



Applied Value Pulp & Paper Report

Quarterly Analysis

Q3, 2020

Applied Value

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Applied Value Pulp & Paper Report

Executive Summary & Introduction

Financial Benchmarking

Market Trends

COVID-19 Impacts on Tissue Segment

Applied Value Presentation



Applied Value's quarterly Pulp & Paper Report is focused on financial benchmarking and market trends affecting the industry

In this Pulp & Paper Report, Applied Value provides essential financial benchmarking focused on the last quarter and 12-month period, while also offering a brief update on the latest market trends.

The report provides a clear, understandable and useful analysis of the relative performance of a selection of global Pulp & Paper companies. Moreover, it provides an overview of the industry and relevant market trends that occurred during the quarter.

Growth

Industry growth last 4 guarters and LTM

Growth in the last quarter per company segment, and region



Operational Costs Breakdown

Operational Costs Breakdown latest quarter per company and region

Operational Costs development YoY per company and region



EBITDA Margins

Average Industry EBITDA margin LTM

EBITDA margin for the last quarter per company, segment and region



Market Trends

Pulp & Paper's market price movements

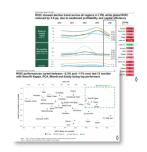
Commodity prices and currency movements



ROIC

ROIC per region for the last two 12month periods

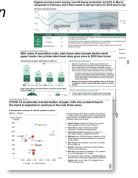
ROIC development per company and region for LTM



Special Section

Covid-19 impact on Tissue in EU and US

Tissue, different products market trends





The report is based on the financial performance of 27 leading Pulp & Paper companies from Europe, North America, Latin America & Asia Companies included in Financial Benchmarking in the Q3 2020 report

Market	Company	Revenue LTM (BEUR)	Country	Board	Paper	Tissue	Wood Products	Pulp	Other
90	Essity	11.8				✓			─ ✓
	UPM	8.8			✓		✓	✓	✓
	Stora Enso	8.8		✓	✓		✓	✓	✓
	Metsä Group	5.0		✓	✓	✓	✓	✓	✓
Europe	Ahlström-Munksjö	2.7			✓			✓	✓
丑	BillerudKorsnäs	2 .3		✓	✓			✓	✓
	Södra	2 .0	-		✓		✓		✓
	SCA	1 .9	_	✓	✓	✓	✓	✓	✓
	Holmen	■ 1.6	-	✓	✓		✓		✓
	International Paper	17.7		✓	✓		✓	✓	✓
America	WestRock	15.0		✓	✓				✓
	Packaging Corp. of America	5.7		✓	✓				✓
ner	Graphic Packaging	5.5		✓	✓				✓
₹	Sonoco	4.4		✓	✓				√
North	Domtar	4.0	*		✓	✓		✓	✓
2	Cascades	3.3	*	✓	✓	✓			✓
	Resolute Forest	2.3	*		✓	✓	✓	✓	✓
	Verso	■ 1.4			✓			✓	✓
	Suzano	4.5			✓			✓	✓
₽¥.	Empresas CMPC	4.5	*		✓		✓	✓	✓
	Klabin	■ 1.7		✓	✓		✓		✓
Asia	Oji Holding	11.3	•	✓	✓		✓		✓
	Nippon Paper	8.0	•	✓	✓		✓		✓
	Daio Paper	4.4	•	✓	√				✓
	Shanying	2.9	*.:	✓	√				√
	Shandong Sunpaper	2.8	*:	✓	√			✓	√
	Hokuetsu	1.9	•	✓	✓			✓	✓



The pulp market is in slow recovery, industry revenues and ROIC both showed slight increases compared to H1 2020

Financial Benchmarking: Highlights in Q3 2020

Key takeaways Top performers

Revenue Growth

- Overall industry revenue experienced a decrease of 12 pp. YoY, but all areas showed a revenue recovery compared to last quarter
- > Europe, North America, Asia and Latin America reported an average revenue decline by 12%, 12%, 11% and 14% respectively in Q3'20 compared to the previous year
- > Top performers of this quarter were Klabin, Shanying, and Graphic Packaging with revenue growth of 25.5%, 20.9% and 7.3% respectively



Profitability & Costs

- Quarterly EBITDA margins of most segments were still at a relatively stable level compared to Q2'20 while the upstream material pulp showed an increase due to recovery of the whole industry
- Majority of the European players managed to control their raw material cost in this quarter, SCA outperformed others with 38% in raw material costs
- Company performance on COGS over sales varied between 60% and 101% with an industry average of 78%, Klabin maintained the top position with COGS over sales at 54% in this quarter
- Average SG&A cost over sales was slightly reduced by 1 pp. compared to same period last year



Return On Invested Capital (ROIC)

- > Global industry average ROIC have decreased continuously in the last three quarters, average ROIC dropped by 4.4 pp. and ended at 4.1% for LTM
- Although Asia experienced a slight decline on NOPAT by 0.5 pp, Asia exceeded other regions with the highest regional ROIC this quarter at 5%
- > Shandong Sunpaper, Essity and PCA were top performers in LTM with ROIC at 11.1%, 11.1% and 9.9%, respectively







Q3 2020 was characterized by recovering market demand and moderate pulp prices, but most graphic paper prices still trended downward Market Trends: Highlights in Q3 2020

Key takeaways

Industry News

- > A hurricane in Q3'20 pummeled US Gulf Coast forcing closures of some pulp and paper mills in the area
- > Box makers reported increased demand from e-commerce, agriculture, and returning food service businesses, including restaurants and beverages; US linerboard prices remained unchanged for this guarter
- > US consumer tissue product sales grew consistently from the beginning of the year into early September, due to panic purchase during the pandemic, YoY growth of 15% 16% was achieved

Pulp Prices

- > Pulp prices leveled with the previous quarter and picked up YoY; Prices in Northern Europe, and Asia are up by approx. 2% and 6% while US east price was down slightly by 1% in one year
- Pulp demand in North America perked up in September due to a combination of downtime reduction and industry seasonality, China surged on continued restocking, and slumped in Europe; future pulp prices line may continue to be relatively flat through year-end

Graphic Paper & Packaging

- Most graphic paper prices continued declining in Q3'20, of which, newsprint has slumped 22 pp. in the past year; However, coated paper soared with 6pp. QoQ
- > Packaging paper prices saw a hike in Q3'20 and may maintain this upward trend as demand stabilizes

Commodities & Currencies

- Electricity price saw a steep increase in Europe in Q3'20
- > Oil price dropped by 3% during this quarter and ended at ~40 USD/barrel on the last day of September
- > Natural gas prices experienced 22% rapid growth in Europe and flattened in the United States with 3% decline
- Most currencies continued to appreciate against USD in this quarter: EUR, GBP, CNY and SEK were up by 6.7pp., 3.1 pp., 4.3 pp., and 7.8 pp. respectively; only BRL went down by 20.4 pp.

