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GOVERNMENT OF CANADA
SC Paper Market in North America

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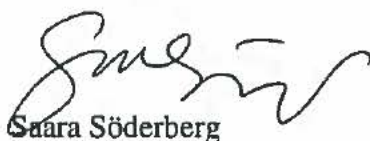
Preface

Resolute Forest Products Inc. ("Resolute") has filed a Notice of Arbitration against the Government of Canada under NAFTA Chapter Eleven. Resolute's claims relate to measures allegedly adopted by the Government of Nova Scotia in support of a SC-paper mill located near Port Hawkesbury, Nova Scotia. Resolute contends that those measures caused it damages of not less than \$163,695,000.

In search of independent opinion, the Government of Canada commissioned the services of Pöyry Management Consulting Oy to provide an expert report that offers an objective overview of the North American SC-paper markets from 2005-2018, with particular focus on SC-paper supply and demand during the periods preceding and following the ownership change and restart of the Port Hawkesbury SC paper line in September 2012. The report at hand also responds to the reports prepared for Resolute by Dr. Seth Kaplan and Dr. Jerry Hausman, both reports dated December 28, 2018.

Pöyry Management Consulting is a global management consulting firm specializing in forestry, forest industry and energy businesses, and is headquartered in Vantaa, Finland. The report at hand has been prepared independently and objectively, and the authors or Pöyry have no stake, directly or indirectly, in the outcome of this arbitration and our fees are not contingent on the outcome of this matter in any way.

Pöyry Management Consulting Oy

A handwritten signature in black ink, appearing to read 'Saara Söderberg'.

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1 BACKGROUND, OBJECTIVES AND SUMMARY

1.1 Background and Objectives

- 1) Resolute Forest Products Inc. (“Resolute”) has filed a Notice of Arbitration against the Government of Canada under NAFTA Chapter Eleven. Resolute’s claims relate to measures allegedly adopted by the Government of Nova Scotia in support of a SC-paper mill located near Port Hawkesbury, Nova Scotia. Resolute contends that those measures caused it damages of not less than \$163,695,000.
- 2) Canada commissioned the services of Pöyry Management Consulting to provide an expert report that:
 - a. offers an objective overview of the North American SC-paper markets from 2005-2018, with particular focus on SC-paper supply and demand during the periods preceding and following the ownership change and restart of the Port Hawkesbury SC paper line (“PHP mill”) in September 2012;
 - b. responds to the report prepared for Resolute by Dr. Seth Kaplan (“Dr. Kaplan”) dated December 28, 2018 (the “Kaplan Report”); and
 - c. responds to the report prepared for Resolute by Dr. Jerry Hausman (“Dr. Hausman”) dated December 28, 2018 (the “Hausman Report”).
- 3) Pöyry is an international consulting and engineering company that has been advising on and executing projects for the pulp & paper industry all over the world for more than 60 years. We are a world leader in forest industry consulting and engineering and have been a trusted partner for many clients for decades. The c.v.’s of the team members who prepared this report are found at Annex I. We have prepared the report independently and objectively and we or Pöyry have no stake, directly or indirectly, in the outcome of this arbitration and our fees are not contingent on the outcome of this matter in any way.

1.2 Definition of the SC-paper Market

- 4) SC-paper is an uncoated mechanical paper, which is smoothed and compacted by calender rolls (supercalender). It is an intermediate grade of paper that offers better quality than newsprint and standard uncoated mechanical paper, but it has traditionally offered lower quality than coated mechanical paper. From bottom to top, SC-paper grades include SNC, SC-B, SC-A, SC-A+, and SC-A++. We refer to the two latter grades collectively as SC-A+ grades. As we will show in Section 2, at least since 2012, SCA+ grades offer comparable quality to coated mechanical paper at lower basis weights.
- 5) SC-paper grades compete directly with other types of printing paper. On the low end of the price and quality matrix, where Resolute has had the majority of its production, SC-B and SC-SNC paper compete with standard uncoated mechanical printing paper (non-SC) grades and improved newsprint, including roto news and high-bright grades. On the opposite end of the SC spectrum, which is occupied by Port Hawkesbury Paper (“PHP”), SC-A+ -grades compete with coated mechanical #5 and #4 grades. Downgrading from coated paper to SCA+ grades has been prevalent since 2013, while at the same time, downgrading occurred in flyers, inserts and coupons from SC-B to standard uncoated paper.

1.3 SC-paper Demand Trends

- 6) Section 3 demonstrates that demand for uncoated mechanical paper has been declining since 2007 due to digitalization. The average annual decline in North America over the period 2007-2018 has been to the order of -7.3%/a, or 322,000 Mt annually. Over the same period, the demand for SC-paper, which is one of the main product segments under uncoated mechanical printing papers, has declined on average -7.6%/a, or 176,000 Mt annually, with the notable exception of 2013 (see Figure 3-2, para. 38, 43, 46). This annual decline corresponds to the output of one average-size North American SC-paper machine per year.
- 7) When PHP temporarily exited the market in 2012, the demand for SC-paper plunged by 21%. Coated mechanical paper declined as well in 2012, but at a significantly lower rate than the rate at which it had been declining annually since 2010, an indication that SC-A/A+ customers turned to coated grades (Table 3-3). With PHP's re-entry in 2013, SC-A demand jumped by 21%. PHP's re-entry into the market coincided with a significant shift of major magazines, starting from Time Magazine, from coated mechanical paper to SC-A+ -grades. At the same time, demand for coated mechanical paper declined 6.4%, which indicates that SC-A+ -grades retook market share from coated mechanical paper.
- 8) The North American SC-paper market has been satisfied by regional (Canadian and US) supply (typically 70-80% of total demand in 2010s) and imports from Europe (typically 20-30%). Table 3-2 in Section 3.3 demonstrates that SC-A/A+ imports accounted for only 15% of the incremental demand in 2013 but absorbed 93% of the demand decline in 2014. In other words, the two main shock absorbers of PHP's re-entry were the European SC paper suppliers and the CM suppliers.

1.4 SC-paper Supply Trends

- 9) The North American SC-paper industry has gone through major restructuring over the last 10-15 years. Apart from ownership changes, the total capacity has declined from 2.4 million Mt/a in 2006 to 1.3 Mt/a in 2018. The industry as a whole has been more or less in exit mode before and after the restart of PHP's Paper Machine 2 ("PM2").
- 10) A mill's cost position relative to its most direct competitors is an indicator of its ability to remain profitable. In Section 3, we demonstrate that PHP's SC-paper machine (PM2) has always been a strong asset compared to its North American counterparts, including Resolute's, which have operated closer to the marginal cost position. PHP's temporary shutdown was not the result of its asset quality, but due to other causes related to its newsprint operation, and its high electricity and labor costs. Only a couple of European machines are on par or better than Port Hawkesbury PM2. Under these circumstances, Port Hawkesbury has not been relevant in terms of market clearing and setting of equilibrium price. The cost position of Resolute's SC-paper machines, on the other hand, has almost invariably been weaker than that of Port Hawkesbury's PM2.

1.5 Price Trends

- 11) In Section 6, we explain that the impact of PHP's exit and re-entry on SC-paper market prices was temporary and negligible in the long term. Overall, SC-paper prices remained relatively flat through 2011-2012, despite PHP's temporary exit. The economic slow-down in 2012-2013 coincided with the marginal price decline in 2013; the improvement to the economy in the 3rd quarter of 2013, general downgrading from coated paper to

SC-A/A+, and consequent boost in SC-A paper demand helped restoring prices of SC-paper to the two-year average level of 2011-2012, and clearly above the 2010 level.

- 12) Dr. Kaplan and Dr. Hausman's reports and model do not properly assess what the actual price impact was of PHP's re-entry or how long that impact lasted given all of other market events. However, we know that it would not have created a structural and permanent decrease in prices in a market that is in secular decline.

1.6 Kaplan Report

- 13) Dr. Kaplan's expert witness report presents a purely theoretical economics framework, and therefore does not assess harm. His report presents a traditional supply-demand schedule and evaluates the possible impact of Port Hawkesbury PM2 re-entry divorced from all other market forces affecting supply and demand.
- 14) Dr. Kaplan equates the Port Hawkesbury reopening with the observed price decline in early 2013. The report does not, however, consider any other factors that could have contributed to, or fully caused the temporary price decline in 2013 or future pricing. PHP's re-entry coincided with the rapid expansion of demand in North America, and therefore had little or no significant effect on regional supply/demand balances and prices. The Kaplan report did not specifically touch on the normalization of prices during the second half of 2013.
- 15) The Kaplan report concludes that the Nova Scotia Government actions have impacted adversely the profitability of Resolute's three mills, Kénogami, Dolbeau and Laurentide. However, the exit and re-entry of the Port Hawkesbury PM2 has not altered the relative cost position of Resolute's SC/SNC paper machines (Dolbeau and Laurentide), which have been in the least cost competitive section of the industry-wide supply curve prior to and following PHP's re-entry.
- 16) In Section 6, we demonstrate that contrary to Kaplan's report, the re-entry of PHP's PM2 has had no significant effect on long-term SC paper equilibrium price in North America. Weakening economy from Q4/2012 through Q2/2013 and increasing demand for SC-A paper due to grade substitution from CM #5 to SC-A have all contributed to price movements in 2013 and beyond. In fact, prices recovered in July 2013 to pre-2013 levels, indicating that PHP re-entered the market at a right time, causing limited price-driven damage to its competitors.

1.7 Hausman Report

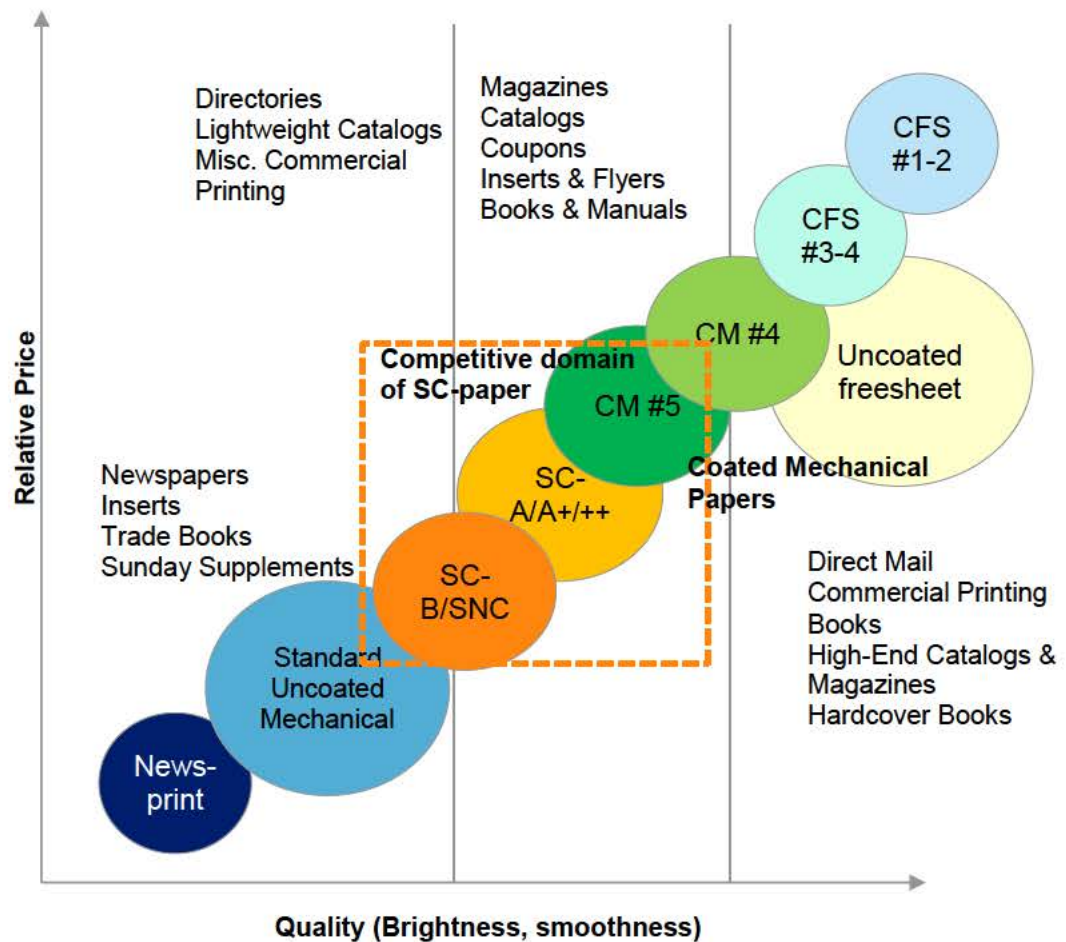
- 17) Dr. Hausman has used a 5-year RISI price forecast from October 2011 as a basis for estimating "but-for" prices of SC-paper for the period 2013-2016. In our opinion, for the reasons set out in Section 7, RISI's price forecast is conditional on assumptions made a priori regarding factors affecting prices, and therefore constitutes a weak basis for estimating "but-for" prices for a market that has undergone turbulent and unforeseeable changes during the alleged impact period between 2013 and 2016. Dr. Hausman's report does not attempt to minimize the bias caused by false market assumptions and other factors affecting prices during the impact period.
- 18) Also, the damages calculation timeframe used by Dr. Hausman is not justified. Although Dr. Hausman may have the confidence to believe that the industry will exist as such for the next 10 years, this does not justify why the damages calculation can be computed from 2013 to 2018 using the RISI price forecast or from 2018-2028 using his personal assumptions on profits.

2 DEFINITION OF THE SC PAPER MARKET AND ITS COMPETITION

2.1 Paper Products in Focus

- 19) The SC-paper market is not insulated from outside competition. Rather, SC-paper grades compete directly with other types of printing paper. On the low end of the price and quality matrix, where Resolute has the majority of its production, SC-B and SNC paper compete with standard uncoated mechanical (non-SC) printing paper (“UM”) grades and improved newsprint, including roto news and high-bright grades. On the other end of the SC spectrum, which is occupied by PHP but not Resolute, SC-A+ grades compete with coated mechanical (“CM”) #5 and #4.
- 20) Printing papers have been named and categorized based on what kind of pulps have been used in their fiber furnish, and whether they are surface coated or uncoated. These categories are:
 - Newsprint – paper made of mechanical pulp or recovered paper, uncoated, typically containing no mineral fillers; main end use is newspapers;
 - UM paper, including SC, soft nip calendered (SNC), machine finished and directory papers, to mention a few; made of mechanical and chemical pulp in varying proportions, or recovered paper for lower end papers; can contain mineral fillers up to 30%; main end uses are inserts/flyers, catalogs, coupons, magazines, books and directories;
 - CM paper (coated #5 and #4); base paper made of mechanical and chemical pulp and mineral fillers (up to 15%) in varying proportions, coated with mineral substances such as clay or calcium carbonate; main end uses include magazines, catalogs and printed advertising materials;
 - Uncoated Free Sheet (“UFS”) – papers consisting mainly of chemical pulp furnish and containing mineral fillers up to 25%; typically used in offices (e.g. cut size paper), for business forms and book printing, envelopes and direct mail;
 - Coated Free Sheet (“CFS”) – papers consisting of chemical pulp furnish, coated on both sides with mineral substances such as clay or calcium carbonate; mineral pigments and coating up to 40% of the total furnish, used for high end magazines or advertising printing.
- 21) Each paper type has a range of properties, including optical characteristics (color, opacity, brightness and gloss) as well strength, smoothness and printability that can overlap with paper in another category, meaning that two product areas may be almost identical by their physical properties, but manufactured differently and therefore categorized differently.
- 22) Figure 2-1 illustrates the quality continuum of printing paper grades, and how the quality is reflected in the end uses of paper.

Figure 2-1
Typical Grade-to-End-Use Matrix for Paper Grades



Source: Paper and Board Grades, (ISBN: 952-5216-18-7).

