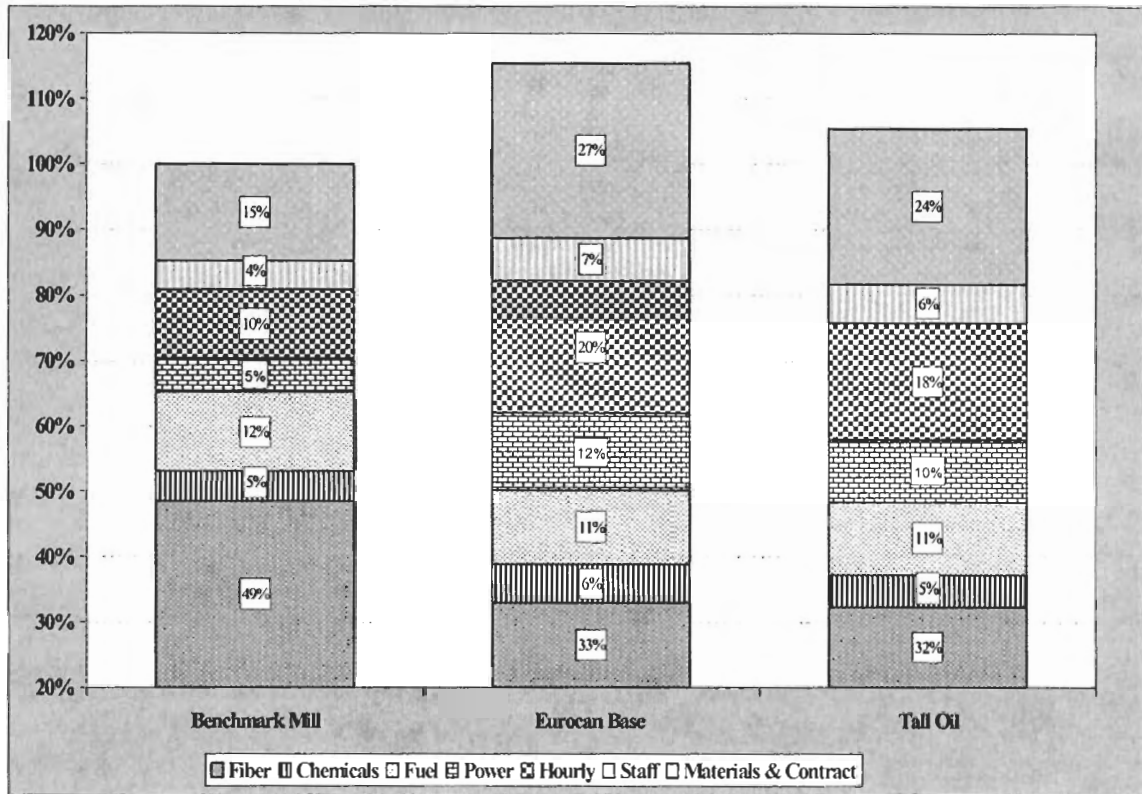
This option will not require any changes to the storage and handling logistics of the mill, which was a substantial factor in the two previous options. Furthermore, this option would be consistent with the mill's desire to reduce manning at the operation, as no significant infrastructure is added to the operation.

This option would, however, require the mill to operate a tall oil plant and a fuel storage facility, which would add some complexity to the fuel systems of the mill.

5.3.1 Financial Analysis of Option 3

This option is expected to reduce overall unit costs per tonne by approximately 10 percent while leaving the configuration of the mill essentially the same. A 1 percent unit cost reduction in fibre, chemicals and staff manning, and a 2 percent unit cost reduction in the power and hourly manning categories would result. The biggest unit cost reduction is seen in the materials and contract category, which is reduced by 3 percent of the unit cost. The cash cost structure of the mill would be approximately 5 percent higher than a benchmark mill but would be 10 percent lower than the base case scenario. This change to the overall cost structure is illustrated in Figure 19.