Note: WTI Spot Crude Oil prices are per 31 Mar 2020

Source: RISI, Interim & Annual Results.



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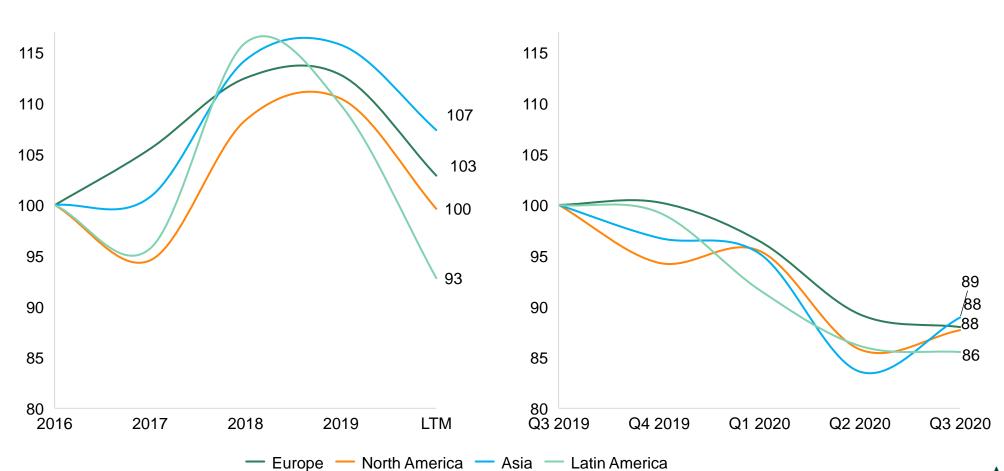




Global yearly revenue growth fell in LTM but all regional areas experienced a recovery in Q3 2020 compared to the previous quarter

Indexed Yearly Revenues, 2016-LTM (index 2016=100)

Indexed Quarterly Revenues, Q3'19-Q3'20 (index Q3'19=100)

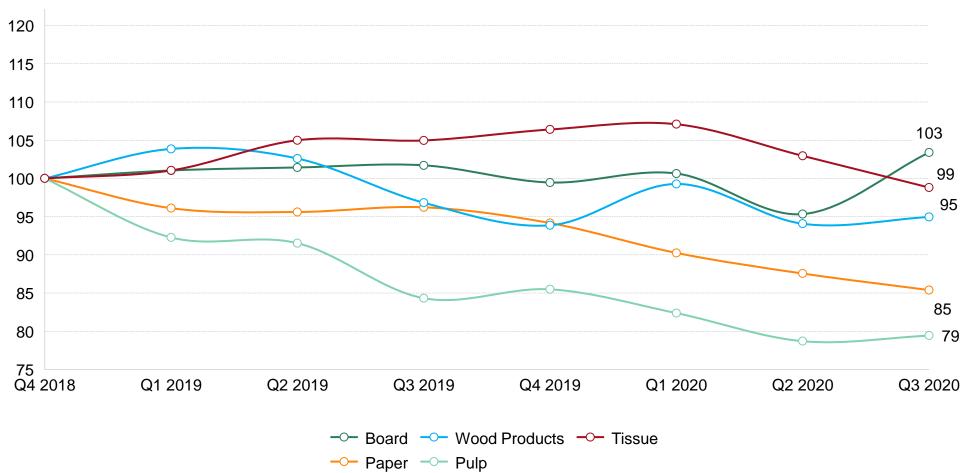


Note: Suzano has been excluded due to the merger with Fibria Source: Capital IQ, Annual & quarterly reports, Applied Value Analysis



Revenues in board products surpassed others with the greatest QoQ increase while other segments were stagnant

Indexed Quarterly Revenues by Segment, Q4'18 – Q3'20 (index Q4'18 =100)



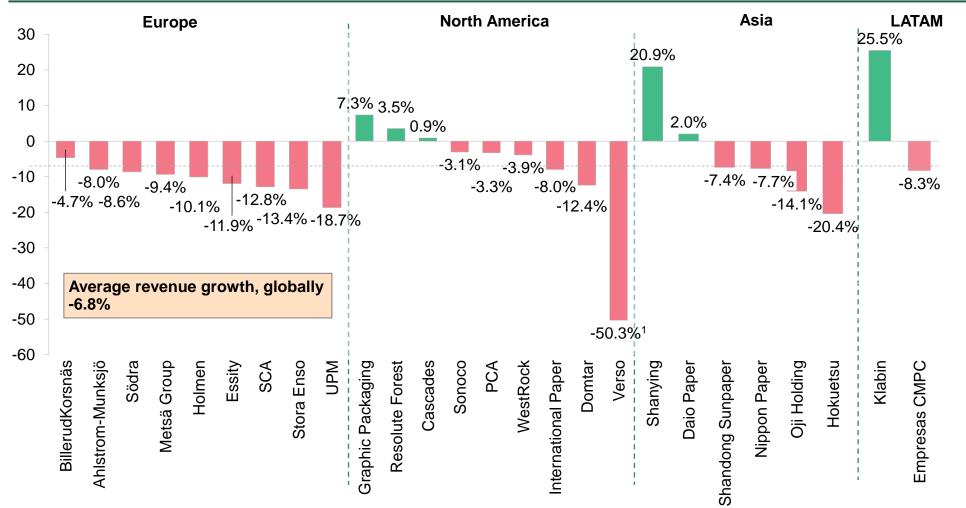
Note: The included companies differ from previous quarter