- 23) Two types of virgin fiber pulp are used to make paper: mechanical and chemical pulp, but recovered paper can also be used. Separating out wood fibers by mechanical means produces paper with better opacity and printability at low basis weight level, but only limited strength and durability. Using chemical pulp, which is much costlier, produces paper with better strength, durability and brightness.
- 24) Newsprint uses 85-100 percent mechanical pulp and 0-15 percent chemical pulp, or 100 percent recovered paper. Mechanical printing papers, including SC Paper, contain by definition at least 10 percent mechanical pulp, but SC paper fiber furnish typically consists of 70-85 percent mechanical pulp and 15-20 percent chemical pulp, whereas the CM paper fiber furnish has 40-60 percent mechanical and chemical pulp. Free sheet papers are made with chemical pulp; their mechanical pulp content cannot exceed 10 percent.
- 25) Some of the quality characteristics such as brightness and smoothness are directly proportional to the price of the paper. For example, ISO Brightness (%) tells us how much light the paper reflects (higher % means more reflection). It is measured on a scale of 0 to 100 and the higher the number, the brighter the sheet. Typically, the higher the paper brightness, the higher is the quality and the cost. Surface smoothness is another

key paper property measure (e.g. Parker Print-Surf (“PPS”)), since high definition of the print requires high smoothness.

- 26) The qualities of SC-Paper and the grades closest to it on the continuum differ vastly, from the highest to the lowest grades, in terms of basis weight, brightness, gloss and smoothness. SC-A++ grade features higher brightness, gloss and smoothness than SC-A+, SC-A, SC-B and SNC grades. SCA+ grades also offer qualities comparable with CM #5. On the lower end, SC-B/SNC offer quality more comparable with UM standard grades and improved newsprint. We agree with Dr. Kaplan that there is no “established” industry standard,¹ but we use the quality ranges in Table 2-1 to distinguish between grades. For comparison, CM #5 and #4 paper properties of one producer, Catalyst, are shown in Table 2-2.

Table 2-1

Source:

Table 2-2
Current CM Paper Definitions

Grade	Basis weight range (lb)	Brightness (%ISO)	Gloss	Opacity	PPS
CM #5 (LWC) ²	34-43	71-73	50-54	89-93	2.1-2.6
CM #4 (MWC) ³	38-50	79-80	58-65	89-94	2.2-2.8

LWC = Light Weight Coated; MWC = Medium Weight Coated

- 27) Table 2-3 presents PHP’s and Resolute’s SC-paper specifications. Since there is no established industry standard for SC-paper grades, we are witnessing a grade creep for marketing purposes. For example, PHP markets a SCA+++ paper, which we consider to be a SCA++ paper, since it meets those specifications laid out above. For its part,

¹ Expert Witness Report of Seth T. Kaplan, Ph.D. (December 28, 2018) (“Kaplan Report”), ¶ 37.

² R-226, Catalyst: Electracote, available at: <https://www.catalystpaper.com/products/coated/electracote>.

³ R-227, Catalyst: Pacificote, available at: <https://www.catalystpaper.com/products/coated/pacificote>.

Resolute markets paper that it refers to as SCA++, but it meets neither the SCA++ nor the SCA+ grade specifications. While its SCA+ and SCA paper do just meet the above specifications, they tend to be on the lower/average level of the range, respectively. This is recognized by [REDACTED]

The table below demonstrates that PHP's SC-A+ grades offer considerably lower basis weights and generally better quality than Resolute's SC-A++, SC-A+ and SC-A grades. It also demonstrates that Resolute's SC-B paper has a higher brightness and opacity than PHP's and its SNC paper sees no competition from PHP.

Table 2-3
Resolute and PHP Current SC-Paper Specs

Grade	Basis weight range (lb)	Brightness (%ISO)	Gloss	Opacity ⁶	PPS
PHP SCA+++	50	80	55	92	n.a.
PHP SCA++ ⁷	30-50	75-77	43-54	83-93	n.a.
Resolute SCA++ ⁸	36-50	75	50-52	86-88	1.0-1.2
PHP SCA+	28-40	70-71	42-51	83-91	n.a.
Resolute SCA+	30-40	70-71	43-48	83-88	1.2-1.4
PHP SCA	28-40	67-68	40-50	85-93	n.a.
Resolute SCA	28-45	68	40-45	82-92	1.2-1.5
PHP SCB	30-35	65	32-35	89-92	n.a.
Resolute SCB	28-38	63	35	84-90	1.8-2.0
Resolute SNC	28-38	63	27	86-94	2.1-2.5

⁴ R-228, [REDACTED]

RFP0009515.

⁵ R-229, [REDACTED]

R-230, [REDACTED]

⁶ For Resolute, higher basis weight does not incur higher opacity in all products. R-231, Resolute SCA++, Resolute SCA+, Resolute SCA, Resolute SCA, Resolute SNC, available at:

<https://www.pfresolu.com/uploadedFiles/Products/Commercial Printing Papers/Papers/ResoluteSC.pdf>

⁷ R-232, Port Hawkesbury, Supercalendered Papers, available at: <http://www.porthawkesburypaper.com/papers.html>.

⁸ R-231, Resolute SCA++, Resolute SCA+, Resolute SCA, Resolute SCA, Resolute SNC, available at:

<https://www.resoluteftp.com/uploadedFiles/Products/Commercial Printing Papers/Papers/ResoluteSC.pdf>

- 28) [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]⁹ Today, we recognize that significant downgrading from CM to SC did take place in 2013, mainly to the benefit of SC-A+ grades.
- 29) In 2011, we were also of the opinion that there was a slightly better outlook for SC-B paper than for SC-A,¹¹ and history has proven us wrong on this count. Also, we recognized the beginning of the trend of downgrading from SC-B/SNC to improved newsprint, such as in the cases of Sears and Target,¹² but we underestimated how severe the trend would be.¹³
- 30) As shown in the next sections, these grade substitution trends would become very significant for PHP, since it has the capacity to produce SC-A+ grades, whereas Resolute's capacity has always largely been in SC-SNC and SC-B paper (640,000 MT), with comparatively limited SC-A production of 133,000 MT [REDACTED], entirely out of Kenogami.¹⁴
- 31) The value proposition of SCA+ papers is to provide a high quality uncoated paper suitable for gravure and Heat Set Web Offset printing for magazines, catalogs and advertising materials, and to present a good and economical alternative for coated publishing paper grades, as noted above in Figure 2-1. As a result, SCA+ grades compete directly with CM papers. At the same time, cost pressures of the publishing industry have led to downgrading from SC-B/SNC to standard UM, including high-bright grades.
- 32) In this regard, we agree with Dr. Kaplan that SC-papers are substitutable,¹⁵ but they are not susceptible to substitution between SNC and SC-A, for example or between SC-B and SC-A+. However, they are highly substitutable between SNC/SC-B and standard UM, on the low end of the continuum, and SC-A+ grades and CM, on the upper end.
- 33) As explained in Sections 2, 5 and 6, we disagree with Dr. Kaplan that SC paper is sold primarily on the basis of price,¹⁶ since quality differentiation is a highly important competitive attribute. The quality gap between the grades of SC-paper is clear, as shown in Table 2-1. The bottom line is that quality matters, and the lower priced products are unlikely to win the order if the customer prefers SC-A or SC-A+ quality over SC-B.

⁹ R-146, [REDACTED] p. 42.

¹⁰ R-161, [REDACTED] p. 23.

¹¹ R-146 [REDACTED] p. 43.

¹² R-161, [REDACTED] p. 29.

¹³ R-161, [REDACTED] p. 24.

¹⁴ R [REDACTED]
[REDACTED] p. 13; [REDACTED]
[REDACTED], RFP0009515-16.

¹⁵ See Kaplan Report, ¶ 37.

¹⁶ See Kaplan Report, ¶ 37.

34)

[REDACTED]
[REDACTED]
[REDACTED]¹⁷
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED] and is limited to 133,000 Mt [REDACTED]
[REDACTED] SC-A out of Kenogami.²⁰

2.2 Geographic Market

35)

North America is a natural geographic definition for SC-paper market in this case based on the location of the suppliers and customers, transport costs, language, trade regulations and agreements, and service availability. Whilst SC paper is a globally traded product, North America is a trade deficit region primarily dependent on regional (Canadian and US) supply, and imports from Europe. Figure 2-2 charts active and closed SC mills both in North America and Europe.

36)

We agree with Dr. Kaplan when he states that the relevant SC-paper market is a North American market and that the majority of Canadian production is exported to the U.S. However, Dr. Kaplan overlooks the important role played by SC-paper imports from Europe. In Sections 3.2-3.3, we explain how an important amount of demand has been met by SC-paper capacity from Europe, which has always exceeded local demand, and excess tonnages have been sold across the globe, but mainly to the North American markets. There has always been room for European paper in North America, particularly SCA+ grades, despite the high shipping costs they incur. Imports from Europe have constituted between 21-30 percent of North American SC-A/A+ paper supply in the 2010s, and could have filled the gap left in the North American market had PHP not restarted. Exports from North America to other markets have been negligible, at least until recent years.

37)

The global SC paper industry has been concentrated in Western Europe and North America, [REDACTED]
[REDACTED].²¹ This is partly due to the fact that wood resources suitable for mechanical pulping are concentrated in the Northern hemisphere. At the same time, the printing processes for which SC paper has been tailored for are mainly characteristic to the western markets. In consequence, global trade in SC paper has taken place merely between Western Europe and North America, with the trade flowing from Europe into the US.

¹⁷ R-237, [REDACTED]
[REDACTED], RFP0009490, [REDACTED]
[REDACTED]

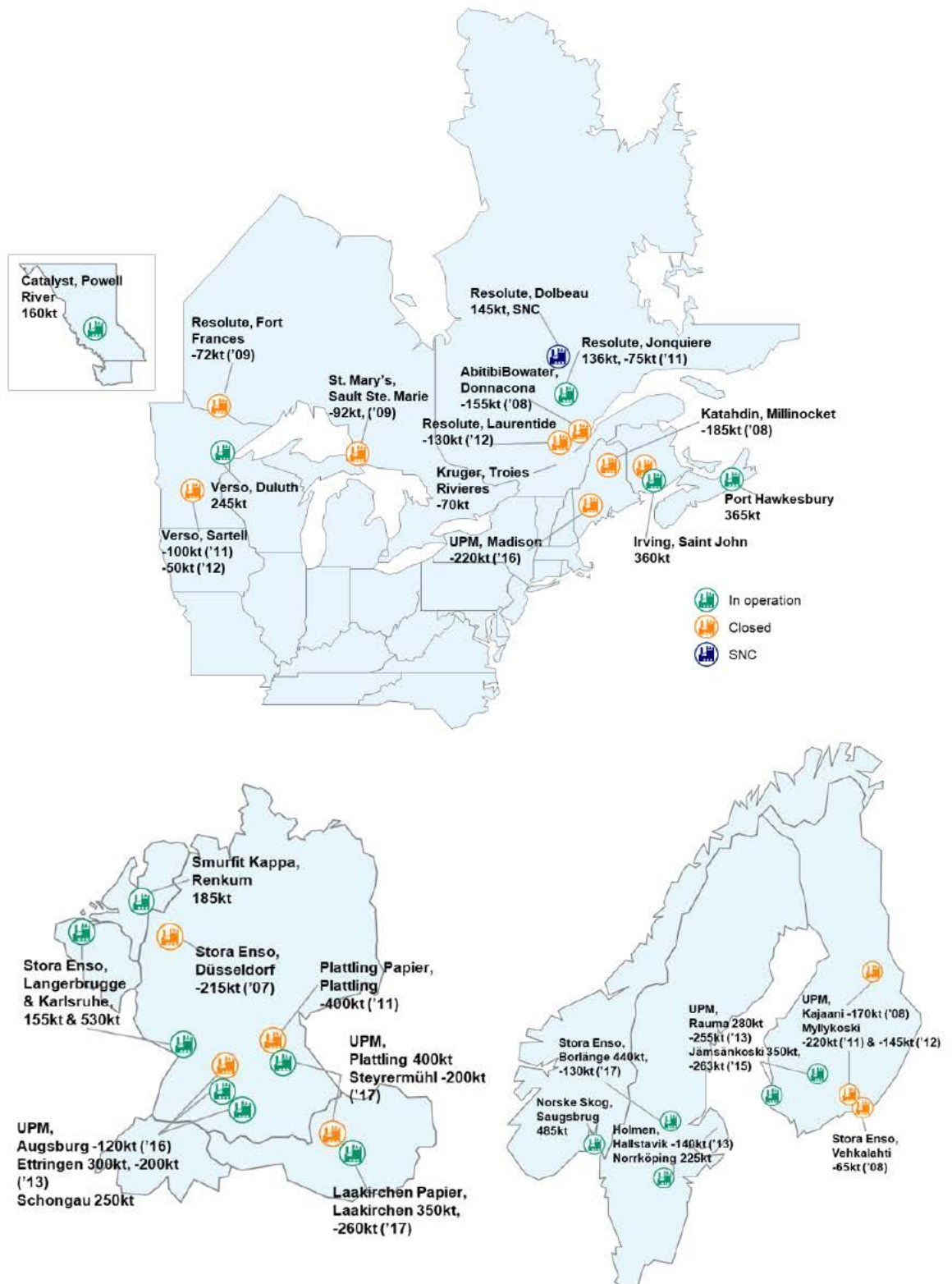
¹⁸ C-163, [REDACTED]
[REDACTED]

¹⁹ PPI PULP & PAPER WEEK, September 30, 2016, p. 8: 39% of Port Hawkesbury's production is allocated to SC-A++, 30% SC-A+, 20% SC-A and 11% SC-B.

²⁰ R-228, [REDACTED] RFP0009515.

²¹ R-161, [REDACTED] p 46.

Figure 2-2
SC Paper Mills in North America and Europe – Existing Assets and Mills Shut Down since 2005



Source: Pöyry Smart

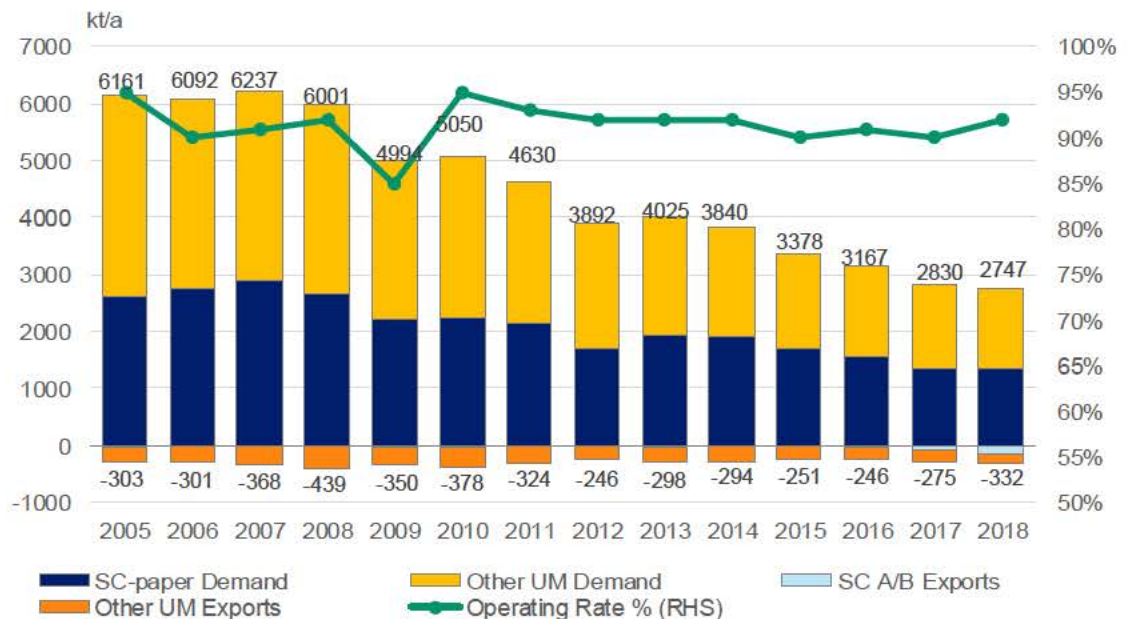
3 DEMAND DEVELOPMENT

3.1 Historical Demand Development 2005-2018

- 38) The demand for UM printing papers (including SC paper) in North America has been declining since 2007. The average annual decline over the period 2007-2018 has been -7.3%/a, or -322,000 Mt annually, 140,000 Mt of which is SC paper.