Figure 19: Change in key cost elements as a result of implementing option 3



Source: Eurocan database

The overall cost of the project is estimated to be approximately \$9 million. The present value of cash flows is expected to be \$44 million net of the project costs after 5 years.⁶¹

5.4 Option 5: Tall Oil Plant & CMP Reactor Side Feeder and NDLK Facility.

Option 4 is a combination of option 3 and a scaled down version of option 2. The scenario described in option 3 would not change in this scenario, with the added exception of the recycling facility. This recycled pulp processing facility would be substantially smaller than the one utilized in option 2 and would only utilize a new

⁶¹ The NPV of the gross cash flows would be \$53 million

double-line kraft facility (NDLK). This combined option would be expected to realize an overall increase in production of close to 17 percent. The scope and function of the tall oil plant and the CMP side feeder would not differ in any way from option 4. The NDLK facility would require the mill to install a smaller more manageable recycled pulp processing facility that would not result in major logistical or storage problems.

The main advantage of using only NDLK as a supplementary feedstock, is that it would not result in many of the quality problems related to using OCC.. NDLK is comprised of mainly virgin fibre, which is considered pre-consumer waste, and would not contain many of the contaminants typically found OCC material. In addition, the level of quality of NDLK is significantly higher than OCC, which is more degraded as a result of being processed several times over. The use of NDLK in the quantity proposed would not likely reduce the quality level currently produced at the mill. This would not jeopardize the quality premium paid for Eurocan linerboard.

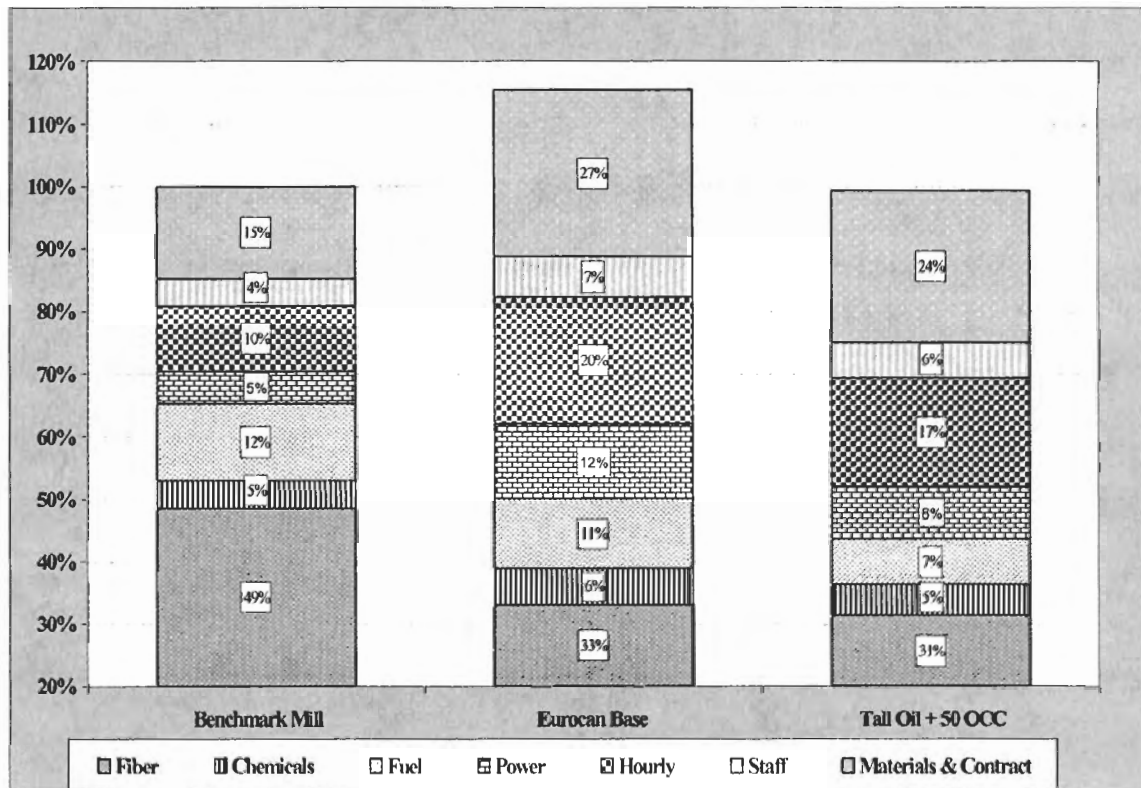
As with option 3, this option would be relatively seamless to implement within the existing configuration of the mill and would not require changes to the pulping or papermaking processes. In addition, the storage and handling logistics of the mill would not change appreciably.