Source: Capital IQ, Applied Value Analysis



Few benchmarked companies showed positive revenue development, but Klabin outperformed the others at an 25.5% growth rate YoY

Revenue Growth, Q3'20 vs. Q3'19, %

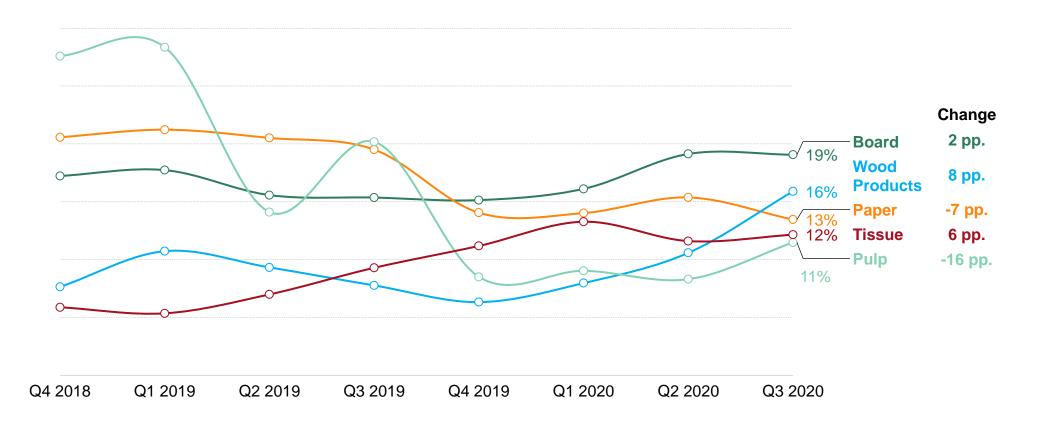


Note: 1) Significant decline due to sale of mills and mill closure Source: Interim & Annual Reports, Capital IQ, Applied Value Analysis



All segments were relatively stable compared to the last quarter, wood products segment saw the highest growth by 8 pp. to 16% in Q3'20

Quarterly EBITDA Margin by segment, Q4'18 – Q3'20, %



Note: The included companies differ from previous quarter

Source: Capital IQ, Applied Value Analysis



Only Europe showed a slight increase in EBITDA margin with growth of 0.1 pp. to 16.8% in Q3'20 while all other regions declined or stayed flat YoY

EBITDA margin by region, YoY



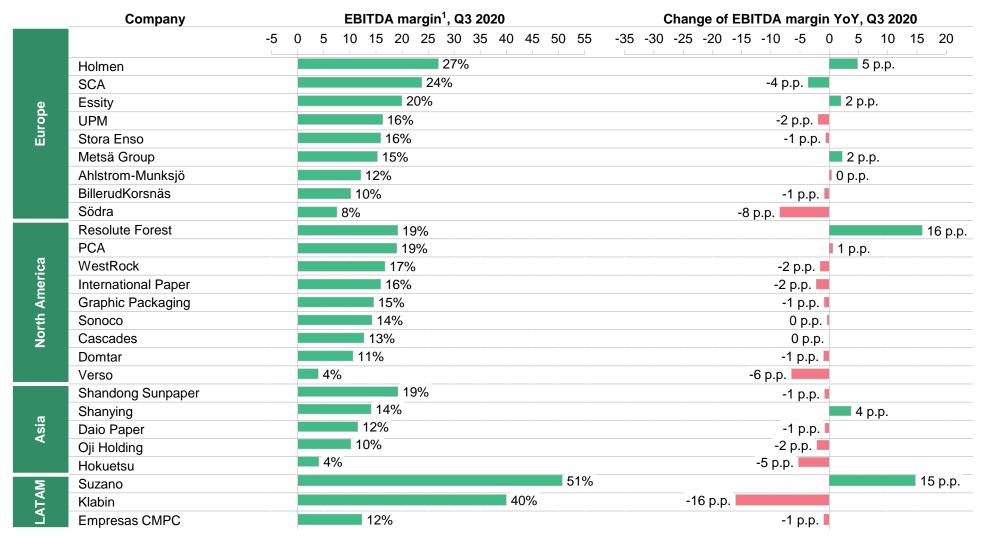
Source: Capital IQ, RISI, Annual & quarterly reports, Applied Value Analysis Nippion Paper Ebitda is not included due to lack of information for Q2 2020

Industry News

- UPM will permanently idle its Kaipola publication paper mill in Jämsä, Finland, by mid-December. The mill's closure will result in 720,000 tonnes/yr of graphic paper capacity being removed from the market
- SCA has decided to stop publication paper production and to invest \$165.4 million in the production of chemically pre-treated thermo-mechanical pulp (CTMP) at its Ortviken mill in Sweden
- Ahlstrom-Munksjö invests Euro 7 million into new coating machine for formaldehyde-free coating in Billingsfors, Sweden
- Domtar made the announcement to convert its Kingsport, Tennessee paper mill into the company's first containerboard facility with a capacity of 600,000 tons of recycled linerboard and corrugated
- Sonoco had signed an \$120 million cash agreement to sell its Europe contract packaging business to Prairie Industries Holdings
- Oji Holdings has started up a new 60,000 ton/yr tissue
 PM at its complex in Nantong, Jiangsu China



Most regions exhibited a negative trend in profitability from Q1 to Q3'20 except for a handful of companies in Europe