Figure 3-1

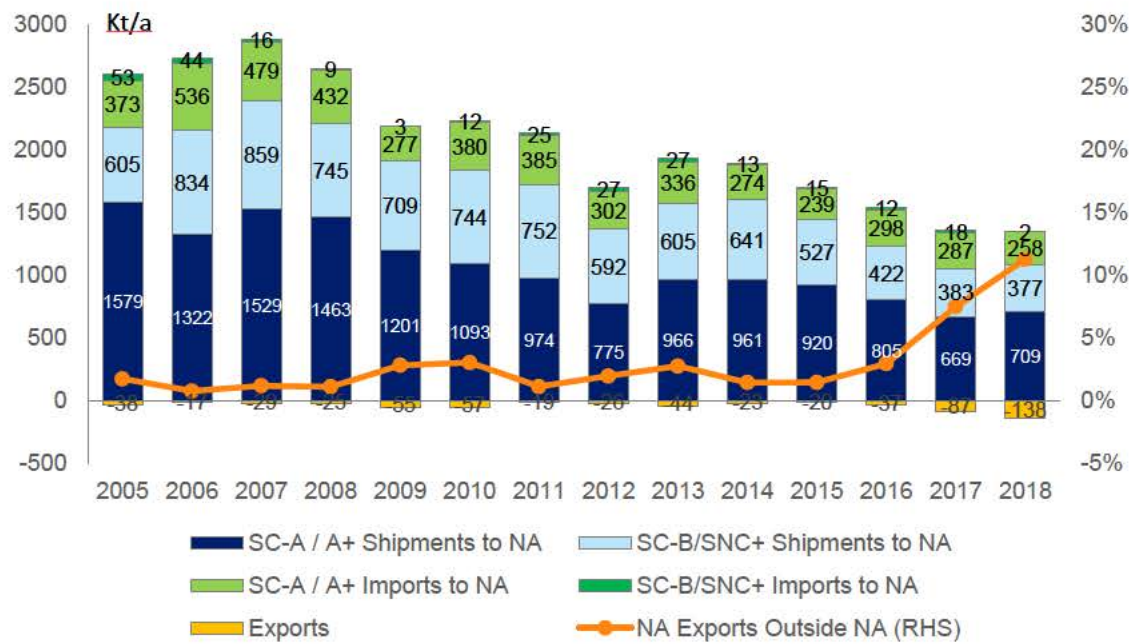
Total Uncoated Mechanical Printing Paper Deliveries and Imports to North America



Source: PPPC

- 39) Prior to 2012, SC-A/A+ paper demand was declining three times faster than SC-B/SNC+ in percentage terms (-99,000 Mt/a and -17,000 Mt/a respectively), but since the re-entry of PHP, the trend has reversed: SC-B demand has been dropping precipitously compared to SC-A demand (-67,000 Mt/a and -33,000 Mt/a respectively).
- 40) Figures 3-1 to 3-3 illustrate the historical development of demand for UM paper and its subgrades SC-A and SC-B/SNC in North America. Following a significant plunge in 2009 due to the financial crisis, demand partially recovered in 2010, before returning to a declining demand path in 2011.

Figure 3-2
SC Paper Deliveries and Imports to North America



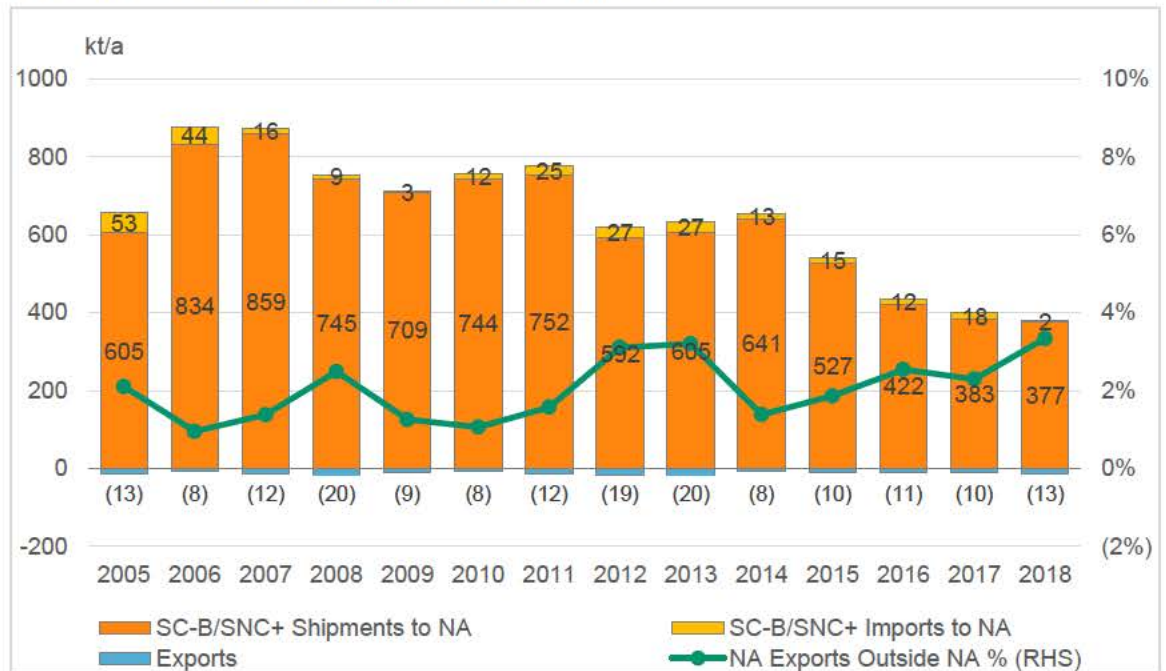
Source: PPPC

Figure 3-3
SC-A/A+ Deliveries and Imports to North America



Source: PPPC

Figure 3-4
SC-B/SNC+ Deliveries and Imports to North America



Source: PPPC

3.2 Demand Trends 2005-2012

- 41) Table 3-1 shows the demand for UM and CM papers in more detail up to the temporary shutdown of PHP.

Table 3-1
Demand for Uncoated and Coated Mechanical Paper in North America 2005-2012 (1,000 Mt)

Grade	2005	2008	2009	2010	2011	2012	CAGR%
SC-A/A+	1,952	1,894	1,478	1,474	1,359	1,077	-8.1%
SC-B/SNC+	878	754	712	756	777	619	-4.9%
Other UM	3,551	3,352	2,804	2,821	2,494	2,196	-6.6%
TOTAL UM	6,381	6,000	4,997	5,050	4,630	3,892	-6.8%
Total UM imports	530	513	321	436	455	349	-5.8%
SC-A/A+ imports	373	432	277	380	385	302	-3.0%
TOTAL CM	5,966	5,023	3,971	4,041	3,693	3,610	-6.9%
Total CM imports	908	822	654	460	398	450	-9.5%

Source: PPPC

- 42) In 2012, the demand for SC-paper took a nose dive, dropping by approximately 440,000 Mt. This significant drop in demand removed any benefit that might have accrued to competitor SC paper producers, including Resolute, based on PHP not operating. Rather than the expected shortage of SC paper supply, and higher prices, demand fell so much in 2012 that there was excess supply, and prices weakened.

- 43) Figure 3-2 shows that the North American SC-paper market has always experienced a significant and steady supply of imports. [REDACTED]²² Of the 410,000 Mt of SC-paper imported that year, 385,000 Mt were SC-A/SC-A+.

- 44) [REDACTED]²³
[REDACTED]²⁴ However, the fact that they went up at all is shocking given the massive slide in SC-paper demand that the market experienced at that time (see Table 3-1). As will be discussed in the next section, there is every reason to believe today that, if Port Hawkesbury had not been restarted, European imports of SC-A/A+ would have continued to take market share from North American producers.

3.3 Demand Trends 2012-2018

- 45) The demand for UM papers in North America continued to decline after 2013 demand boost (see Table 3-2).

Table 3-2
Demand for Uncoated and Coated Mechanical Paper in North America 2012-2018 (1,000 Mt)

Grade	2012	2013	2014	2015	2016	2017	2018	CAGR%
SC-A/A+	1,077	1,302	1,235	1,159	1,103	955	967	-1.8%
SC-B/SNC+	619	632	654	542	434	401	379	-7.6%
Other UM	2,196	2,091	1,951	1,677	1,630	1,519	1,355	-7.7%
TOTAL UM	3,892	4,025	3,840	3,378	3,166	2,875	2,701	-5.9%
UM imports	349	379	334	264	335	338	294	-2.8%
SC-A/A+ imports	302	336	274	239	298	287	258	-2.6%
TOTAL CM	3,610	3,378	3,211	2,901	2,721	2,463	2,275	-7.4%
CM imports	450	403	288	374	376	362	442	-0.3%

Source: PPPC

- 46) In 2013, when PHP resumed full production, demand for SC-paper recovered by 238,000 Mt (14.0%/a), before resuming its continuing decline. Further, according to market commentators, measuring tonnage alone in 2013 results in a false drop in demand given the changes to SC-paper basis weights. With purchasers, including Macy's, Target and Kohl moving to a lighter paper, overall tonnage would appear to have declined, even though these companies were not purchasing less paper.²⁵ Accommodating for this basis weight change, 2013 North American shipments of SC-paper were approximately 65,000 Mt or 6.0% higher than reported. When we add the

²² R-161, [REDACTED] pp 7 and 17.

²³ R-161, [REDACTED] p. 18.

²⁴ R-161, [REDACTED] p. 17.

²⁵ R-233, ERA Forest Products Monthly, "A Comprehensive Analysis of the Forest Products Sector" (November 2017); R-234, Reel Time, "SCA & Coated Forecast for 2018.....and much more (November 6, 2017).

65,000 Mt of basis weight adjustment to the 238,000 Mt of new demand, we see that the surge of demand in 2013 was not 14.0%/a, but 17.9%/a.

- 47) Rather than the market weakness that PHP's re-entry was expected to cause, with excess supply and an accompanying downward price cycle beginning, there was a shortage of SC-paper supply in 2013. By March, suppliers recognized they had unnecessarily dropped their prices due to PHP's re-entry, and announced price increases for July 2013. The price increase is proof of a strong market (see Section 5.1, Figure 5-2).
- 48) Table 3-3 shows the demand changes in SC-A paper and CM paper from 2010 through 2018. While the demand for SC-A has been declining on average 5.1%/a over the period 2010-2018, the decline in CM has been even faster, averaging 6.9%/a. Changes in demand have been more or less parallel through the past 10 years, except in 2012-2013 when demand growth rates were rather counter-cyclical. Note that the decline in CM demand was smaller in 2012 than in any other year since 2010 while SC-A demand dropped by 21%, partly as a result of PHP exit. In the following year, SC-A demand grew 21% - back to the level of 2011, while demand for CM declined 6.4%. This partly explains where the demand went when PHP was temporarily shut down. That is why CM demand fell only by 2.2%, and not by 5-10%/a as in all other years. Similarly, it also explains why and from where SC-A was able to re-capture the market one year later.

Table 3-3

SC-A and Coated Mechanical Paper Demand Changes in North America 2010-2018

Year	SC- A/A+ demand 1,000 Mt	CM demand 1,000 Mt	SC-A/A+ growth %/a	CM growth %/a
2010	1,473	4,041	-0.3	+1.8
2011	1,359	3,693	-7.7	-8.6
2012	1,077	3,610	-20.8	-2.2
2013	1,302	3,378	+20.9	-6.4
2014	1,235	3,211	-5.1	-4.9
2015	1,159	2,901	-6.2	-9.7
2016	1,103	2,721	-4.8	-6.2
2017	955	2,463	-13.4	-9.5
2018	967	2,275	+1.3	-7.6

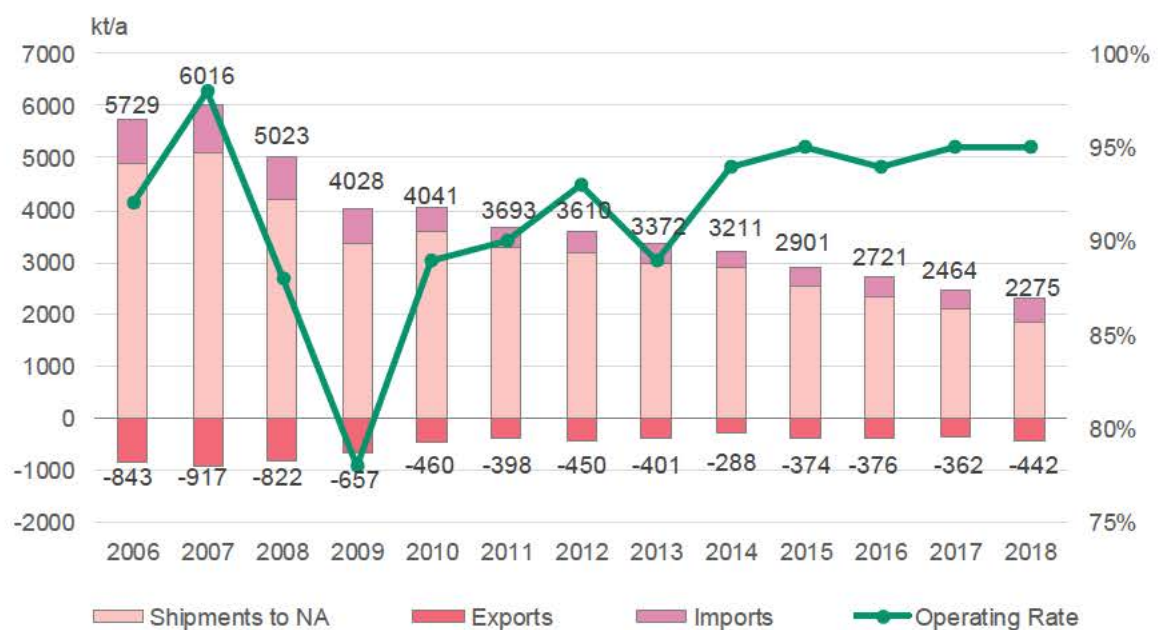
- 49) The demand for SC-A/A+ grades experienced a boost in 2013 [REDACTED]
[REDACTED]
It was not until early March 2013 that SC paper buyers and sellers began to accept the fact that the strong market would continue, at which point producers began talking to their customers about a July price increase. The supply/demand balance favored

²⁶ R-242, [REDACTED] RFP0009500-01.

producers so much that there was no effective resistance to the July price increase; buyers had no leverage to negotiate a slower implementation.