5.4.1 Financial Analysis of Option 4

This combined option would cost the mill approximately \$20 million. The project would result in a 12 percent decrease in the unit cost per tonne. Unit costs would be only 3 percent higher than a benchmark mill in the industry. Categories that would see the most significant drop in unit costs would be power, hourly manning and materials and contract. The decrease in unit costs of these categories would be 3 percent. Fibre costs would

decrease 2 percent, while chemicals and staff unit costs would decrease by 1 percent each. Figure 20 illustrates the overall decrease in the mill's key unit costs.

Figure 20: Change in key cost elements as a result of implementing option 4



Source: Eurocan database

The NPV of the option would be \$53 million net of the project costs after 5 years.⁶²

⁶² NPV of the gross cash flows would be \$73 million

6 RECOMMENDATION

Over the past 24 months the mill has seen a continued improvement in production month over month. Over this period the mill has been able to establish quarterly volume production records as well as daily rate records,⁶³ which has demonstrated a sustained ability for the mill to achieve full capacity utilization. The renewed potential the mill has demonstrated suggests that the exit option, discussed in Chapter 4, would be premature.

A more reasonable first step would be to realign the cost structure of the operation by continuing to increase the production levels. Options 2, 3 and 4 present the best opportunities to increase production and to generate positive discounted cash flows. Option 2 and 4 have similar capital costs, while those of option 3 are approximately half.

Of the three options, option 4 results in best discounted cash flow. However, option 3 would be the easiest to implement. Option 2 could result in decreased revenues, due to the loss of Eurocan's price premium. It could also result in operational problems, due to the volume of recycled pulp being added to the system. This could serve to make Eurocan linerboard somewhat less differentiated and more comparable to linerboard from other regions of the world, such as the U.S. As U.S producers have better transportation rates to the North American and the Latin American markets, they would be able to offer buyers better prices for their linerboard, which would now be considered of similar quality.

⁶³ Papermachine rates are measured as total tonnes produced per day. The rate records broken are the highest daily rate over a period of a month.

In addition, the handling costs related to transporting, unloading and processing the OCC material in option 2 would be significantly more than the additional operational requirements associated with option 3 and option 4. The handling, which would be relatively labour intensive, would run counter to Eurocan's efforts to reduce manning at the facility. The tall oil plant activities in options 3 and 4 would largely be automated and could be incorporated as a responsibility of the current operators. Option 4 would require a slight increase in handling; however the NDLK reprocessing requirements could also be achieved with current crew levels.

The assessment of the options shows that option 4 provides the largest discounted cash flows for the operation, over the five-year projection. Full implementation of option 4 could be achieved by first implementing the tall oil component of the project (i.e. option 3), and phasing in the NDLK option in subsequent years. The phased approach would defer capital risk and not over extend mill resources.

The recommended option to pursue would be option 4 by first implementing option 3, as has been described above. This option will get the cost of the mill to the level of an average rival. With the slight price premium in linerboard due to its quality advantage, the operation could achieve an above average position in the linerboard industry, and an average position in sackkraft. Over the long run Eurocan does maintain a slight competitive advantage with respect to fibre access. By adopting best industry practices with respect to costs and reducing them to an average level, it can achieve a cost advantage. Option 4 serves as a way of achieving this goal.

APPENDICES

Appendix 1

Price	Lineboard price	569	552	552	552	552	552		
	Sackkraft price	831	755	755	755	755	755		
		2005	2006	2007	2008	2009	2010	Annual cash flow increase relative to baseline (\$'000)	
		(\$000)	(\$000)	(\$000)	(\$000)	(\$000)	(\$000)		
Net Revenue	Base Line	52356	43430	43430	43430	43430	43430	-	
	Option 2	52356	49907	49907	49907	49907	49907	6477	
	Option 3	52356	61487	61487	61487	61487	61487	18057	
	Option 4	52356	62667	68030	68030	68030	59154	15724	
	Option 5	52356	68158	74276	74276	74276	65026	21596	
Present Value of Cash Flows @Discount Rate 15%									
		Initial Investment	Year 1	Year 2	Year 3	Year 4	Year 5	Discounted Cash Flow Year 5 (\$'000)	NPV of Option (\$'000)
			0.8696	0.7561	0.6575	0.5718	0.4972		
NPV of Cash Flows	Option 2	15000	5632	4897	4258	3703	3220	10529	6711
	Option 3	20000	15703	13653	11873	10325	8978	29356	40532
	Option 4	9000	13674	11889	10339	8991	7818	25563	43710
	Option 5	20000	18780	16329	14199	12349	10738	35109	52394

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