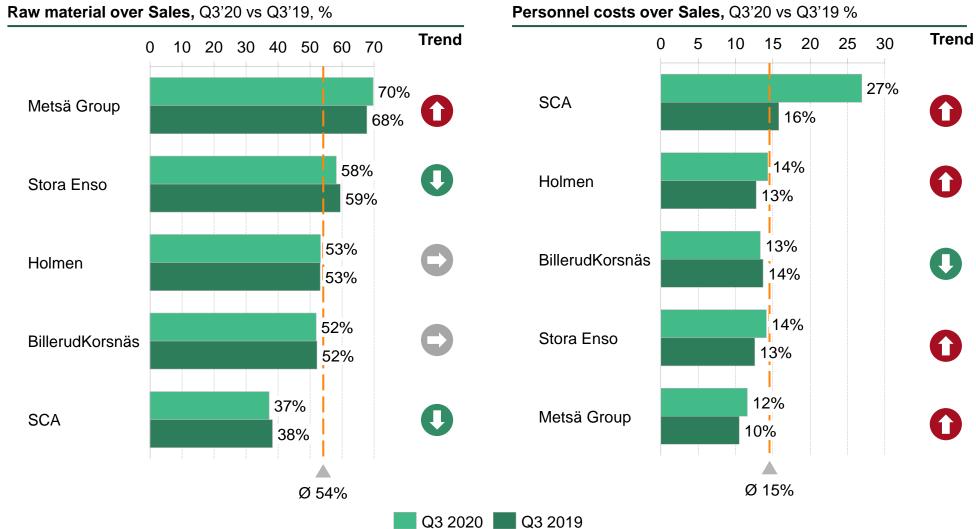


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Note: 1) Adjusted Margin

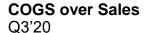


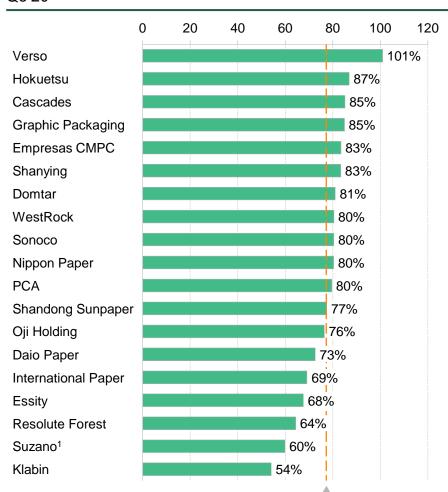
Most peers managed to stabilize raw material over sales, and SCA faced a large non-recurrent personnel cost due to termination of operation



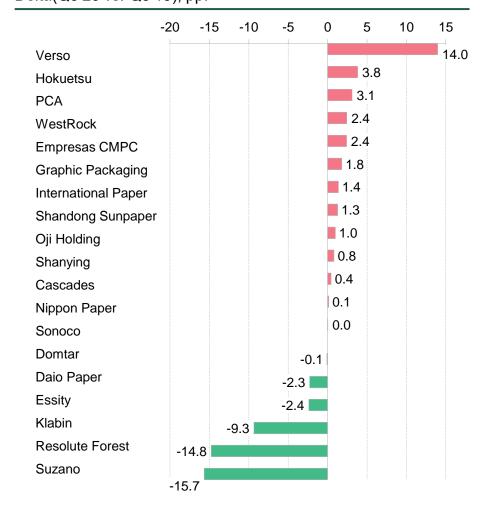


COGS over Sales varied among industry players and Resolute Forest had the largest reduction of COGS over sales by 14.8 pp. to 64% in Q3'20





COGS over Sales Development by Company Delta(Q3'20 vs. Q3'19), pp.



Ø 77%

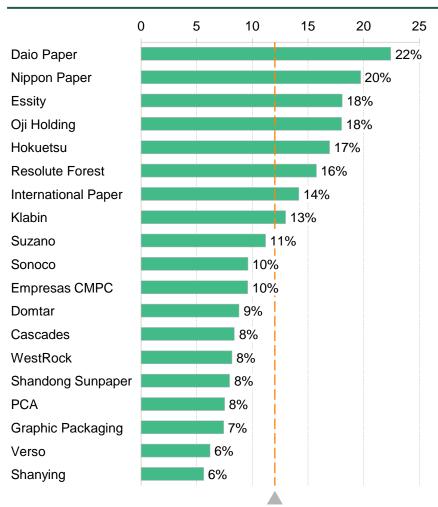
Note: 1) Suzano is incomparable due to merger with Fibria

Source: Capital IQ, Annual & quarterly reports, Applied Value Analysis

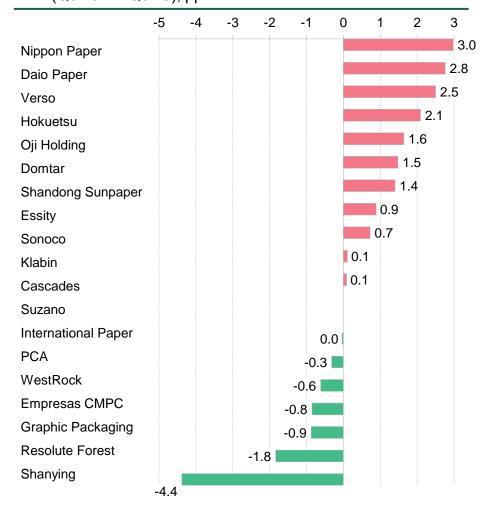


Some industry players have managed to reduce their SG&A over sales ratio, and Shanying saw the highest reduction of 4.4 pp. to 6% in Q3'20





SG&A over Sales Development by Company Delta(Q3'20 vs. Q3'19), pp.