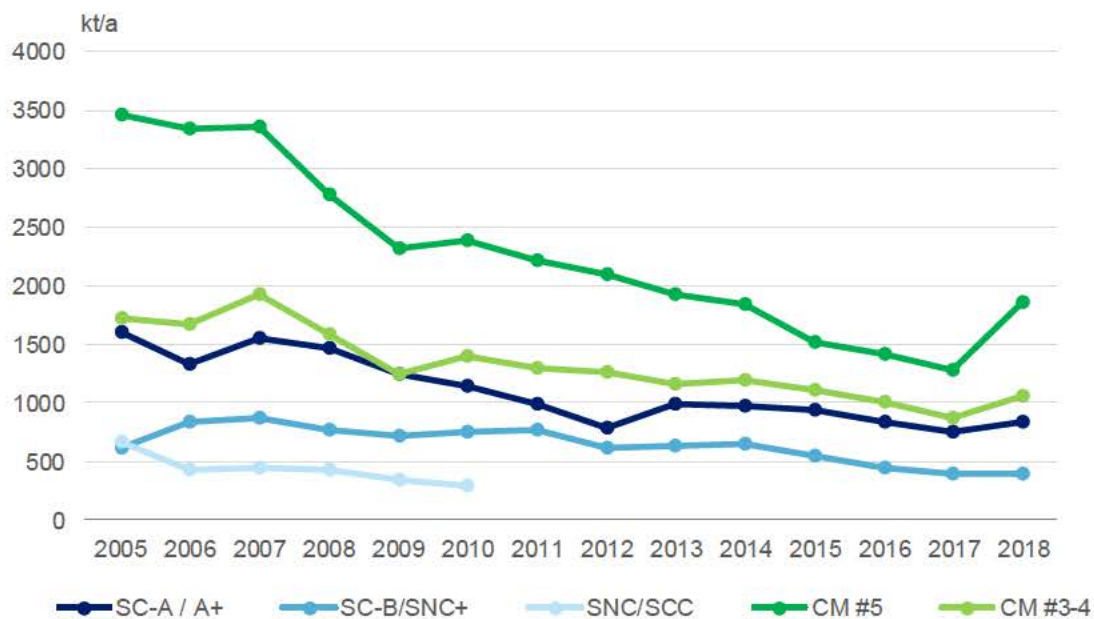
- 50) It is especially important to note that SC-A/A+ imports accounted for only 15% of the incremental demand in 2013 but absorbed 93% of the demand decline in 2014. In other words, the two main shock absorbers of PHP's re-entry were the European SC paper suppliers and the CM suppliers.
- 51) The downgrading that we explained above in section 2.1 of magazine paper from CM to SC-A/A+ was a significant market change that took place after PHP re-entry. Looking at the total shipments (North America + Exports) of SC-paper (Figures 3-2 to 3-4) and CM #5 and CM #3-4 (Figure 3-5), we can make the following observations:
- From 2011 to 2012 the demand for SC-paper (A and B/NC combined) fell drastically by 440,000 Mt. Meanwhile demand for CM paper decreased by 83,000 Mt. That CM demand fell far less than its yearly average amount since 2010 suggests that there could have been substitution from SC-papers to coated grades during the time PHP was idle.
 - SC-A/A+ demand took a dive in 2012 (-282,000 Mt/a), but recovered in 2013 (+225,000 Mt/a; or an estimated 260,000-270,000 Mt/a factoring in the basis weight change), following the re-entry of PHP. Demand for CM declined softly in 2012 (-83,000 Mt/a), followed by a more drastic decline in 2013 (-232,000 Mt/a).
 - Downgrading from CM to SC-A+ grades was caused by the need of magazine and similar paper buyers to save costs by shifting to paper that PHP, Irving and European mills produced, but that Resolute did not.
 - SC-B demand declined in 2012 (-158,000 Mt/a) and recovered but only marginally in 2013 (+13,000 t/a). That is to say that SC-B also benefited, if only marginally, from the surge in demand in 2013.

Figure 3-5
Total Coated Mechanical Printing Paper Deliveries and Imports to North America.



Source: PPPC

Figure 3-6
Annual Shipments of Coated and Uncoated Mechanical Papers from North America.



Source: PPPC

4 SUPPLY DEVELOPMENT

- 52) The following sections demonstrate that the PHP PM2 has always been a strong asset compared to its North American counterparts. NewPage Port Hawkesbury's temporary shutdown was not the result of its asset quality, but due to other causes related to its newsprint operation, and its high electricity, fiber and labor costs. The cost position of Resolute's mills, on the other hand, has not improved due to lack of re-investment.

4.1 Changes in Supply Structure 2005-2018

- 53) Port Hawkesbury PM2 has always been the largest and most modern SC-paper machine in North America, apart from the period when the mill was kept idle. Only a couple of European machines are on par or better than PHP PM2. PM2 has the technical advantage over smaller and older North American competitors, including Resolute's mills. PHP PM2 has occupied the 2nd or 3rd quartile of the industry-wide supply curve over the period 2010-2015, and has not been even close to the marginal cost position. It has also almost invariably been more cost competitive than any of Resolute's paper machines. Under these circumstances, Port Hawkesbury has not been relevant in terms of market clearing and setting of equilibrium price.
- 54) Figures 4-1 and 4-2 show the asset quality comparisons of SC-paper machines selling into the North American market between 2005 and 2018 (capacity situation at the end of each year, respectively). The graphs illustrate the asset quality position of SC-paper machines selling into the North American markets. The capacity of the machines is plotted on the y-axis while the x-axis illustrates the average technical age of the machines. The technical age depends on the start-up year of the machines, their rebuild history and replacements made in the machinery. In other words, the rejuvenating effect of modernizations and rebuilds has been taken into account in the estimation of the technical age of the machines.
- 55) The strongest players tend to be those with large and modern machines, i.e. those placed in the upper right hand corner of the graphs in Figures 4-1 and 4-2. Correspondingly, the smallest and oldest paper machines are typically in the weak (lower left hand) corner.
- 56) PHP PM2 has been amongst the strong players plotted on the right corner of the asset quality window. In other words, PHP PM2 has had the technical capability to be a competitive producer of SC paper in North America. PM2 is the largest North American SC-paper machine (360,000 Mt/a) with a capacity clearly above the industry average and one of the newest in terms of technical age. Only European suppliers have machine capacities above industry average. With the exception of PHP, North American SC-paper assets are smaller and older in terms of capacity and technical age.

4.1.1 Asset Quality Comparison 2005-2012

- 57) [REDACTED]
- [REDACTED]
- [REDACTED]²⁷ The former European owner Stora Enso, which was/is a leading SC-paper producer worldwide, transferred its technical know-how to PHP. In consequence, at the time of its start-up in 1998 PM2 was the most efficient SC-paper mill in North America, and could produce paper of comparable quality to CM #5 due to its high gloss

²⁷ R-146

p. 67; R-161, [REDACTED]
p. 36.

and brightness. Resolute's asset base for SC-A paper, being composed of only one machine in Kenogami, and Verso's Sartell PMs were considered the weakest assets amongst their North American peers. Verso's smallest paper machines (PM1 & PM2) were closed down in 2012.

- 58) In a similar fashion, many of the SC-paper machines operating in the first decade of the millennium were shut down. Of the total 19 machines based in Canada and the USA in 2005, only 9 machines were operating in 2011.

[REDACTED]

[REDACTED]

4.1.2 Asset Quality Comparison 2012-2018

- 59) Market changes continued post-PHP entry. In 2013, the North American SC-paper industry comprised eight paper machines; in 2018 there were seven machines left (Figure 4-2). The overall capacity has not changed much since 2013, though – the only significant exit has been the Myllykoski/UPM Madison paper machine closure in 2016.

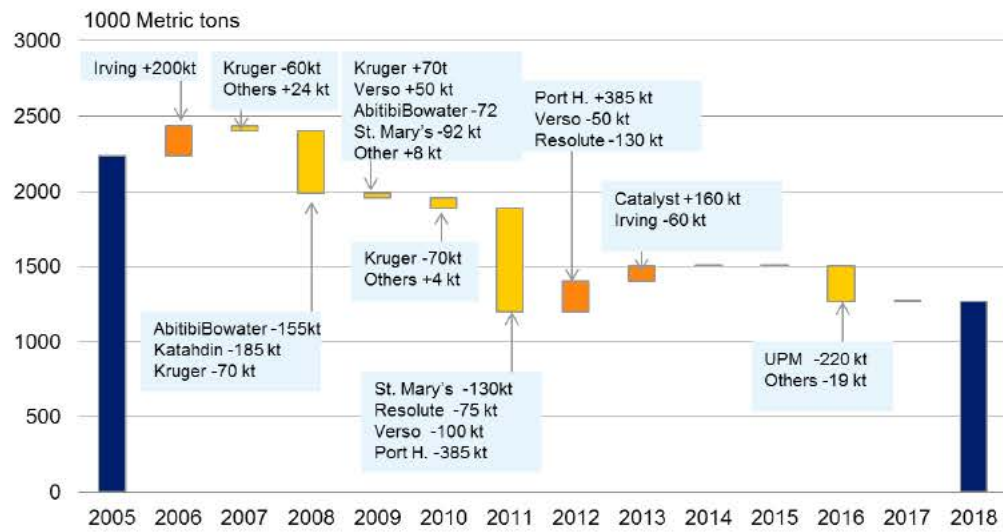
²⁸ All asset quality and supply curves are modelled by Pöyry.



4.1.3 Capacity Development

- 60) The North American SC-paper industry has been going through major restructuring over the last 10-15 years. Apart from ownership changes, the total capacity has declined from 2.4 million Mt/a in 2006 to 1.3 million Mt/a in 2018 (Figure 4-3). The industry as a whole has been more or less in exit mode before and after the restart of PHP PM2.

Figure 4-3
SC Paper Capacity Development in North America 2005-2018



Source: Pöyry Smart Database.

4.2 Supplier Cost Positions

61)



62)



63)



4.2.1 Cost Positions 2010-2011

64)



65)



[REDACTED]

4.2.2 Cost Positions 2012-2015

66)

[REDACTED]

67)

The supply curve has shifted due to changes in demand and costs. Declining demand has resulted in exits and thus made the supply curve shorter in the course of time. At the same time, the supply curve has shifted downward mainly because of weakening CAD and EUR vis-à-vis the US dollar. The reason that Resolute's operations have been subject to exit threat is because they have been close to the marginal producer position, whereas PHP's position has been close to the mid-point of the curve. The downward-shifting supply curve implies also declining equilibrium prices – phenomenon that is familiar for the pulp and paper industry worldwide.

68)

Resolute has not invested much into its Laurentide mill. According to the industry news sources monitored by Pöyry, the latest capital projects at Laurentide took place in 1997²⁹ and 2000-2001³⁰. In 1997, CAD 31 million was invested to 'general improvements' and later CAD 8 million and CAD 19 million were invested in 2000 and 2001 respectively to miscellaneous capital projects. The Laurentide closure in 2014 was widely reported. A piece by the Confédération des Syndicats Nationaux ("CSN"), which is a large trade union in Quebec, reported that Laurentide suffered from "ancient technology" and claimed that "if the plant is obsolete, it is the direct result of negligence and a chronic lack of investment."³¹

²⁹ PPI PULP & PAPER WEEK, September 5th 1997.

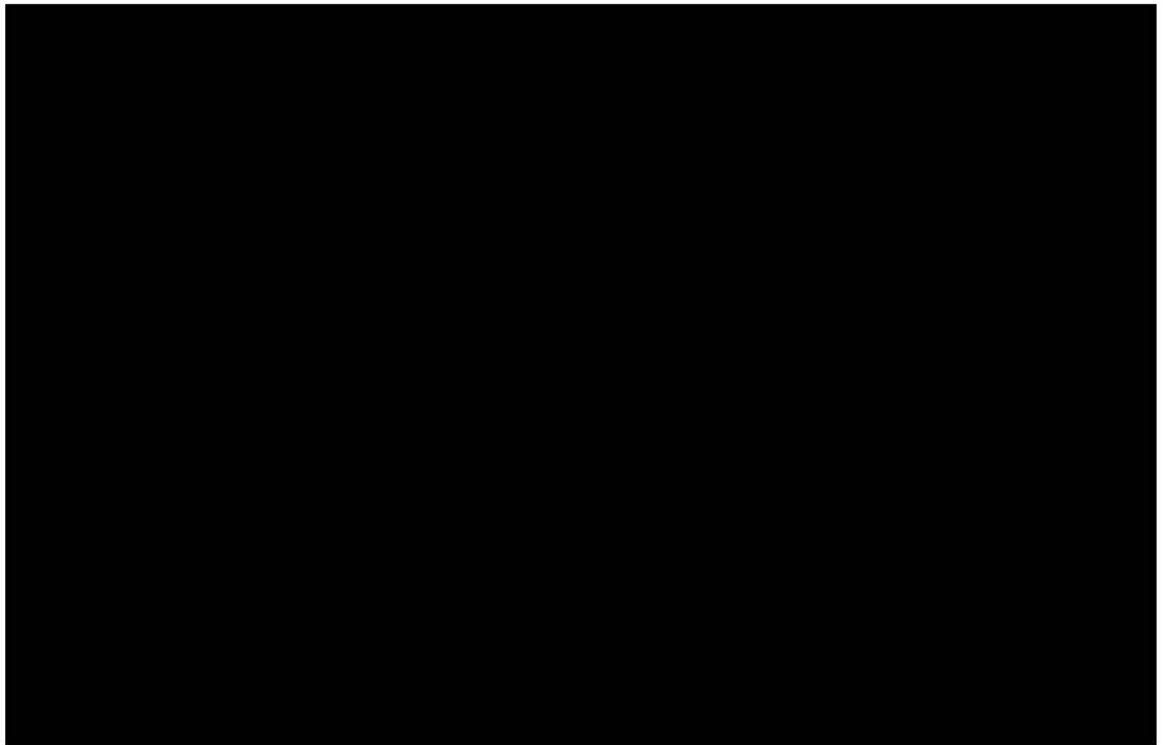
³⁰ PPI PULP & PAPER WEEK, January 17th, 2001.

³¹ Laurentide's capacity represents close to 27% of North America's 800,000 tons/yr supply for soft nip and SC-B paper, which is a far smaller market than the two million tons/yr market for higher end "glossy" SC grades that compete with LWC for commercial printing and publishing purposes. 'Ancient technology' an issue. While the resulting oversupply undoubtedly played a part in Laurentide's difficulties, sources said the real issue behind its closure is not so much the supply-demand and pricing dynamics in the market, but the mill's antiquated stone groundwood pulping equipment. The second-largest trades union federation in Quebec by membership, the Confédération des Syndicats Nationaux (CSN), said in a 2014 statement that while the mill's "ancient technology" provides excellent furnish, it is much more energy intensive to operate than more modern equipment. "If the plant is obsolete, it is the direct result of negligence and a chronic lack of investment," a CSN official said. "The mill has a good paper machine, but I don't think it will make paper again. Resolute isn't afraid to spend money on good mills, but there were no options for Laurentide -- its costs were too high," a mill contact said. PULP & PAPER WEEK Sept. 5, 2014, p. 8.

5 PRICES

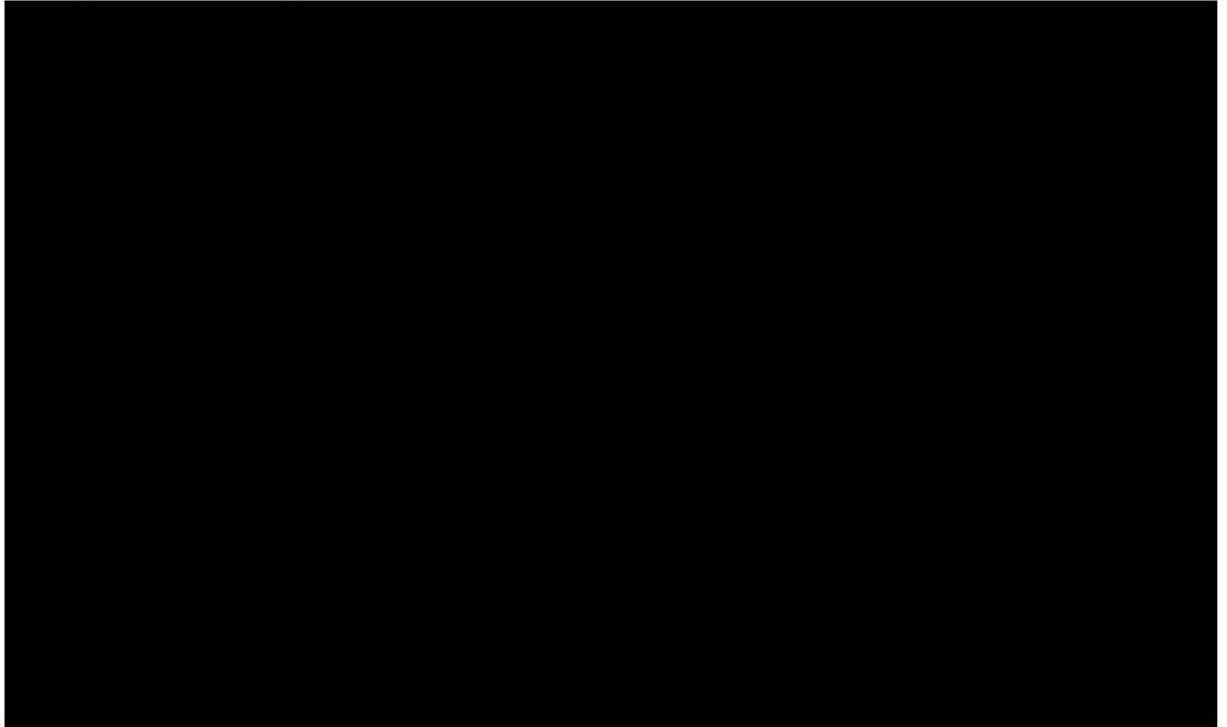
5.1 Price Development 2001-2018

- 69) The impact of Port Hawkesbury PM2 exit and re-entry on SC-paper market prices appears negligible because paper prices are not dependent only on supply volume but also on economic growth, factor costs and exchange rates.
- 70) Some price trends can be observed from nominal series. For example, SC-A and SC-B have exhibited four distinct shifts since 2000. 2000-H1/2001 the delta in favor of SC-A was approximately 200 USD/t. From H2/2001-2003 the gap shrank to 150 USD/t, from 2004 to H1/2010 the gap was 95 USD/t and finally post 2010 the prices have converged, and the difference is only 13 USD/t over 8-year period. The historical premium of SC-A vs. SC-B is highlighted on the blue area on Figure 5-1, in which coated mechanical papers are displayed on dashed line, uncoated mechanical papers on solid line, and newsprint on dotted line.
- 71) Based on our review of pulp prices and the secular decline of the SC market, we do not expect the 2018 price rise to be a lasting phenomenon. Pulp and paper prices increased in 2018 across the world. Softwood pulp prices (in gross price terms) went up by 21% in the US from 2017Q4 to 2018Q4; hardwood kraft pulp rose by 15% during the same period, and SC paper prices increased by 17%. The first months of 2019 have shown significant softening of the markets, softwood pulp prices (gross) in the US have declined by 4% over one quarter, while spot prices have declined from USD 930/Mt in December 2018 to 780/Mt in April 2019 (-16%). Gross prices of hardwood pulp have declined by 3%, while spot prices have gone down from USD 790/MT in December 2018 to USD 695/Mt in April 2019 (-12%). SC paper prices tend to follow the pulp price cycles with some lag, so we expect also SC paper prices to decline towards summer 2019.



Source: RISI

- 72) Figure 5-2 illustrates the development of SC-paper prices in North America highlighted against the exit and re-entry time of Port Hawkesbury PM2. The impact of PHP exit and re-entry on market prices appears negligible. Overall, SC-paper prices remained relatively flat through 2011-2012, despite PHP's temporary exit. The economic slow-down in 2012-2013 coincided with the marginal price decline in 2013; the improvement to the economy in the 3rd quarter of 2013, general downgrading from coated paper to SC-A/A+, and consequent boost in SC-A paper demand helped restore prices of SC-paper to the two-year average level of 2011-2012, and clearly above the 2010 level.

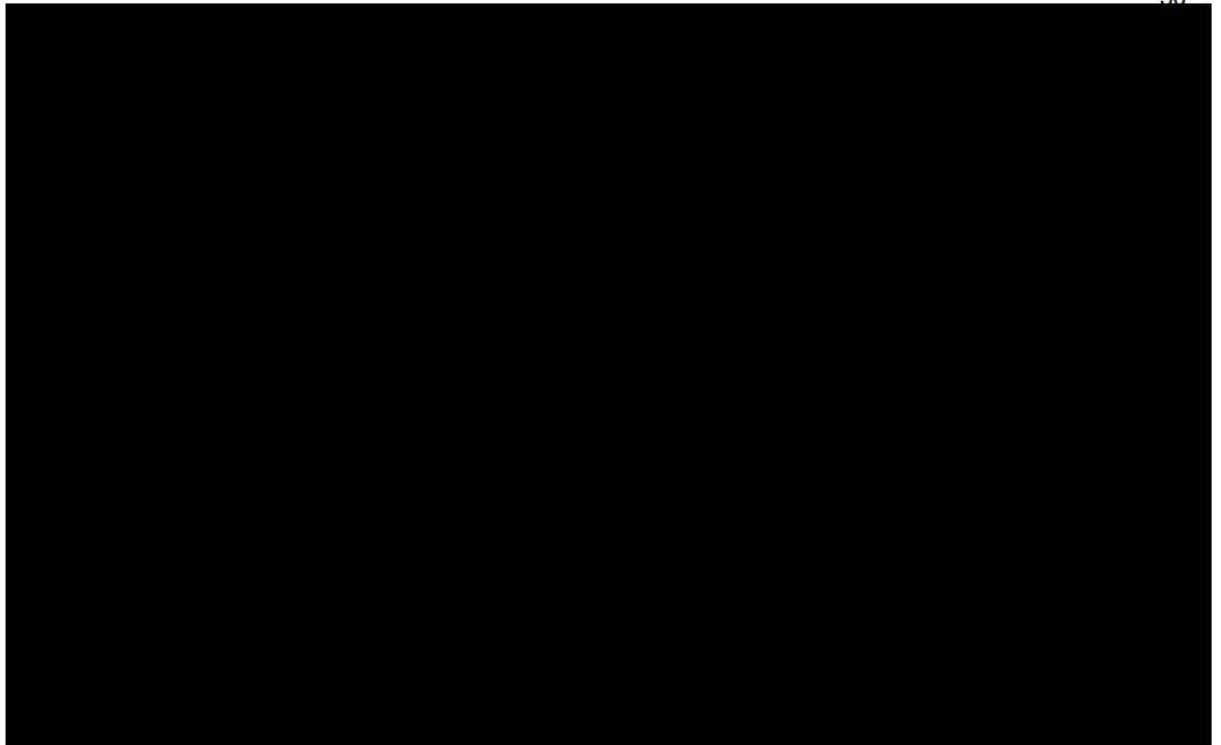


Source: RISI, IMF for WPI.

5.2 Price Relationships

5.2.1 SC Paper Prices vs. Factors Affecting Demand

- 73) Printing papers are a classical example of “inferior” goods, where increase of income results in a reduction of consumption. It is comforting to know that economic theory allows both cases, i.e. increasing and decreasing demand when income increases. However, due to the observed demand decline, it is uncertain whether one can find powerful demand side variables explaining the price development of SC-paper. Figure 5-3 shows the interrelationships between economic growth and SC paper prices in North America.



Source: RISI, Bureau of Economic Analysis.

- 74) The following can be concluded:
- Historically, SC paper prices have been clearly more volatile prior to the financial crisis of 2009 than during the post-crisis period;
 - Economic growth and SC paper prices are clearly pro-cyclical with prices following changes in economic activity with a lag;
 - The economic slow-down in 2012-2013 coincided with the marginal price decline; the improvement to the economy in the 3rd quarter of 2013 helped prices of SC paper rise back to the two-year average level of 2011-2012 (and clearly above the 2010 level).

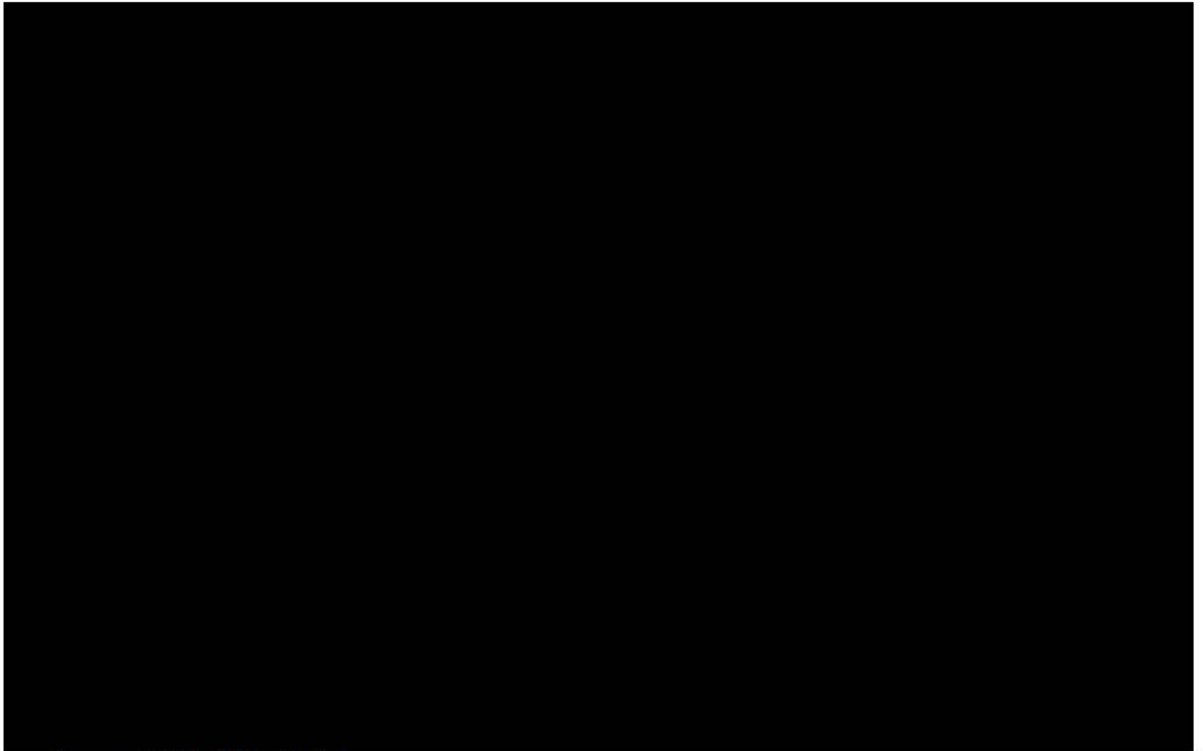
5.2.2 SC Paper Prices vs. Factors Affecting Supply

- 75) The following four figures introduce exchange rates, pulp and pulpwood pricing that play a part on manufacturing costs.
- 76) Figure 5-4 illustrates that changes in exchange rates can explain variations in SC-paper prices. The CAD/USD rate would be a logical supply side determinant due to the dominance of Canadian supply (CAD-denominated costs) in US SC-paper markets. EUR/USD rate would be another potential supply side factor influencing the equilibrium price (see Figure 5-5). Based on PPPC data, shipments from Europe accounted for 15-19% of the total demand in North America during 2010-2015, thus constituting a potentially significant driver for SC paper prices in the USA.
- 77) Based on Figures 5-4 and 5-5, we highlight the following:
- SC-paper prices in the US (paid in US dollars) seem to be positively correlated with the strength of CAD. Strengthening/weakening CAD results in lower/higher USD price requirement.

- The weakening of CAD could partly explain the simultaneous dip in SC-paper price in 2012-2013, although the prices (as well as the value of CAD) were close to all-time highs at the time of PHP re-entry.
- The relationship between EUR rate and SC-paper prices in the US follow the same pattern as with CAD (strength of EUR is pro-cyclical with SC paper prices in USD terms).

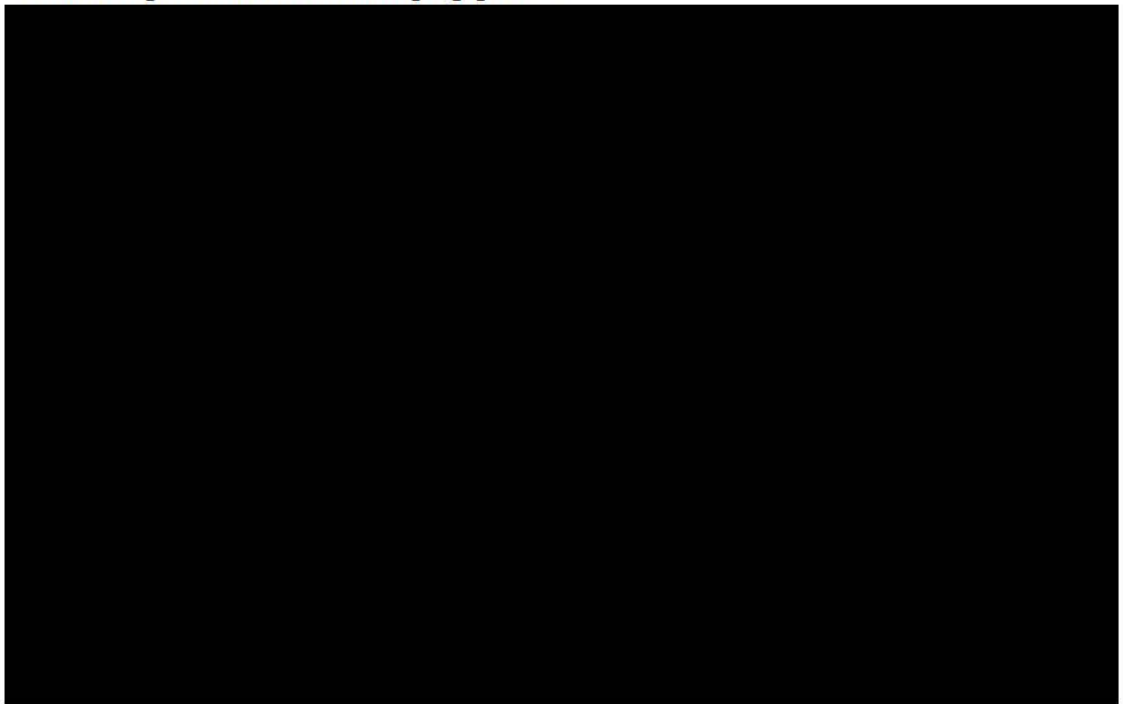


Source: RISI, WM-Reuters.