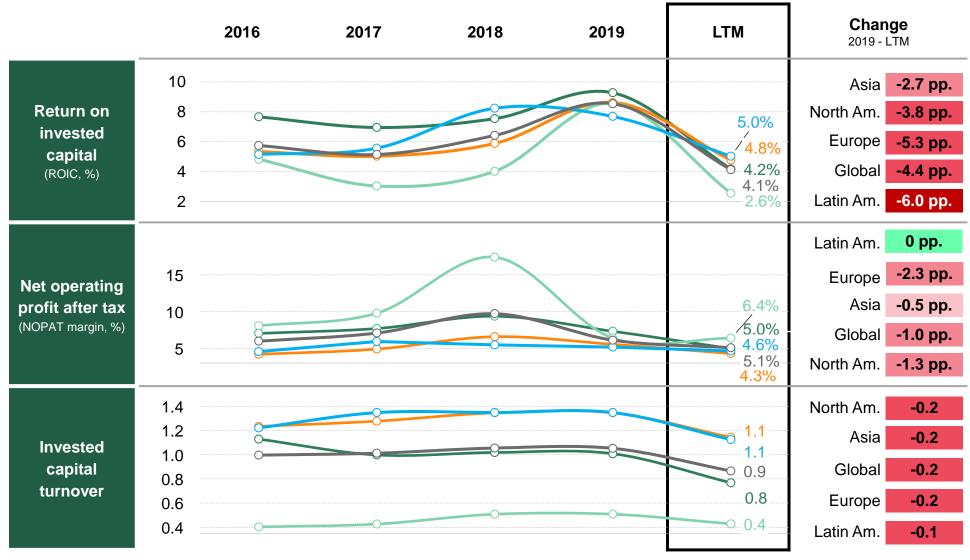




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Ø 12%

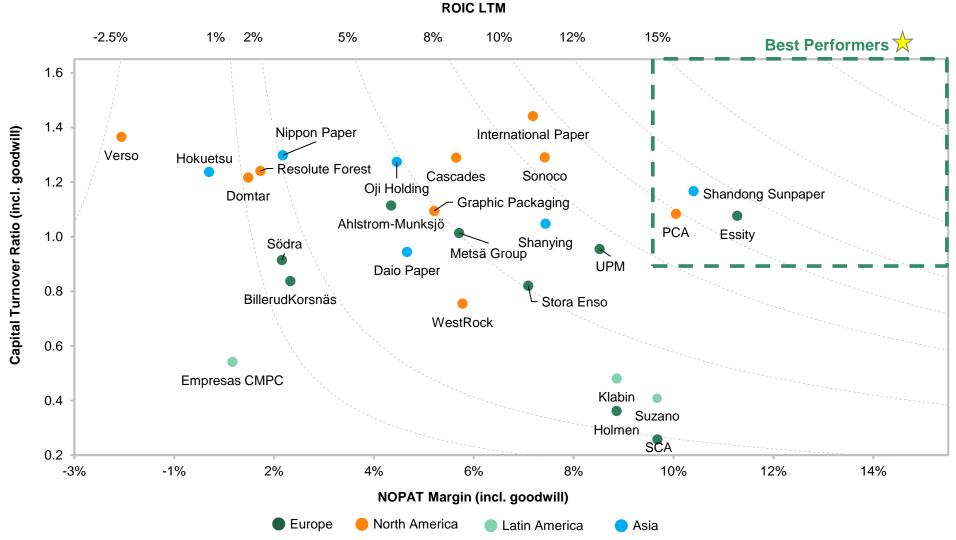
ROIC declined across all regions in LTM due to decrease in capital efficiency and profitability—global ROIC reduced by 4.4 pp. in LTM



— Europe — North America — Latin America — Asia — Global



ROIC performances varied between ~2.1% and ~11% over last 12 months with Shandong Sunpaper, PCA, and Essity being the top performers



Notes: ROIC = Return on Invested Capital (actual return that the company has generated after tax) Source: Capital IQ, Annual & quarterly reports, Applied Value Analysis



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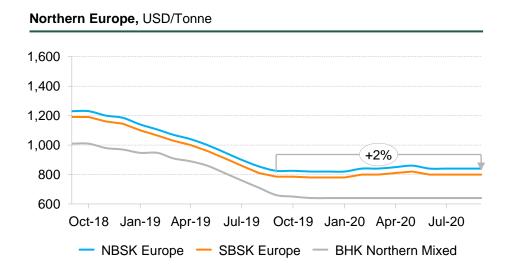
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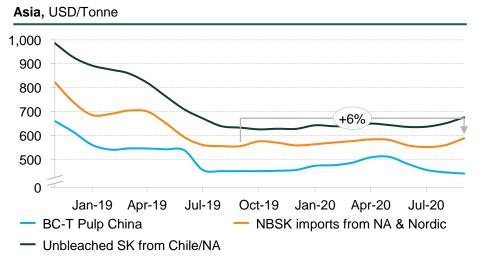
Source: RISI, Interim & Annual Results.

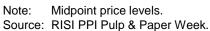


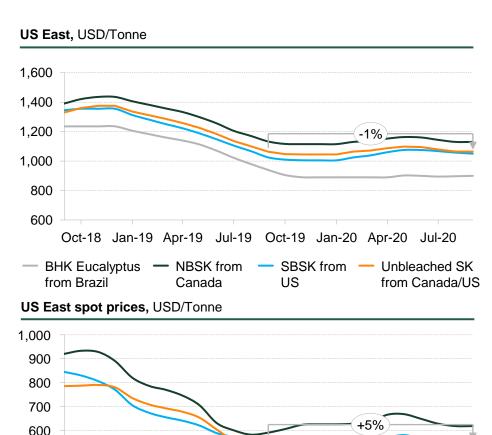
Global pulp prices developed within the range of -1% and +6% YoY, the overall trend continued to be downward across all regions in Q3'20 Global Pulp Price Development, Last 24 Months

500









Oct-19 Jan-19 Apr-19 Jul-19 Oct-19 Jan-20 Apr-20

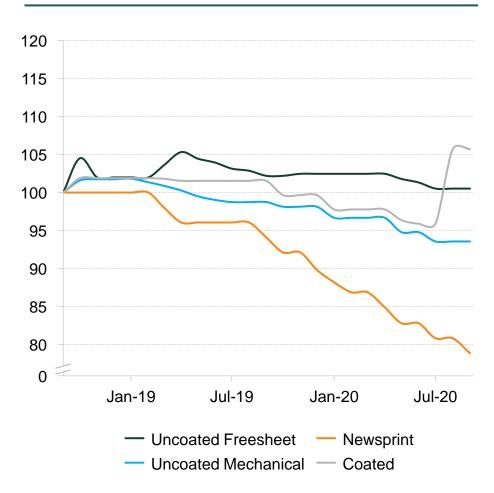
- NBSK - SBSK - BHK



Coated paper price rebounded the most out of all graphic paper, all kinds of packaging paper prices peaked in this quarter

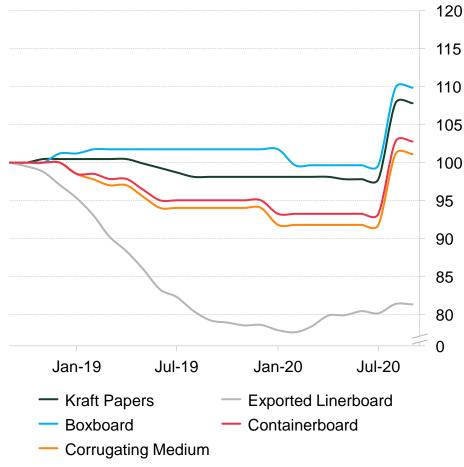
Graphic paper prices

Avg. indexed price per product segment, (index sep'18=100)



Packaging paper prices

Avg. indexed price per product segment, (index sep'18=100)

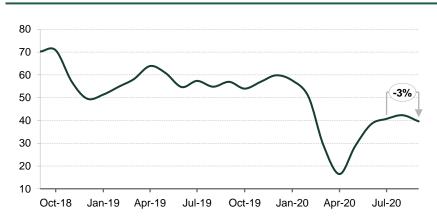


Note: Midpoint price levels.
Source: RISI PPI Pulp & Paper Week.



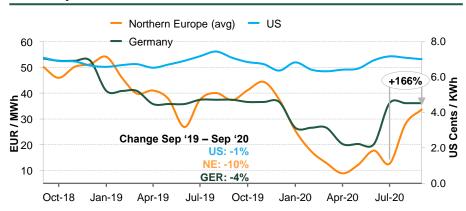
Electricity price saw a steep increase in Europe in Q3 2020 while most currencies continued to appreciate against USD in this quarter Commodity & Currency Price Development, Last 24 months

WTI Spot Crude Oil, USD/Barrel



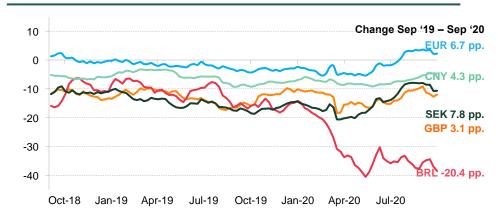
Source: US Energy Information Administration

Electricity



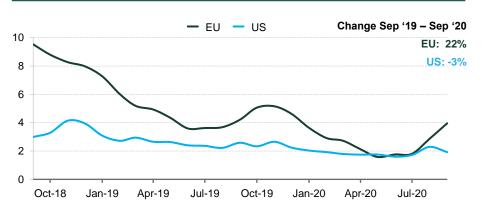
Source: US Energy Information Administration (Industry retail price), Nordpool, EEX (EGIX Germany)

Currency appreciation against USD, %



Source: S&P Capital IQ

Natural Gas, USD/mmbtu



Source: NYMEX (Natural Gas spot price at the Henry Hub terminal in Louisiana), World Bank (EU average import border price)



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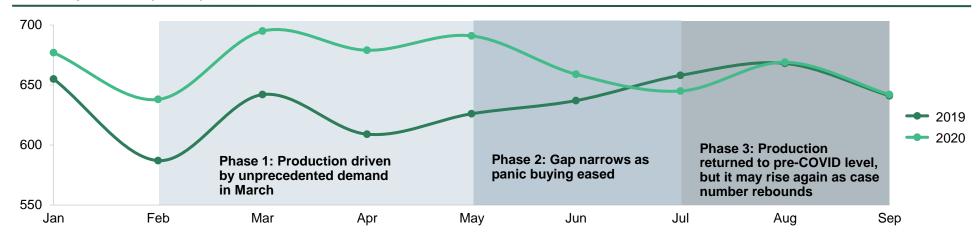
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Hygiene product panic buying drove US tissue production by 8.9% in March compared to February, and eased in Q2, returning to 2019 levels in Q3

US tissue production (Ktonne)

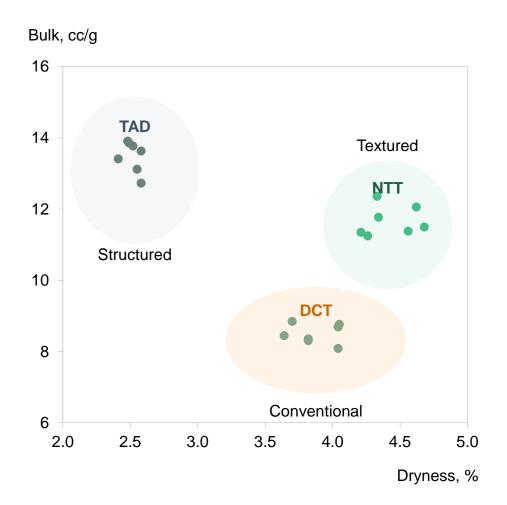


	Company	Annual Capacity (kt)	Description
TAD	JD Irving	80	The project will commence in 2021, in Macon, GA; this will become Irving's second large TAD set up in Macon within three years
(Through Air	KP Tissue	77	KP Tissue plans to set up a machine in Sherbrooke, QC; it just started up a converting line at the Sherbrooke complex, two additional will be added in August and in Q4
Drying)	First quality tissue	150	Plans to install two new TAD tissue paper machine in 2020 and 2023, the first TAD will be available in Q3 2022
Other	Roses Southwest Papers	/	\$12 million expansion plant in New Mexico will bring in new equipment and expand capacity for company's long-term development
expansion	JD Irving	/	The \$4.9 million mill modernization investment in Kedgwick, NB was completed; this will support its paper and tissue production and enhance its production efficiency
Conversion	Von Drehle	32	Natchez pulp mill will make commercial bath and towel paper by 100% virgin pulp instead of RCP



Advanced technology in tissue manufacturing caused oversupply in the market and ignited a price war in retail tissue market

Technology in Tissue Manufacturing



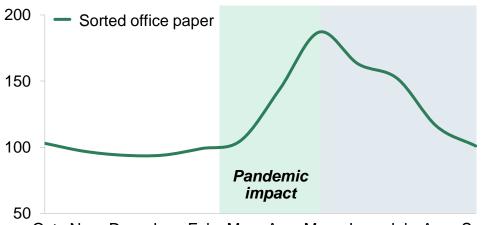
	Dry Crepe Technology	New Tissue Technology	Through Air Drying
Bulk	Low	Medium-High	High
Dryness	Medium	High	Low
Energy consumption	High	Low	High
Resolute tissue	✓	✓	x
Featured product	Standard	Premium	Ultra Premium