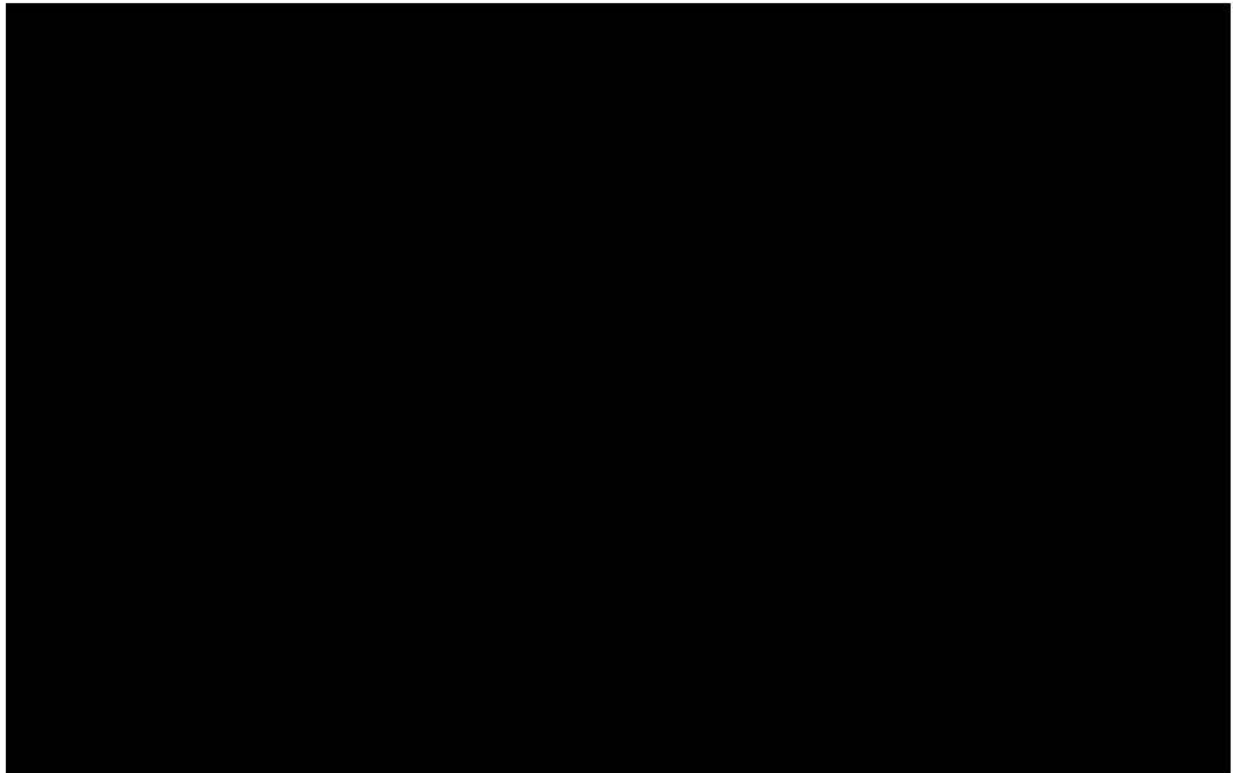
Source: RISI, WM-Reuters.

- 78) The main cost factors and thus relevant supply determinants of the SC paper industry are market pulp and wood for mechanical pulping, as illustrated in Figures 5-6 and 5-7.
- 79) Bleached Softwood Kraft Pulp (“BSKP”) constitutes a significant cost item in SC-paper manufacturing. SC paper mills are typically not integrated with chemical pulp production and therefore, dependent on external pulp market – or at least on captive pulp supply where corporate pricing tends to follow the pulp market cycles. The relationship between pulp prices and SC paper prices demonstrate that SC paper prices move in parallel with market pulp prices.



Source: RISI.

- 80) The correlation between wood prices in Canada and SC paper prices in the US is at best moderate, as shown in Figure 5-7.



Source: RISI, Pöyry Smart.

5.3 Pöyry 2012 Report in Retrospect

- 81) [REDACTED]
- [REDACTED]³². In retrospect, that price forecast was not accurate because we did not predict the sizeable SC demand surge in 2013. No market commentator that we are aware of predicted the surge in demand that occurred in 2013, and only recognizing it after the fact.³³
- 82) The price was forecast to drop from an average USD 930 per Mt in 2011 to an average USD 916 per Mt in 2012, however with a correct producer price index forecast the price

³² R-161, [REDACTED] pp 8

³³ R-235, [REDACTED] p.66, [REDACTED]

R-236, [REDACTED] p. 77, [REDACTED]

P.64

- [Redacted text block]
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6 REVIEW OF THE KAPLAN REPORT

6.1 General Findings

- 86) Dr. Kaplan's expert witness report does not attempt to assess whether three of Resolute's Canadian mills were damaged by the re-start of the Port Hawkesbury PM2 starting in 2013. Instead, it assumes they were damaged based on a purely theoretical framework of basic economics and a shallow understanding of the paper market.
- 87) While focusing solely on three grades of paper (SNC, SCB and SCA) to the exclusion of the rest of the competition, Dr. Kaplan's report takes a strong stand on substitutability of these three grades. To support his claim of high substitutability, Dr. Kaplan argues that "SCP products ... are ... sold primarily on the basis of price."³⁴ Dr. Kaplan's statement is a partial truth that risks being highly misleading. To call these grades commodity-like, while not technically incorrect, tends to discount the importance of quality, and lump all SC grades together as if quality differentiation were not an important competitive attribute. However, quality is very important, and the quality gap between Resolute's and PHP SC-paper grades is evident (Table 2-3). [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]³⁵ The lower priced product seldom gains the order if the customer prefers better quality.
- 88) Relying on the theory of SC paper substitutability, Dr. Kaplan argues that "any increase in the supply of Port Hawkesbury's SC paper will negatively affect the price of all SC paper sold in the North American market."³⁶ However, an alternative and more reasonable viewpoint is that Port Hawkesbury's main product (SC-A+ grades) competes with the equivalent paper produced by Irving, imported SC paper (e.g. from Finland, Sweden and Norway), and with CM papers, mainly CM #5 from North America and overseas sources, and that competition in the lower quality SC-paper market occupied by Resolute's SC-B and Soft Nip Calendered ("SNC") grades have hardly been affected by Port Hawkesbury, but have been challenged significantly by high bright and other improved newsprint.
- 89) A serious flaw in Dr. Kaplan's report is that it does not account for the role of imports in the North American SC paper market. European production of SC paper dwarfs North American production, and European imports of SC paper have traditionally filled a gap left by North American production. Figure 6-1 below illustrates the importance of imports as a percentage of overall demand, showing for example 400 MT or over 20% of demand in 2011. It also shows that the lion's share of the imports are in SC-A/A+ grades, with negligible imports in high-gloss grades (SC-B, SNC) due to ample supply from local Canadian/US mills. Most importantly, it shows that imports have been in steady decline since Port Hawkesbury's re-entry (Figure 6-1).

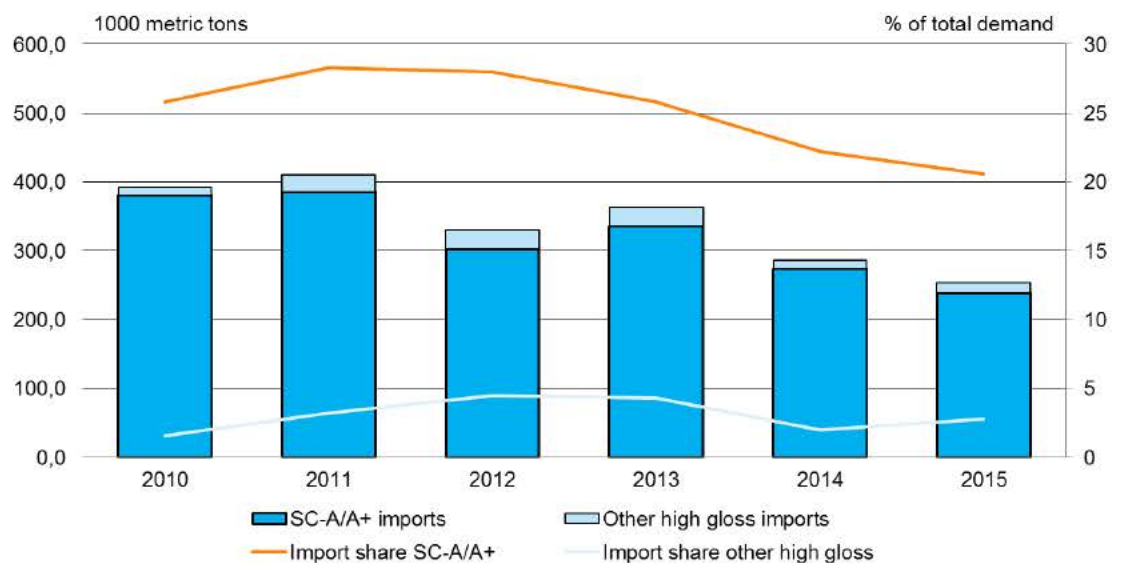
³⁴ Kaplan Report, ¶ 37.

³⁵ R-243, [REDACTED] RFP0009458-59; See also R-244, [REDACTED] RFP0009490, in which the customer preferred the brightness of PHP's paper.

³⁶ Kaplan Report, ¶ 37.

- 90) Kaplan report states in his conclusion: “The full re-entry of the PHP mill introduced 360,000 MT of SC-paper capacity to a declining market with moderately elastic demand. This significant addition of supply was not due to, or met with, a significant increase in demand, thus, prices for SCP fell. This fall in prices caused higher-cost mills to exit the market and led to profit declines for the mills that remained in the market.”³⁷
- 91) His statement that the significant addition of supply was not met with an increase in demand is simply wrong. The actual data is reported by the PPPC, showing that overall SC-paper demand increased by 238,000 Mt in 2013. Imports of SC-A paper declined in the following year by 62,000 Mt, giving room for the re-entered capacity during its ramp-up.

Figure 6-1
SC Paper Imports to North America 2010-2015



Source: PPPC

- 92) If we were to consider SC-A/A+ paper on its own, since the re-start of the Port Hawkesbury PM2, the share of imports to North America out of total demand has declined from 28% in 2012 to 20-21% in 2015, or by 150,000 Mt. In 2013, imports temporarily increased due to the 21% growth of SC-A/A+ demand, but the demand growth was only temporary as evidenced by the 2014 and 2015 data.
- 93) Another serious flaw with Dr. Kaplan’s report is that it overlooks how SC-A+/SC-A++ paper from PHP competes with CM papers (mainly CM #5, but also CM #4). Whilst the demand of SC-A increased by 225,000 Mt and shipments from North American SC-paper mills to North American end users increased by 191,000 Mt in 2013, coinciding with the re-entry of PHP PM2, the demand and shipments of CM in North America declined by 238,000 Mt and 187,000 Mt, respectively. Likewise, imports of CM from Western Europe (~90% of total CM imports to North America) dropped by 50,000 Mt in 2013. Such simultaneous movements in North American mechanical paper market suggest that substitution has in fact taken place in the higher end of the market, and that PHP has taken market shares from CM paper rather than SC-B.

³⁷ Kaplan Report, ¶ 50.

6.2 Financials

- 94) Dr. Kaplan was retained to:
- 1) opine on whether the benefits package lead to the re-entry of PHP, and
 - 2) whether the re-entry of PHP caused economic harms to Resolute's Super Calendered Paper operations.³⁸
- 95) It is agreed that, under NewPage ownership, the Port Hawkesbury newsprint and SC mill was shut down in the aftermath of financial crisis 2008-2009 because it was no longer profitable. In these circumstances, a normal course of action is to evaluate whether the operation can be re-structured to be sustainable.
- 96) Dr. Kaplan analyses the benefits package, concluding at paragraph 17 that "as a consequence, and directly attributable to the benefits package that enabled PHP to fully re-enter the market, Resolute suffered lost profits through lower prices and lower shipments than it otherwise would have enjoyed."³⁹
- 97) Implying that the benefits package *alone* caused the re-entry of PHP is a far-reaching statement that ignores the expertise that Pacific West Commercial Corporation ("PWCC") has brought to the operation. Although Dr. Kaplan repeatedly emphasizes the PWCC's goal of achieving a low-cost structure under PWCC's ownership, there is no shame in a new owner saying that it will use their expertise and network to re-structure the operations to make it as cost-effective as they can. Previous ownership did not have the capacity to carry out these types of changes, and no new owner would consider re-structuring to be only slightly more cost competitive.
- 98) Dr. Kaplan lists the components of the CAD 124.5 million benefits package without commenting how and when each component is utilized, which explain part the reason behind the mill's re-entry and continued existence.⁴⁰ [REDACTED]
- 99) It is worth highlighting a few financial items relevant to the re-structuring plan:
- Much commentary is targeted at power cost,⁴² but Dr. Kaplan focuses solely on the "reduced" power costs of PHP compared what the former owner used to pay.⁴³ Neither his report nor the Memorial addresses the other aspects of the electricity pricing mechanism negotiated between PHP and NSPI. For example,

³⁸ Kaplan Report, ¶ 14.

³⁹ Kaplan Report, ¶¶ 18-33.

⁴⁰ Kaplan Report, ¶ 24.

⁴¹ C-163, [REDACTED]

⁴² *Resolute Forest Products Inc. v. Government of Canada* (UNCITRAL) Claimant's Memorial, 28 December 2019, pp. 17-21.

⁴³ Kaplan Report, ¶ 24.

⁴⁷ On per ton basis: Sales – Discounts – = Net Sales Price– Logistics Costs = Ex-Mill price

Table 6-1

6.3 Supply Curves

100) Dr. Kaplan's illustration at paragraphs 43-47 of stepped SC paper supply curves – with and without Port Hawkesbury re-entry - remains theoretical, and isolated from the dynamics of the paper industry. Those dynamics include the following:

- **CM Paper Capacity:** Port Hawkesbury PM2 re-entry constitutes only a part of the industry's capacity development during 2012-2014 and cannot therefore possibly be accountable for all of the market's reactions at that time. With the restart of Port Hawkesbury and the closures of the Sarto and Grand Mère mills, SC paper capacity in North America did not grow by 360,000 Mt in 2012, but rather by +185,000 Mt and by an additional 100,000 Mt in 2013 with the restart of Catalyst Paper's Powell River PM10 offset against the grade change of Irving St. John PM2. At the same time, the capacity of other UM papers⁴⁸ increased by +535,000 and +75,000 Mt in 2012 and 2013, respectively (Table 3-1)⁴⁹.
- **Cost Position of Resolute's SC Mills:** Port Hawkesbury PM2 remained off-line from September 2011 through October 2012. Its exit and re-entry did not alter the relative cost position of Resolute's SC-paper machines, which stayed in the third or fourth quartile of the stepped supply curve (i.e. the least cost competitive section of the industry-wide supply curve) throughout the study period

⁴⁸ Non-supered grades including super-bright, high-bright, bulky book, lightweight mechanical printing papers.

⁴⁹ SC paper capacity grew by 185,000 metric tons in 2012 as a result of Port Hawkesbury's PM2 re-entry (+360,000 t/a), Resolute Grand Mère, Laurentide PM 10 closure (-130,000 t/a) and Verso Sartell mill PM3 closure (-50,000 t/a). In the following year, SC paper capacity grew by an additional 100,000 t/a by reason of Catalyst Paper's Powell River PM10 restart (+160,000 t/a) and Irving St. John PM2 (-60,000 t/a) grade changes. Capacity of other UM papers increased in 2012 by 535,000 tons as a result of grade changes at Nippon Paper's (Weyerhaeuser) Longview mill PM2 (+410,000 t/a) and Catalyst, Powell River PM11 (+185,000 t/a), White Birch's Quebec City PM3 restart (+90,000 t/a) and Resolute Fort Frances PM 7 shut-down (-155,000 t/a). In 2013, capacity continued to increase by 75,000 t/a resulting from the restart of Resolute's Dolbeau PM5 (+145,000 t/a), grade change at Resolute's Thunder Bay mill (-135,000 t/a), grade change at Catalysts Powell River PM9 (+120,000 t/a) and grade change at Catalyst's Crofton mill (-55,000 t/a).

(reference is made to Section 4 of this report). In a market that decreases, the affected suppliers that are forced out of the market will typically be the least competitive. This is to say that Resolute's paper machines were the higher cost players all along, facing the risk of dropping out irrespective of whether Port Hawkesbury's cost position was on the lower cost sections of the supply curve.