- Imbalanced supply and demand: the saturated North American tissue market will be flooded with million tones of additional capacity as a result of technological improvements despite stagnant population and GDP growth
- Surge in private label: advanced technology enabled private labels to enhance product quality and broaden product portfolios; competition with branded products further exerts pressure on retail prices

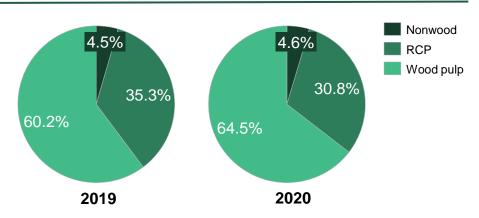


SOP price surged in May and then faced a downward trend as producers switched to virgin pulp from recovered paper

Sorted office paper(SOP), price \$/tonne



Volume of fiber consumed in tissue globally, %



Mar - May

- Supply decline: SOP has been in short supply since shelter-in-place orders issued in March; shutdown of offices and schools caused fewer SOP collection
- Demand growth: Due to upward demand of hygiene product, tissue sales surged in March, thus also drove up the demand of raw material (SOP)

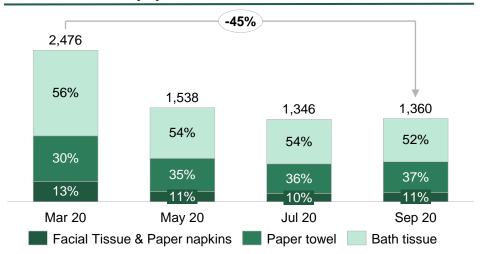
Jun – Sep: SOP price gradually return to pre-COVID level

- Slightly recovered supply: In early June, shredding companies and other businesses reopening added some SOP supply
- Weak demand: Lack of RCP and raw material high price made tissue producers to use more virgin fiber as recovered fiber's substitute
- The shortage supply of RCP and growth demand of athome tissue impacted positively on virgin pulp consumption, which led to a 4.5%, or 1.6 million tonne fiber use shifting from RCP to virgin pulp
- Some tissue mills increased their usage of virgin pulp in H1 2020 among recovered paper supply constraints; such as Von Drehle's Natchez pulp mill

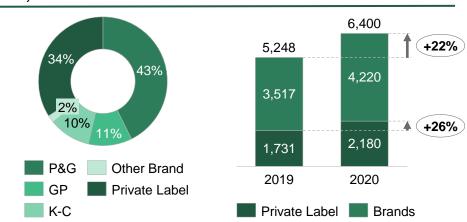


With eased quarantine orders, bath tissue sales declined while paper towels rose; private label towel sales grew more in 2020 than brand

US bath tissue & paper towel sales, MUSD



Paper towel sales and market shares of brand & private label in US, MUSD



Bath tissue & Paper towel

Bath tissue sales declined faster than kitchen towels as US businesses slowly reopened in mid-May. Demand for athome tissue decreased; however, sales of both segments are expected to continue to outperform Q3 2019 as US case numbers rebounded in the end of September

> "Households are likely to maintain higher stocks at home than they were – reports are saying at least two weeks. Additionally, folded hand towels are also being found in households for hand drying, reducing the use of cloth towels for drying." according to Uutela (August 2020)

 Demand of bath tissue will gradually return to 2019 level in following months, paper towel sales will remain strong

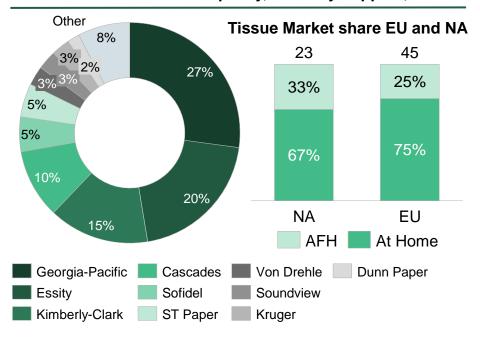
Brand & Private label for paper towel

- Private label showed steeper increases than brand paper towel at 26% in 2020 YoY, partially due to private label tissue's price competitiveness, customers who trade down with private label are rarely return to brand tissue
- Private label may gain more market share in future as it has following advantages:
 - > Price competitiveness
 - Production technology development enhanced tissue quality and product mix
 - Private label supported by the rise of discounters in the US (Aldi plans to open 70 new store in US in 2020)



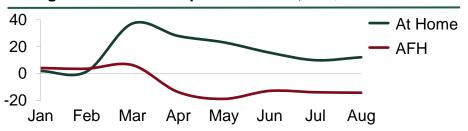
The away-from-home tissue segment slightly recovered from the previous declines as lockdowns were lifted

2019 North America AFH capacity, share by supplier, %

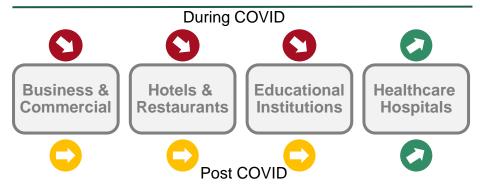


- Depressed Demand: As businesses closed during pandemic lockdowns it caused demand for away-fromhome tissue to continue to fall
- Weakened raw material supply: There has been a raw material supply shortage since shelter-in-place orders were issued in March; offices and school shutdowns led to less recovered paper collection

Change in US tissue shipment volume, YoY, %



AFH main end users demand projection



- "AFH sector will not fully recover even in 2021 as working from home will continue to some degree and other public traffic will remain lower than in past years." according to Uutela (August 2020)
- As the weather cools down, resurgence of COVID becomes a contingent event which may bring negative consequences to the AFH sector and drive demand of retail up again