Table 6-2
UM Paper Capacity Changes in North America 2010-2018

Company/mill	Capacity change 1,000 Mt	Year/qtr	Remarks
Kruger, Trois Rivières	-70	2010/II	PM 6 shut-down
Abitibi-Bowater, Kenogami	4	2010/-	PM 7 capacity exp.
St. Mary's, Sault Ste Marie	0	2010/-	PM 5 shut-down & restart
St. Mary's, Sault Ste Marie	-130	2011/II	PM 5 shut-down
Resolute, Kenogami	-75	2011/IV	PM 6 shut-down
Verso, Sartell	-50	2011/IV	PM 1 shut-down
Verso, Sartell	-50	2011/-	PM 2 shut-down
Port Hawkesbury, Point Tupper	-360	2011/IV	PM 2 idled
Verso, Sartell	-50	2012/II	PM 3 shut-down
Port Hawkesbury, Point Tupper	+360	2012/IV	PM 2 restart
Resolute, Laurentide	-130	2012/IV	PM 10 shut-down
Catalyst, Powell River	160	2013/-	PM 10 grade change from SNC
Irving, St. John	-60	2013/-	PM 2 grade change to high-brite
UPM, Madison	-220	2016/II	PM 3 shut-down
Verso, Duluth	5	2016/-	PM 1 capacity expansion

- **Surge in SC Paper Demand in 2013:** The impact of Port Hawkesbury's re-entry on the North American SC paper market balances has remained limited because of the rapid growth of SC paper demand in 2013. During the year of Port Hawkesbury's re-entry, SC paper demand in North America increased +238,000 Mt or +14%/a), which was made up almost exclusively by the demand for SC-A/A+ paper (+225,000 Mt, or +20.9%/a). At the same time, shipments from North American SC paper mills increased by 221,000 tons, meaning that they were the main beneficiaries of the demand growth. We therefore disagree with Dr. Kaplan when he writes: "This significant addition of supply was not due to, or met with, a significant increase in demand, thus, prices for SCP fell."⁵⁰

⁵⁰ Kaplan Report, ¶ 50.

- **Fall in Demand for CM:** The sudden growth in SC-paper demand in 2013 coincided with an important fall in demand and shipments of CM in North America (declined by 238,000 and 187,000 Mt respectively), while imports of CM dropped by 50,000 Mt.

6.4 Prices

101) According to Dr. Kaplan, the renewed supply of Port Hawkesbury's paper, on its own and without any other market effects, led to a USD 45/metric ton price decline in early 2013,⁵¹ which also caused a permanent and sustained drop in prices. This mechanistic conception of market dynamics may have convinced the USITC, but we do not find it convincing as it lacks a full consideration of other market effects beyond the temporary 6-month price drop. A few counter-arguments:

- Simple graphical examination of supply and price interrelationships leads to erroneous interpretation of causal relationships. Dr. Kaplan finds the re-entry of PM2 in October 2012 to be the cause of a substantial price decrease in January 2013. However, the closure of Port Hawkesbury PM2 in September 2011 did not lead to the opposite, which would have been a logical consequence of tightening supply. On the contrary, prices declined by USD 20/metric ton by the end of 2011 which, according to this scheme, does not make sense.
- It is highly likely that there are other intervening factors both on the demand and supply side that have contributed to the changes in SC paper price. Meaningful demand determinants could be economic development (GDP growth), or advertising expenditure. Factors affecting the supply, including cost of wood or power, or CAD/USD exchange rate, could partly explain the changes in SC paper price.
- Weakening business cycle might as well have been the main reason for decreasing prices from late-2012 through mid-2013 (Figure 3-3). Real GDP growth in the USA leveled at 1.4%/a in Q4/2012-Q2/2013, denoting slower than average growth as longer-term growth over the period 2010-2015 was 2.3%/a on average. The weaker economy has likely been the main trigger for downgrading from CM to SC-papers in 2013 [REDACTED]⁵²
- The weakening economy is also reflected in advertising expenditures – which is one of the key determinants of the advertising-driven SC-paper market. According to Zenith, the growth of advertising expenditure in North America declined from 2.5% in 2012 to 2.1% in 2013. Growth of paper-based advertising expenditure remained at negative 7%/a level.

102) We note that Dr. Kaplan's statement is not caveated by the well-known assumption in economics of *ceteris paribus* (all thing being equal), which is meant to make clear that all everything outside discussion of PHP's re-entry, including all of the above market shocks, is held constant and nothing interferes with the that market effect.

[REDACTED]

⁵¹ Kaplan Report, ¶¶ 48-49.

⁵² R-242, [REDACTED] RFP0009500-01.



Source: Bureau of Economic Analysis, RISI

6.5 Conclusions

- 103) Dr. Kaplan's expert witness report presents a purely theoretical economics framework for the case in question. The report presents a traditional supply-demand schedule and evaluates the possible impact of Port Hawkesbury PM2 re-entry divorced from all other market forces affecting supply and demand.
- 104) Dr. Kaplan equates the Port Hawkesbury reopening with the observed price decline in early 2013. The report does not, however, consider any other factors that could have contributed to, or fully caused the temporary price decline in 2013 or future pricing. Port Hawkesbury PM2 re-entry coincided with the rapid cyclical expansion of demand in North America, and therefore had little or no significant effect on regional supply/demand balances and prices. The Kaplan report did not specifically touch on the normalization of prices during the second half of 2013.
- 105) The Kaplan report concludes that the Nova Scotia Government actions have impacted adversely the profitability of Resolute's three mills, Kénogami, Dolbeau and Laurentide. However, the exit and re-entry of the Port Hawkesbury PM2 has not altered the relative cost position of Resolute's SC/SNC paper machines, which have been in the least cost competitive section of the industry-wide supply curve prior to and following PHP's re-entry.
- 106) The re-entry of PHP's PM2 has thus had no significant effect on long-term SC paper equilibrium price in North America. Weakening economy from Q4/2012 through Q2/2013 and increasing demand for SC-A paper due to grade substitution from CM #5 to SC-A have all contributed to price development in 2013 and beyond. In fact, prices recovered in the mid-2013 to pre-2013 levels, indicating that PHP re-entered the market at a right time, causing no price-driven damage to its competitors.

7 REVIEW OF THE HAUSMAN REPORT

7.1 Some Background Notes

- 107) Dr Hausman has adopted the “forecasting approach” for estimating “but-for” prices. Proper application of the “forecasting approach” would preconceive using observed values of the independent variables during the impact period, instead of envisioned future development of the price variables, as Dr. Hausman has done.
- 108) Dr. Hausman’s exclusive use of the “forecasting approach” is insufficient to provide confidence that his model is capturing the actual impact of the event or breach.
- 109) Dr. Hausman uses only the RISI price forecast as a basis for estimating “but-for” prices for the period 2013-2016. In our opinion, the RISI price forecast constitutes a highly speculative and weak basis for estimating “but-for” prices in the face of other models that would minimize the biases from false market assumptions and factors affecting prices during the impact period.
- 110) Dr. Hausman has calculated the total damages incurred by Resolute Forest Products by aggregating data from the three mills in scope (Kénogami, Dolbeau, Laurentide). In a nutshell, Dr. Hausman calculates expected future profits based on forecasts and compares those to the actual profits to arrive at delta that represents the damages caused by the re-entry of PHP to the market. This is done for 2013-2017. For 2018-2028 Dr. Hausman forecasts a terminal period damage.
- 111) The adopted forecasting approach involves the following problems:
- Forecasting approach can be used only when the factors affecting prices are specified and known with certainty (data available from history); one should make sure that the underlying structural parameters are the same for the reference period and in the “but-for” world, and that the regression specification adequately characterizes the nature of competition in both the impact and control periods.
 - The underlying models that RISI uses are not reported (neither model specifications nor model evaluation statistics/diagnostics) and thus are not available for assessment.
 - The forecast is merely an extrapolation of certain salient assumptions. RISI’s price forecasts are based on assumptions/scenarios on economic development, demand, capacities etc. made in October 2011. In retrospect, many of these assumptions have been proven wrong (Table 7-1).

112)

113)

114)

115)

116) In summary, the RISI forecast constitutes a weak basis for estimating “but-for” prices for the period 2012-2016. Dr. Hausman’s approach does not minimize the bias originating from false assumptions regarding the business environment during the impact period.

7.2 Duration of the Price Impact Period

117) The damages calculation timeframe is not justified. Dr. Hausman himself has confidence to believe that the industry will exist as such for the next 10 years, but beyond that he is uncertain. This does not justify why the damages calculation can be computed from 2013 to 2018 on the RISI model or through 2028 using Dr. Hausman’s own assumption of profits.

118) Dr. Hausman has projected the 2018-2028 actual and expected profits based on an annual [REDACTED] decline in profits from each mill’s 2017 actual and expected profits.⁵³ Such an extension is not justified as there is no guarantee that any of

⁵³ Expert Witness Report of Jerry Hausmann, Ph.D. (December 28, 2018) (“Hausman Report II”), ¶ 42.

Resolute's SC-paper machines (or anyone else's for that matter) will be operating in 2028:

- a) Following the trend of high-gloss (SC-A/SC- B) production in North America over the past five years (-78,000 Mt/a), the region's production by 2028 would be 780,000 Mt smaller than today, i.e. 460,000 Mt.
- b) Demand for SC-paper in North America has declined even faster, from 1.93 million Mt in 2013 to 1.35 million Mt in 2018 (-118,000 Mt/a). Extrapolating this trend through 2028 would lead us to a demand volume of 170,000 Mt by 2028.
- c) As shown in Annex I, the cost position of Dolbeau and Laurentide paper machines was relatively poor already prior to 2015, and therefore their long-term survival up to 2028 and beyond cannot be assured.⁵⁴

7.3 Other Points of Consideration

- 119) Dr. Hausman defines profits as the contribution margin, or "*incremental profits that firm receives from a sale minus incremental costs of producing the good*",⁵⁵ or Sales – Variable Costs. In the long run there are only variable costs, but in the short run firms bear both variable and fixed costs. It is not clear why Dr. Hausman only considers variable costs for his damages calculation. Dr. Hausman makes a broad generalization by saying that SC-papers are substitutes, therefore price changes on SC-A paper are applicable to other grades.⁵⁶ This assumption totally ignores supply-demand factors on price formation and technological improvements in production.
- 120) Dr. Hausman states that a capacity increase of approximately 25 percent for the SCP market will typically lead to a significant price decrease depending on the price elasticity of demand, holding other economic factors constant.⁵⁷ In reality, though, SC-A producers successfully sought a USD 50/ton price increase for July 2013, suggesting a surprisingly tight SC-A paper market. The tightness was mainly due to the fact that many CM buyers shifted down to SC-A grades, particularly the SC-A+ grades produced by Irving and Port Hawkesbury. RISI did not predict this demand shift or its effect on prices.
- 121) In his damages calculation, Dr. Hausman applies the YoY price change % to the Mill Net price, which is defined as Net Sales – Logistics Cost.⁵⁸ He implicitly assumes that logistics costs increase at the same time as sales price.
- 122) The RISI forecast also contains a variable cost forecast for US Uncoated Mechanical Paper making. Dr. Hausman claims that year-on-year the variable costs of Resolute don't change much,⁵⁹ yet he is comfortable using a US-based cyclical RISI forecast to calculate *expected* variable costs for a Canadian producer given large deviations between year on year basis (Table 7-2).

⁵⁴ Hausman Report II, ¶ 43.

⁵⁵ Hausman Report II, ¶ 20.

⁵⁶ Hausman Report II, ¶ 24.

⁵⁷ Hausman Report II, ¶ 25.

⁵⁸ Hausman Report II, ¶¶ 26-27.

⁵⁹ Hausman Report II, ¶ 32.

Table 7-7-2
RISI Uncoated Mechanical Paper Variable Cost Forecast, USD / t.

Year	2011	2012	2013	2014	2015	2016
Change YoY %	7.2%	1.0%	3.8%	0.8%	3.3%	-1.8%

- 123) Dr. Hausman's profit calculation uses expected costs, actual shipments, and expected prices.⁶⁰ Further justification of his use of actuals together with forecasts is needed, particularly given Resolute's understanding that it may be unable to pass along increases in its operating costs to their customers because its mill's ability to increase prices is determined by industry supply and demand, rather than changes in the cost of raw materials.⁶¹
- 124) Finally, for present value calculations Dr. Hausman uses WACC without giving breakdown of its components.⁶² Resolute Group WACC is not necessarily appropriate discount rate for an individual operation.

7.4 Conclusions

- 125) Use of the RISI price forecasts from October 2011 constitutes a weak basis for estimating "but-for" prices for a market, that has undergone turbulent and unforeseeable changes during the alleged impact period from 2013 up to today.
- 126) Likewise, the extension of the impact period up to 2028 is not justified. The cost position of Resolute's paper machines was relatively poor already prior to 2015, and their survival in a declining market up to 2028 cannot be assured.

⁶⁰ Hausman Report II, ¶ 41.

⁶¹ R-241, AbitibiBowater Inc., Annual Report for the Fiscal Year Ended December 31, 2011 (Form 10-K), p. 14.

⁶² Hausman Report II, ¶ 44.

Annex I Qualifications

Saara Söderberg
VP Industry



Effective project leadership skills with extensive expertise on areas such as operational excellence, corporate planning, strategy development, technical and operational performance, due diligence, and investment analysis. Excellent client relationship skills, with strong ability to identify, communicate and discuss business development opportunities and deliverables of a consulting engagement with the most senior levels of management within a client's organization. Extensive problem solving skills, with strong insight and understanding, ability to identify core issues in complex business challenges, to frame analyses and to prioritize efficiently allowing timely execution of activities.

International Experience:

Key Expertise: Management consulting and industry experience in the forest industry cluster in Europe and North America

Language Skills: Finnish, English, Swedish (Italian, German)

EDUCATION

Paper Technology, Paper Converting, Business Strategies and International Marketing, Helsinki University of Technology, 1988-1994

WORK EXPERIENCE

VP Industry, Pöyry Management Consulting Oy, 2018-present

VP Strategy, Suominen Corporation, 2017-2018

VP Product Management and Marketing, Suominen Corporation, 2013-2017

Director, Pöyry Management Consulting Oy, 2010-2013

Vice President, Global Tissue Business Line, Pöyry Industry Oy, 2009-2009

Research Associate, The Finnish Pulp and Paper Research Institute, Printing Technology, 1996-1997

Internal management training program, Tetra Pak Oy, Finland, 1994-1996

Master's Thesis, UPM-Kymmene, Kaukas Paper Mill, 1994-1994

PROJECT EXPERIENCE

Operational excellence in an European mill's operations, Confidential, 01/2012-12/2012

Business division strategy, Confidential, 01/2012-12/2012

Project viability analysis, Confidential, 01/2012-12/2012

Due Diligence of a Latin American specialty paper producer, Confidential, 01/2011-12/2011

Asset redeployment of s-d European production sites, Confidential, 01/2011-12/2011

Performance improvement of a North American pulp producer, Confidential, 01/2008-12/2008

Investment strategy for a private equity investor, Confidential, 01/2007-12/2007

Operations improvement analysis for a major North American pulp and paper company, Confidential, 01/2006-12/2006

Development of business strategy for a major pulp and paper chemical's company., Confidential, 01/2005-12/2005

Development of business strategy for a major pulp and paper chemical's company., Confidential, 01/2004-12/2004

PUBLIC VERSION

Newsprint strategy in Russia for a global pulp and paper corporation, Confidential, 01/2003-12/2003

Business Strategy development in China for a global pulp and paper corporation, Confidential, 01/2003-12/2003

Economical and technical feasibility of a woodfree paper mill in Europe, Confidential, 01/2003-12/2003

Advisory services to a North American pulp and paper company in a divestment, Confidential, 01/2003-12/2003

Anticipated trends in the global graphic paper industry, Confidential, 01/2003-12/2003

Pulp and paper industry markets for pigments in selected Southern European regions., Confidential, 01/2003-12/2003

Business and technical due diligence of a specialty paper company, Confidential, 01/2003-12/2003

Cost competitiveness and asset quality benchmarking analysis of global coated woodfree paper producers, Confidential, 01/2003-12/2003

Cost competitiveness and asset quality benchmarking analysis of global coated woodcontaining paper producers, Confidential, 01/2003-12/2003

Cost competitiveness and asset quality benchmarking analysis of global SC paper producers, Confidential, 01/2003-12/2003

Cost competitiveness analysis of selected coated woodfree and coated groundwood paper producers, Confidential, 01/2003-12/2003

Cost competitiveness and asset quality benchmarking analyses of newsprint producers in Western Europe; of global coated woodfree paper producers; of global coated woodcontaining paper producers; of global SC paper producers; of global board producers; of global specialty paper producers; of global pulp producers; of an envelope paper producer, Multinational, 01/2002-12/2002

Evaluation of development possibilities of a multi-grade paper machine; of feasibility of a paper mill development project; of investment opportunities of a global pulp and paper company on SC paper market; of business development options for a global forest products corporation in publishing papers, Multinational, 01/2002-12/2002

Feasibility study of a coated wood-containing paper machine rebuild in Europe; of a wood-containing paper machine rebuild in Europe, Confidential, 01/2002-12/2002

Growth strategy of a global pulp and paper company in a selected market, Confidential, 01/2002-12/2002

Pre-feasibility study of a wood-containing paper production line in Europe, Confidential, 01/2002-12/2002

Business strategy development for a North American pulp and paper company, Confidential, 01/2002-12/2002

Burgo Verzuolo PM9 Project, Italy, 02/2000-02/2002

Technical evaluation and valuation of an acquisition opportunity in Europe; Cost competitiveness assessment of SC-A and SC-B paper producers in the Western European and North American markets; Positioning analysis for FPC grades; Cost competitiveness assessment of coated wood-containing paper producers in the W-E and N-A markets; Analysis of rebuild opportunities; Cost competitiveness of selected standard newsprint producers; Cost competitiveness of brown and grey envelope paper in Europe; Asset quality and operating performance analysis of several paper and board grades, Multinational, 01/1999-12/1999

Business opportunities in Southern cone; Evaluation of competitive environment in the Western European newsprint industry; Assessment of strategic advantages and threats; Development of board machine concept – techno-economic report; Pre-feasibility study for a new LWC-line; Maintenance development analysis, Multinational, 01/1998-12/1998

PUBLIC VERSION

Asset quality and operating performance studies of different Western European newsprint and SC paper producers; of a Western European wood-containing paper grades producer; of a Western European packaging grade producer, Multinational, 01/1997-12/1997

Cost competitiveness, asset quality and operating performance analyses of selected specialty paper producers in the Western European market; and of selected packaging board producers in the Western European market, Multinational, 01/1997-12/1997

Several cost benchmarking analyses of selected Western European producers of wood-containing paper grades, Confidential, 01/1997-12/1997

Cost competitiveness analyses of selected Western European producers of newsprint, book paper, directory paper, SC, LWC and MWC paper; of selected newsprint producers globally; of selected envelope paper producers in the Western European market, Multinational, 01/1997-12/1997

Investment feasibility studies of several Western European paper or packaging grade producers, Confidential, 06/1997-09/1997

LATEST PUBLICATIONS AND PRESENTATIONS

Speeches and presentations in domestic and international conferences

SELECTED AWARDS AND COMPETITIONS

SELECTED PROFESSIONAL ASSOCIATIONS

Member, The Finnish Paper Engineers' Association (PI), 1994-present



TIMO SUHONEN

Education

M.Sc. (For.), University of Helsinki, 1983
M.Sc. (Agr. & For.), University of Helsinki, 1985
Lic. Sc. (Agr. & For), University of Helsinki

Current Position

Principal

Languages

Finnish, English, Swedish, (German)

Specialty

Strategic/development plans for the pulp and paper industry; fibre strategies; market research; forest economics; development economics; econometric analysis and forecasting/scenarios

Pöyry Experience

Mr. Suhonen joined the Jaakko Pöyry Group in 1981. Since then, he has worked in various assignments and positions in the field of market research, strategy and business development. Mr. Suhonen has been involved in important strategic development studies for the Asia-Pacific, European and North American pulp and paper industry, and he is very familiar with the market situation in these regions. He is also well acquainted with the economic constraints in developing countries, and has a long record of projects carried out for and in collaboration with international and bilateral development organisations such as the World Bank, Asian Development Bank, UNIDO and FINNIDA. Mr. Suhonen has participated in a number of national forestry master plan projects and forest industry development & restructuring programs.

During 1992-1995, Mr Suhonen was assigned as Manager, Consulting Services for Jaakko Pöyry (Asia-Pacific) Pte Ltd in Singapore. He was nominated Vice President, Information Management of Jaakko Pöyry Consulting, Finland in 1997. Since early 2000, he has worked as Associate Principal or Principal for Pulp, Paper, Packaging and Hygiene Business Area at Pöyry Management Consulting Oy, headquartered in Vantaa, Finland.

Mr Suhonen has been responsible for the following selected studies and types of engagements:

Previous Experience

- 1996-2019 **Major individual engagements:**
- Mill Expansion Plan for a Chinese Paper Mill
 - Board Machine Relocation Plan for a Chinese Client
 - Strategic Opportunities for a Russian Forest Products Company
 - Finnish Wood Market (*expert witness report re wood cartel in Finland*)
 - Econometric Analysis of Market Power in the Finnish Wood Market (*expert witness report re wood cartel in Finland*)
 - Prefeasibility Study for a Testliner Mill in Russia
 - Markedsanalyse Skogsnäring in Norge (*strategic analysis for Norway's forest industry*)
 - Graphic Paper Market Overview (*expert witness report for an arbitration case*)
 - Strategic Opportunities in Dissolving Pulp Markets
 - Strategic Opportunity Study – Packaging Machinery Industry
 - Analysis of Business Plan for an Indonesian Pulp and Paper Producer
 - Chemical Pulp Industry Review
 - Fibre raw material supply for a molded fibre packaging producer
 - Cartonboard markets in Asia-Pacific
 - Availability of recycled fibre for a Central European tissue paper mill
 - Klargörande av konjunkturcykel
 - IPO Documents /Support Study
 - Econometric Study: Impact of Exchange Rate Variations on Pulp Prices
 - Global Fibre Strategy
 - Development Strategy for Forest Industry in Tyumen
 - Due Diligence for an European Packaging Paper Mill
 - Long-term Strategy for a Forest Products Company
 - Business Plan for a Publication Paper Mill
 - Feasibility Study for a Greenfield Paper Mill
 - Feasibility Study for a Pulp Mill in China
 - Prefeas. Study for a Pulp Mill/Wood Processing Plant in the Baltic Region
 - Business Opportunities in the Packaging Machinery Industry
 - Business Opportunities for Offshore Companies in Asia-Pacific
 - Strategy Seminars
 - Cyclical and Trend Price Forecasts for Pulp & Paper
 - Fibre Strategy Studies
 - Business Opportunities for Folding Carton Converting in China
 - Business Opportunities for a Dissolving Pulp Mill in Asia
 - Life-cycle Analysis for Selected Pulp Grades

Multi-client studies:

- World Paper Markets up to 2025 (1996, 1999, 2002, 2005, 2008, 2011, 2014 and 2017 updates)
- World Fibre Outlook up to 2025 (1997, 2000, 2003, 2006, 2009, 2012, 2015 and 2018 updates)
- Value of Production Adjustments
- Pulp and Paper Industry Investment Forecast up to 2002
- Future of the Indian Pulp and Paper Industry
- Dynamics of the Tissue Paper Business
- Is a Global Long-Term Fibre Shortage Ahead?

1992-1995

Major individual engagements:

- Asia-Pacific Cartonboard Market Analysis
- Viability Study for a Newsprint Mill in Malaysia
- Facility and Pre-engineering Study for a Woodfree Paper Mill in China
- Availability, Supply and Costs of RCP and Pulpwood for Newsprint Production in the UK
- Information Memoranda for Pulp/Paper Projects in India & Southeast Asia
- Viability Studies for Pulp/Paper Projects in Southeast Asia and India
- Tissue Paper Markets in Thailand/Southeast Asia/Asia-Pacific
- Prefeasibility Study for a Plywood Mill in Sichuan, China
- Carbonless Copy Paper Markets in the Asia-Pacific Region
- Marketing Development/Operation Improvement for a Pulp & Paper Mill
- Valuation of a Pulp & Paper Mill in Asia-Pacific
- Boxboard Markets in Malaysia and Singapore
- Market Survey of Light-Shade Linerboards in Asia-Pacific
- Feasibility Study for a Fine Paper Project in Thailand
- Information Memorandum/Pulp Mill Project in Indonesia
- Feasibility Study for a Newsprint Mill in Malaysia
- Pulp and Paper Industry Development Plan for Thailand
- Feasibility Study for a Pulp Mill in Laos

Multi-client Studies:

- Business Opportunities in the Asia-Pacific Forest Products Sector
- Pulp and Waste Paper Markets in Asia-Pacific

- 1988-1991 **Major individual engagements:**
- Outlook for World Sack Paper Markets
 - Technical Evaluation of a Pulp and Paper Company in Canada
 - Restructuring Programme for the Tanzanian Forest Industry
 - Tianjin Pulp and Paper Subsector Development Strategy
 - Strategy and Development Plan for Ust-Ilimsk LPK
 - Prefeasibility Study for Straw-based Pulp Mill in Canada
 - Prefeasibility Study for a Possible Use of the Wood Surplus in Denmark
 - Global Investment Opportunities in Selected Pulp and Paper Grades
 - The Philippine Pulp and Paper Subsector Restructuring Programme
 - Analysis of the European Woodfree Printing Paper Markets
 - Market Study for Bagasse Based Cultural Paper Grades in Thailand
 - Assessment of Market Potential for Straw and Other Special Pulps
 - Master Plan for Forestry Development in the Philippines - Market Analysis
 - Evaluation of the Future Earning Capacity of a Philippine Paper Mill
 - Evaluation of Backing Paper Suppliers for the Self-adhesive Label Industry
 - Market Outlook for New Zealand-based Forest Products in the Pacific Rim
 - Market Prospects for Hardwood-Based Products in the Pacific Rim
 - Identification of Potential JV Partners in the Finnish Clothing Industry
 - Global Availability of Eucalyptus Pulp in the 1990s
 - Market Prospects for Selected Pulp and Paper Chemicals in Finland
 - Market Potential for Consistency Transmitters in the Pulp & Paper Industry
- 1986-87 Leave of absence (UNIDO assignment - Industrial Survey of the Sudan)
- 1981-85 **Major individual engagements:**
- Competitive Position of a Coated Woodfree Mill in Western Europe
 - Market Potential for Coated Printing Papers in W. Europe and N. America
 - Outlook for Imports of Uncoated Free Sheet and LWC Papers into the USA
 - Market Opportunities for Part Mechanical Data Papers
 - Development Plan for Forestry and Forest Industries in Guerrero, Mexico
 - Swedish Pulp and Paper Industry Towards the 1990s
 - World Markets for Newsprint up to 2000
- Multiclient study:**
- Long-Term Outlook for Printing and Writing Papers in Western Europe

Publications

Price Variable in Dynamic Consumption Models of Selected Paper Products: A Pooled Cross-section and Time Series Analysis. Thesis for the Degree of Master of Science in Forestry and Agriculture.

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Papermaking Science and Technology – Book 5, Mechanical Pulping. Future Outlook (together with Annikki Vehniäinen and Pekka Haikkala) ISBN 978-952-5216-35-6 (book 5), 2009

Articles

Printings/Writings – How Much Growth? PPI International. August 1984

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Paper Industry Shifting from Regional to a Global Market. Kemia-Kemi. Vol 33, 2006

Alle Zeichen auf Zuwachs. Harvest Magazin.12/2006

Massa- ja paperikonevalmistajan mahdollisuuksien maapallo. Optimi. 2/2007

Several articles in Pöyry Client Magazine Know How Wire from late 1990s to 2010

Lauri Tenhunen



Mr. Tenhunen works as a consultant in Pöyry Management Consulting predominantly in the space of financial and econometric analysis. Prior to joining Pöyry he worked for FactSet in London and consulted Nordic sell-side institutions and private equity investors on market data and financial modelling. At Capgemini Finland Oy he managed IT-projects. Mr. Tenhunen has a M.Sc. on Economics from Oulu Business School and is a CFA level II candidate. Having lived in Japan and China he speaks conversational Japanese and Mandarin Chinese.

International Experience: United Kingdom, China, Japan

Key Expertise: Market Data, DCF Analysis,

Language Skills: Chinese, Japanese, English, Finnish

EDUCATION

M.Sc. In Economics and Business Administration, University of Oulu 2009-2013.

Major: Economics. Minors: IT, Finance, Marketing, Chinese, Japanese.

Exchange studies at the Jiangxi University of Finance and Economics in Nanchang, China spring 2013. 50 ECTS of Information Processing Science Studies at University of Oulu 2007-2008.

RELEVANT WORK EXPERIENCE

Consultant, Pöyry Management Consulting Oy, 2018-

Senior Consultant, FactSet Europe Ltd, 2015-2017

Project Coordinator, Capgemini Finland Oy, 2014-2015

PROJECT EXPERIENCE

Commercial Due Diligence: Financial analysis (01-02/2018).

3 Greenfield Investment projects: DCF valuation (02-08/2018).

2 New Product Option Conversions: Profitability Analysis (09/2018-01/2019)

LATEST PUBLICATIONS AND PRESENTATIONS

SELECTED AWARDS AND COMPETITIONS

SELECTED PROFESSIONAL ASSOCIATIONS

Chairman of Finanssi ry, an association of 1500 students (2012).

Minna Luukka



Ms. Luukka works as a consultant in Pöyry Management Consulting predominantly in the space of technological, asset benchmarking and market analysis, especially in the fiber based packaging business. Ms. Luukka has a M.Sc. in Paper and Packaging Technology and Industrial Economics from Aalto University.

International Experience: Spain

Key Expertise: Asset Benchmarking, Cost Competitiveness, Market Data

Language Skills: English, Finnish, French, Spanish

EDUCATION

M.Sc. in Paper and Packaging Technology and Industrial Economics from Aalto University, Helsinki 2004-2012.

Major: Paper and Printing Technology Minors: Industrial Economics

Exchange studies at the Valencia University in Spain, spring 2009.

RELEVANT WORK EXPERIENCE

Consultant, Pöyry Management Consulting Oy, 2012-

Shift Supervisor, Stora Enso 2011-2012

PROJECT EXPERIENCE

Cost competitiveness of global cartonboard industry

Identification of business opportunities related to a paper machine conversion

Competitive environment in recycled containerboard

Commercial Due Diligence: Asset benchmarking

LATEST PUBLICATIONS AND PRESENTATIONS

Co-author: Effect of water vapor in air on thermal degradation of paper at high temperature.

Polymer Degradation and Stability Volume 99, Pages 283–289

SELECTED AWARDS AND COMPETITIONS

SELECTED PROFESSIONAL ASSOCIATIONS

Operations inspector, Housing Company 2016-2018

Chairman & Secretary, Tenants' Committee, 2010-2012

Representative, Study Committee of Forest Product Guild, 2006

Annex II
Estimated Supply Curves – North American SC-paper Market 2010-2015

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Annex III
List of Abbreviations

CAD	Canadian Dollar
CFS	Coated Free Sheet
CNS	Confederation des Syndicats Nationaux
CM	Coated Mechanical
EUR	Euro
GNS	Government of Nova Scotia
ISO	International Organization for Standardization
lb	Pounds
LWC	Light Weight Coated
M	Million
Mt	Metric tons
MWC	Medium Weight Coated
NAFTA	North American Free Trade Agreement
NSPI	Nova Scotia Power Inc.
PHP	Port Hawkesbury Paper
PM	Paper Machine
PPPC	Pulp and Paper Products Council
PWCC	Pacific West Commercial Corporation
SC	Supercalendered
SCP	Supercalendered Paper
SNC	Soft Nip Calendered
UARB	Utility and Review Board
UFS	Uncoated Free Sheet
USD	US Dollar
VP	Vice President
Y-o-Y	Year-on-Year