Applied Value Pulp & Paper Report

Executive Summary & Introduction

Financial Benchmarking

Market Trends

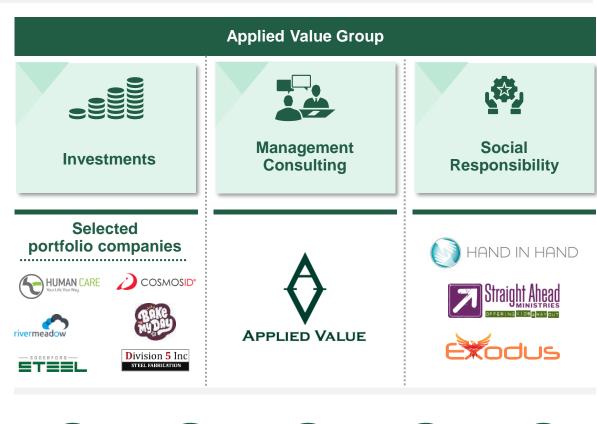
COVID-19 Impacts on Tissue Segment

Applied Value Presentation



Applied Value is a management consulting and investment firm founded on the principles of lean growth and entrepreneurship

















Fact-based

Practical over theoretical

Hands-On Global perspectives



Applied Value challenges and supports repat global clients across industries from six offices

Selected clients

Applied Value offices and footprint





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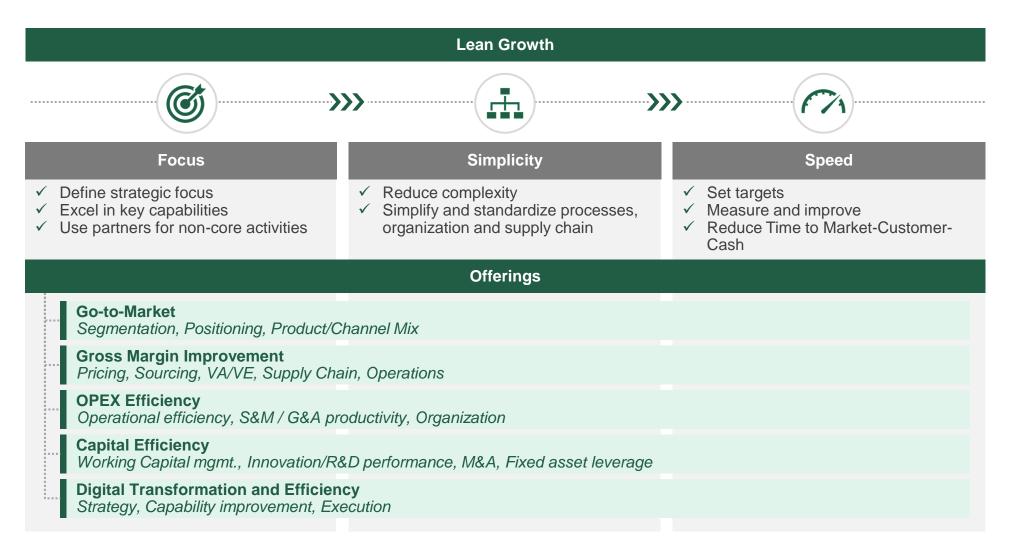
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Our Lean Growth framework is based on Focus, Simplicity, Speed – guiding principles to raise client performance





Pulp & Paper is one of our three main client industries

Industry	Examples of Applied Value Engagements	Client results			
Pulp & Paper	 Turnkey engagement to improve margins and capital turnover over a five-year period Engagements included: staff optimization, product mixture optimization, capital rationalization, sourcing, and other key areas 	> EBIT improved from 4% to 20% over a 4-year period Capital Turnover Ratio was improved from 0.55 to 0.9			
Telecom	 More than 200 engagements carried out in close collaboration with clients for over 10+ years Acted as key advisor in major turnaround Prime focus on organizational and sourcing efficiency in an industry with continuous cost pressure 	 Operating expenses cut by more than 60% during turnaround Clients have consistently outperformed industry 			
Automotive	 Consecutive work for 10+ years within Sourcing across multiple commodities, including more than 200 fact-based negotiations supported for 50+ commodities Hands on strategy and implementation support of steel purchasing for 8+ years 	Continuous return of 8-12 times fee to client Clients have consistently managed to buy steel below market prices			



Our Pulp & Paper practice has been serving world leading organizations since our founding

Overview of Applied Value's Pulp & Paper Experience

Applied Value has continuously advised global market leaders in the Pulp & Paper industry:

- > Key advisor to top executives during several successful turnarounds using our lean growth framework
- > Improving business performance of Pulp & Paper and Chemicals companies, as well as equipment & services providers

We have conducted <u>50+ engagements</u> improving Cost & Capital efficiency and Revenue Growth for our Pulp & Paper clients:

- > EBIT improvement program from 4% to 20% over a 4-year period for an Integrated Pulp & Paper Company
- > Sourcing Improvement Program covering Services / Chemicals / Logistics / MRO for a Global Packaging Company
- > External Distribution System Optimization for European Manufacturer of Liquid Paperboard and Sack Paper
- > Product Strategy for an Integrated Pulp & Paper Company
- > Operations Improvement Program to improve Unit Output and Labor Efficiency for an Integrated Pulp & Paper Company
- SG&A efficiency for an Integrated Pulp & Paper Company

We are known for **creating immediate impact** and **driving change** for our clients



Applied Value has strong expertise in several areas relevant for driving improvements in the Pulp & Paper industry

Applied Value's Pulp & Paper Expertise

Applied Value Expertise	Improvement levers	Typical results			
Commercial Excellence	 > Product and customer focus > Pricing > Sales process and organization > People, culture, and incentives 	 20-30% reduction of SG&A costs Improved customer and product profitability Top line growth 			
Process Speed	 Complexity reduction Change of policies Elimination of low-value add activities Streamline Ways-of-Working 	> "Order-to-Cash" lead time reductions of 20-40%			
Mill Efficiency	 Operational benchmarking Maintenance efficiency Operator and production overhead efficiency OEE improvements 	> 5-30% cost reduction, depending on category			
Sourcing Excellence	Commercial strategyValue Analysis / Value EngineeringConsumption strategy	 4-12% reduction of COGS in long-term Sourcing Programs 15-25% reduction of spend in selected categories (mainly indirect material) 			





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APPLIED VALUE GROUP